

# History

Issued December 2009

## *2000 Census of Population and Housing*

PHC-R-V2

### **Volume 2**

Chapter 7: Census Geography and the Geographic Support System

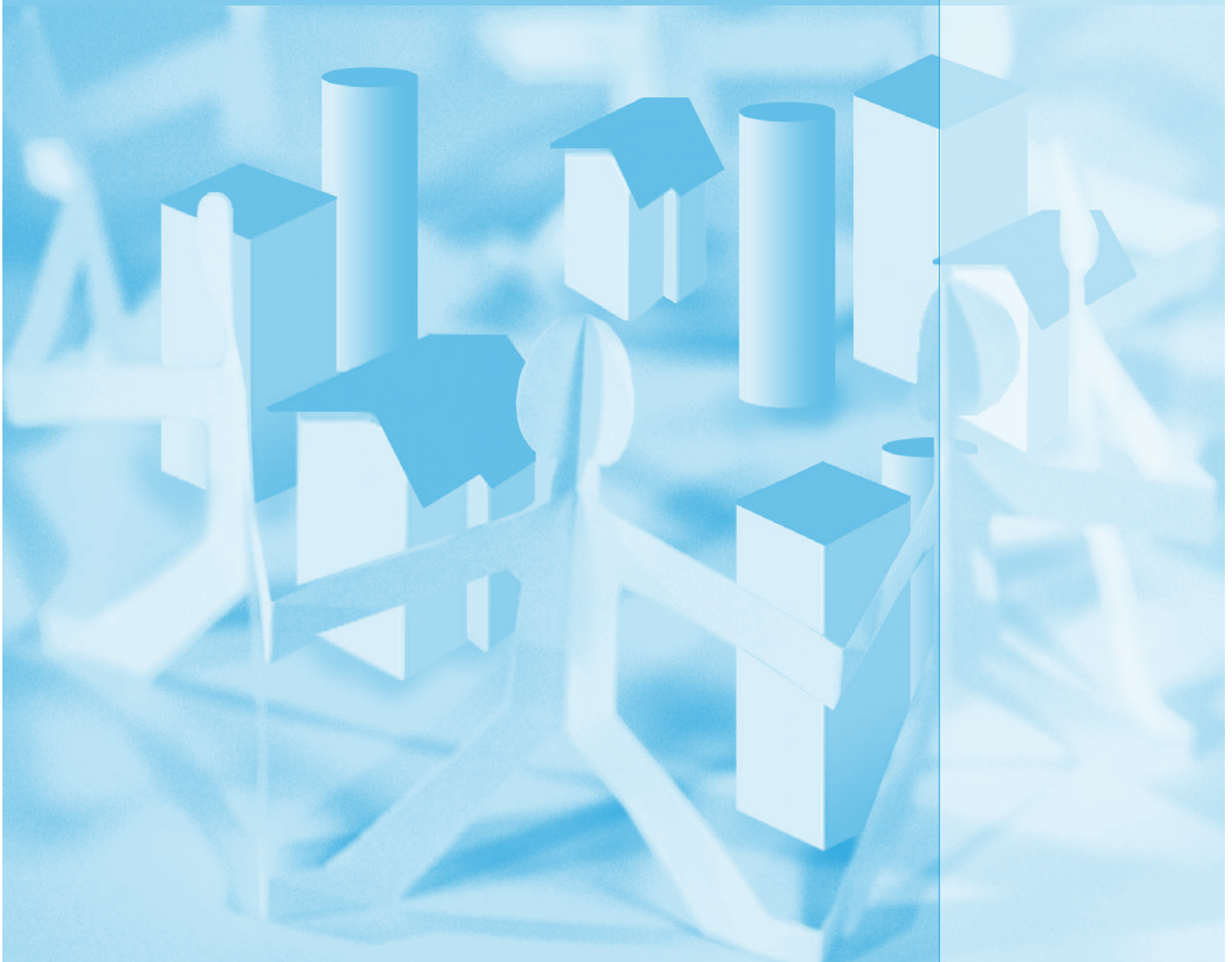
Chapter 8: Addresses and Questionnaire Printing and Mailing

Chapter 9: Data Products and Dissemination

Chapter 10: Testing, Experimentation, Evaluation, and Coverage Measurement Programs

Chapter 11: Legal Issues

Chapter 12: Puerto Rico and the Island Areas



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## *2000 Census of Population and Housing*

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## Volume 2: Preface

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This volume includes the last six chapters of the *History: 2000 Census of Population and Housing*. These chapters present detailed descriptions of many aspects of Census 2000, from geographic support and address list preparation through the creation and dissemination of census data products, the evaluation and experimental programs, the resolution of census-related litigation, and the conduct of the census in Puerto Rico and the Island Areas.

**Chapter 7, “Census Geography and the Geographic Support System,”** describes the procedures the Census Bureau used to produce maps for data collection and tabulation purposes, as well as the operations undertaken to update and improve the TIGER® system. **Chapter 8, “Addresses and Questionnaire Printing and Mailing,”** describes the creation and maintenance of the master address file and its decennial census derivative file and summarizes the process of printing census questionnaires, inserting them into properly addressed envelopes, and delivering them to the correct addresses. **Chapter 9, “Data Products and Dissemination,”** describes the tabulation data files from which data products were created, the various series of data products, and the ways the Census Bureau disseminated census data to the public and to other government agencies. **Chapter 10, “Testing, Experimentation, Evaluation, and Coverage Measurement Programs,”** reviews the goals and results of the experiments embedded in Census 2000 and the evaluations of the operations and procedures the agency conducted in the course of taking this census. **Chapter 11, “Legal Issues,”** describes census-related legislation, the disagreements over the uses of sampling in the census and how they were resolved, census-related Freedom of Information Act requests, and the lawsuits to which the census gave rise. **Chapter 12, “Puerto Rico and the Island Areas,”** discusses census operations and procedures in Puerto Rico and the Island Areas.

Volume 1 of this *History: 2000 Census of Population and Housing* covers such topics as the planning activities for the census, questions included on the census short form and census long form, programs that publicized the census and generated community partnerships, methods of distributing the census forms and collecting information, and the systems for reading and processing the data collected.

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- Glossary



## Census Day, 2000

*By the President of the United States of America*

### **A Proclamation**

Every 10 years, as mandated by our Constitution, all persons living in the United States are called upon to participate in the census. As the foremost method of gathering information about our Nation, the census plays a crucial role in helping us to maintain our democratic form of government.

An accurate census helps to ensure that the rights and needs of every person are recorded and recognized as we shape public policies, programs, and services. Too often in the past, children, minorities, and low-income individuals have not been counted and, as a result, have not been fully and fairly served. Census data are also used to determine the number of seats each State is allocated in the U.S. House of Representatives, and State and local governments depend upon these data to draw legislative districts that accurately represent their residents.

The census also serves as the basis for many public funding and private investment decisions. Census results play a part in determining the portion each State receives of more than \$185 billion in funds distributed by the Federal Government each year. State and local public officials use census data to decide where to build public facilities such as schools, roads, hospitals, and libraries. Census data also are a valuable resource for businesses that are trying to identify where to build stores, office buildings, or shopping centers.

The census is unique. It reaches every population group, from America's long-time residents to its most recent immigrants, and every age group from newborns to centenarians. The census touches every social class and every racial and ethnic group. The census is truly a democratic process in which we all can participate.

Census 2000 offers each of us an important opportunity to shape the future of our Nation. By taking part, we help ensure the well-being of our families and our communities, and we fulfill one of our fundamental civic duties. The U.S. Census Bureau has taken unprecedented steps to ensure full participation in this first census of the new millennium. At the same time, the Bureau will continue its long tradition of protecting the personal information of America's citizens, and no other Government agency will be able to see any individual or family census form. I strongly urge every man and woman living in the United States to fill out and return his or her census form or to cooperate with census takers who will help them do so.

NOW, THEREFORE, I, WILLIAM J. CLINTON, President of the United States of America, by virtue of the authority vested in me by the Constitution and laws of the United States, do hereby proclaim April 1, 2000, as Census Day. I call upon all the people of the United States to observe this day with ceremonies, activities, and programs that raise awareness of the importance of participating in Census 2000.

IN WITNESS WHEREOF, I have hereunto set my hand this first day of April, in the year of our Lord two thousand, and of the Independence of the United States of America the two hundred and twenty-fourth.

*William J. Clinton*





**Chapter 7.****Census Geography and the Geographic Support System**

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# Chapter 7: Census Geography and the Geographic Support System

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## INTRODUCTION

Improvements related to an array of geographic issues were critical to the success of Census 2000. As in previous censuses, geographic programs supported the planning of operations, including address listing and data collection activities, the creation of the maps for census operations, and the tabulation and dissemination of data. The development of an all-inclusive, automated address list that was linked to a geographic database facilitated the Census Bureau's effort to take a complete and accurate census of an ever-expanding population in the most effective and cost-efficient manner. The result was a variety of geographic-area tabulations and products for the nation.<sup>1</sup>

One of the Census Bureau's main goals was to improve the Topologically Integrated Geographic Encoding and Referencing (TIGER®) system and the products derived from it. The agency also expanded and enhanced the address list (called the master address file or MAF) to provide as complete a set of addresses as possible prior to the mail-out of questionnaires for most of the United States and to accurately associate every address with a geographic location in the TIGER database.<sup>2</sup> In addition, the Census Bureau continued to maintain and refine its map production processes and to identify and delineate geographic entities for which it collected and provided data.

Advances in technology changed the mode of operation for the Census 2000 geographic programs. Program information, materials, and products were posted to the Census Bureau's Internet site. This provided the Census Bureau with a new way to disseminate information to its partners. In addition, many programs offered both electronic and paper response options, enabling data users to choose the format of items they requested from geographic and address list programs.

This chapter describes the geographic entities included in Census 2000 and the Census 2000 geographic programs and geographic products. It also summarizes the differences between the 1990 and 2000 geographic operations.

## CENSUS 2000 COOPERATIVE EFFORTS

The Census Bureau consulted with a number of governmental and nongovernmental groups and organizations as part of establishing and conducting the Census 2000 geographic programs. State, local, and tribal governments were consulted, as well as organizations with representatives from those governments, such as the National Association of Counties, National Association of Towns and Townships, National Conference of State Legislators, National League of Cities, National States Geographic Information Council, and all of the Census Advisory Committees.

The Census Bureau also met with numerous professional groups and attended or gave presentations at professional conferences across the country to provide information and obtain comments and suggestions about proposed Census 2000 geographic programs. Among those consulted were the Urban and Regional Information Systems Association, Intertribal Geographic Information Systems Conference, National Association of Towns and Townships Conference, Environmental Systems Research Institute Conference, Minnesota GIS/LIS Conference, National Association of

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<sup>1</sup> Geography products include the Census Bureau's geographic support system, a variety of census-related maps, and the geographic entities used in and tabulated by the decennial census. Note that "Map Image Metafile," "MIM," "TIGER," and "TIGER/Line," are registered trademarks of the Census Bureau; "ZCTA" is a trademark of the Census Bureau; and "ZIP Code" and "ZIP+4" are registered trademarks of the U.S. Postal Service.

<sup>2</sup> See, for example, U.S. Census Bureau, "Census 2000 Operational Plan," December 2000, Section VII, and Andrew A. White and Keith F. Rust (eds.), *Preparing for the 2000 Census* (Washington, DC: National Academy Press, 1997), pp. 13–23.

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Counties Conference, League of Cities Conference, International City/County Management Association Conference, and State Data Centers. The purpose here was to highlight how cooperative participation in programs like TIGER®, MAF, and geographic areas delineation could benefit both the Census Bureau and tribal, state, and local organizations.<sup>3</sup>

Legal and statistical geographic entities provided the framework for the collection, tabulation, and presentation of the Census 2000 data. Figures 7-1 and 7-2 show the entities for which the Census Bureau tabulated data. These entities are defined in the glossary or technical documentation that accompanied the published or tabulated census data.<sup>4</sup>

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<sup>3</sup> Refer to <<http://www.census.gov/geo/www/partnership.html>> for more information. See also Chapter 4, “The Partnership and Marketing Program.”

<sup>4</sup> See <<http://www.census.gov/geo/www/tiger/glossary.pdf>>. Most of these entities are described in the geographic appendix (Appendix A) to Census 2000. A detailed explanation and the history of many of the areas for which Census 2000 reported data are available in the Census Bureau’s *Geographic Areas Reference Manual* (Washington, DC: Government Printing Office, 1994), <<http://www.census.gov/geo/www/garn.html>>.

Figure 7-1.  
**Standard Hierarchy of Census Geographic Entities**

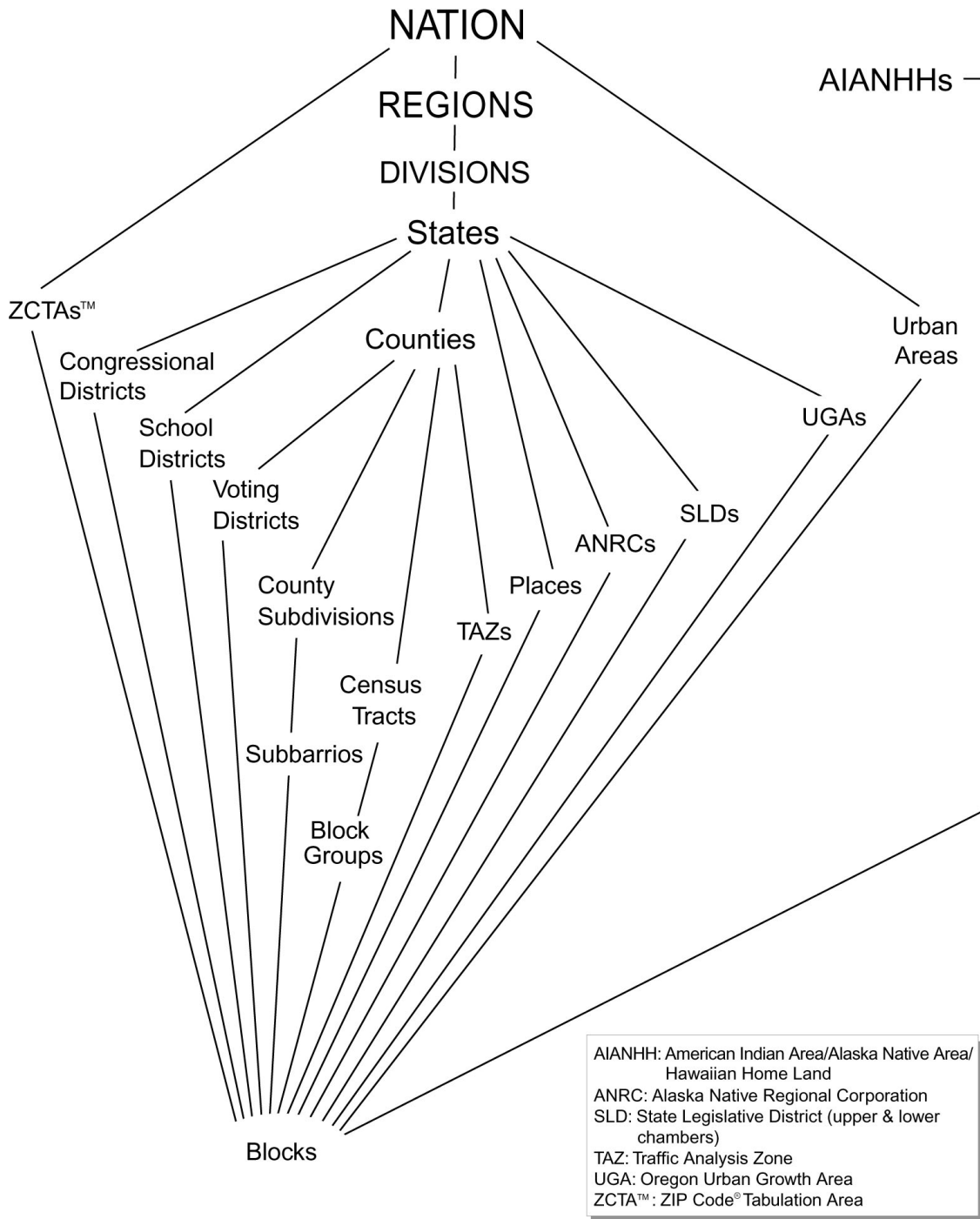
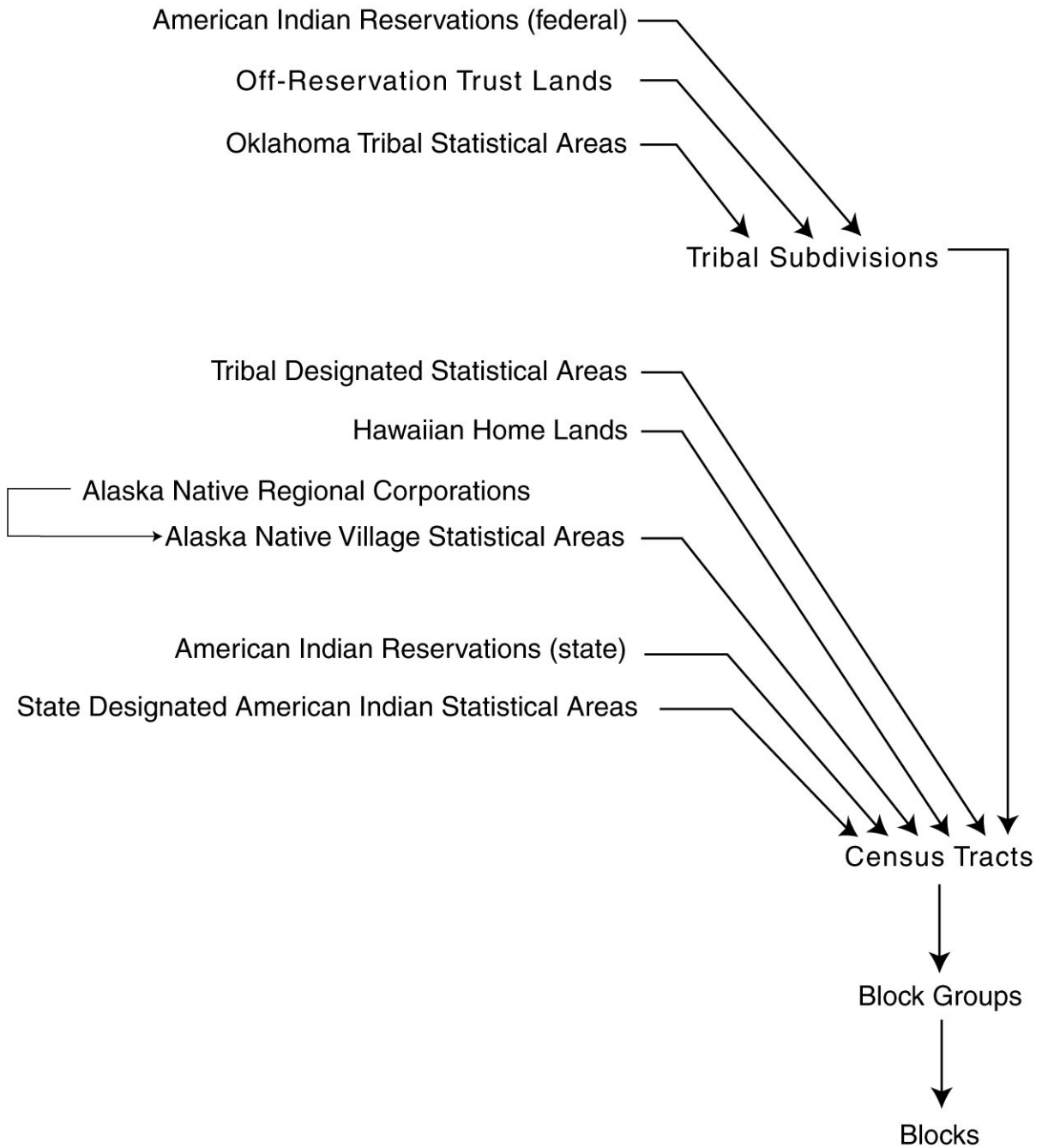


Figure 7-2.

**American Indian Area/Alaska Native Area/Hawaiian Home Land Hierarchy**



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## Legal and Geographic Entities

In Census 2000, the Census Bureau recognized legal entities and their boundaries legally in effect on January 1, 2000. This continued the agency's practice, first used for the 1970 census, of using January 1 as the basis for review and assignment of addresses and data tabulation. The types of legal entities for which the Census Bureau tabulated data were extensive and included the nation, states, counties/equivalent areas, minor civil divisions (MCDs), sub-MCDs, consolidated cities, incorporated places, congressional districts, state legislative districts, voting districts, American Indian reservations and/or off-reservation trust lands, Alaska Native Regional Corporations (ANRCs), tribal subdivisions, and Hawaiian Home Lands.

The Census Bureau used six geographic programs to collect and verify boundary data on legal entities. These programs (Boundary and Annexation Survey, Boundary Validation Program, State Certification Program, Tribal Review Program, Changes for the Legal Entities, and Redistricting Data Program) are discussed below.<sup>5</sup>

**Boundary and Annexation Survey (BAS).** The Boundary and Annexation Survey (BAS) was used to gather information about all counties and equivalent areas, MCDs, incorporated places, consolidated cities, American Indian reservations and off-reservation trust lands, ANRCs, and tribal subdivisions. Such information included boundary changes, mergers and consolidations, newly established and discontinued entities, and name and status changes.

Federally recognized American Indian tribes with a reservation or with off-reservation lands were included in the BAS, starting in 1998. The Census Bureau requested local and tribal officials with jurisdiction over these lands to update legal boundaries and to verify or correct the locations and names of streets and other base features shown on the maps. The 1999 BAS included ANRCs, which enabled Alaskan officials to review names and boundaries as recorded in the TIGER<sup>®</sup> database.

**Boundary Validation Program (BVP).** The 2000 BAS was the last survey mailed before delivery of Census 2000 questionnaires. Once this survey was completed, the Census Bureau conducted the Boundary Validation Program. This was a new program for Census 2000 and was the last opportunity for officials of governmental units (GUs) to review the legal boundaries before the tabulation of Census 2000 data.

The Census Bureau conducted an intensive mail and telephone follow-up program for GUs that did not respond to either the 2000 BAS or the BVP. The Customer Liaison Office (CLO) served as the agency's liaison with the State Data Centers (SDCs). Although their participation was voluntary, all SDCs participated. The CLO reported that some SDCs even offered to perform follow-up for local nonresponding GUs. The SDCs also urged GUs to respond to the BVP and notified them that if they did not respond because boundaries were accurate, they could report this to the local SDC, which would relay that information to the Census Bureau. This was a valuable service because the SDCs obtained responses from GUs that the Census Bureau could not reach.<sup>6</sup>

**State Certification Program.** After each BAS, the Geography Division (GEO) sent a list of the changes submitted for each geographic entity in the state, together with lists of all GUs in the state, to a governor-appointed state official for certification. These officials were asked to review the information for completeness and accuracy and to verify that all actions had taken place in conformance with state law. The Census Bureau required that all information about the entities included in the BAS reflect the legal situation as it existed on January 1 of the survey year so that the tabulated data for Census 2000 reflected the inventory of legal areas and boundaries in effect on that date.

**Tribal Review Program.** In addition to the BAS, the Census Bureau undertook a separate survey early in 1997—the Tribal Review Program—to determine the official boundaries and names of all federally recognized American Indian tribes with a land base; that is to say those tribes that,

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<sup>5</sup> See Chapter 9, "Data Products and Dissemination," for more information on the Redistricting Data Program.

<sup>6</sup> Refer to <<http://www.census.gov/geo/www/partnership.html>> for more information.

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according to the U.S. Bureau of Indian Affairs (BIA), had a reservation and/or off-reservation trust land recognized by the federal government.<sup>7</sup> As part of the Tribal Review Program, selected tribes were offered the opportunity to identify features they wanted the Census Bureau to hold or not hold as tabulation block boundaries for the Block Definition Project. The tribes with an American Indian reservation and/or off-reservation trust lands became part of the BAS in 1998.

**Changes for the legal entities.** Section 191 of Title 13, U.S. Code, specified that the following areas be included in the decennial census as: “. . . each State, the District of Columbia, the Virgin Islands, Guam, the Commonwealth of the Northern Mariana Islands, and the Commonwealth of Puerto Rico . . . .” Inclusion of other areas required concurrence of the U.S. Secretary of State. On March 6, 1995, the U.S. State Department announced that Census 2000 would not include the Republic of Palau, which became independent of the United States on October 1, 1994.<sup>8</sup> This left American Samoa and a number of small, mostly unpopulated islands in the Caribbean Sea and the Pacific Ocean in the census by special agreement with the Department of State. Previously, the Census Bureau referred to the areas outside the United States collectively as Puerto Rico and the Outlying Areas, but for Census 2000 it adopted the more descriptive term of Island Areas to identify the latter entities collectively.

At the county level, the Census Bureau recognized two new types of legal entities in Alaska: “city and borough” and “municipality.” The latter term applied only to Anchorage. Alaska established two new county-level entities in the 1990s: Denali Borough and Yakutat City and Borough. The creation of the latter from part of the Skagway-Yakutat-Angoon Census Area caused the Census Bureau to rename the remaining portion as Skagway-Hoonah-Angoon Census Area.

Two legal entities that served as statistical equivalents of counties for the 1990 census relinquished that status during the decade. In 1995, South Boston, VA, gave up its status as a city independent of any county by joining the surrounding Halifax County. In 1997, the portion of Yellowstone National Park in Montana, which had not been part of any county, was absorbed into the two adjacent counties, Gallatin and Park.<sup>9</sup> The creation and deletion of county-level entities resulted in the 1990 and 2000 count of the entity types remaining at 3,141.

The types of MCDs recognized for Census 2000 remained constant. But the number of governmental and administrative MCDs decreased from 24,861 to 24,787 as a result of mergers and redistricting in states where MCDs represented election districts. The BAS recorded changes to over 1,300 MCDs consisting of at least 1 square mile. The number of incorporated places increased from 19,289 in 1990 to 19,452 in 2000. The BAS revealed that roughly 88,500 annexations added territory to incorporated places between 1990 and 2000; incorporated places detached territory roughly 1,350 times. The BAS reported a net gain of about 12,780 square miles by incorporated places during the period.

Tables published by the Census Bureau presented only the Federal Information Processing Standards (FIPS) 55 codes for county subdivisions, sub-MCDs (the subbarrios in Puerto Rico), and consolidated cities and places. Other FIPS publication codes used were FIPS 5 for states and equivalent areas, FIPS 6 for counties and equivalent areas, FIPS 8 for metropolitan areas, and FIPS 9 for congressional districts. The Census Bureau or local participants provided codes for other tabulated areas.

**Redistricting Data Program.** Public Law (P.L.) 94-171 requires the Census Bureau to provide state governments with decennial census data for “geographic areas for which specific tabulations of population are desired” to assist states in meeting the one-person, one-vote requirement specified in the law. The areas under consideration usually correspond to or approximate voting areas

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<sup>7</sup> *Federal Register*, Vol. 65, No. 121 (June 22, 2000), pp. 39062–69. See, U.S. Census Bureau, *Geographic Areas Reference Manual*, 1994, pp. 5-10–5-11. See also U.S. Census Bureau, Geography Division, “Operational Plan for American Indian and Alaska Native Geographic Programs,” October 30, 1996, p. 5.

<sup>8</sup> U.S. Census Bureau, Decennial Management Division, “Geographic Areas for Inclusion in the 2000 Decennial Census,” March 28, 1995.

<sup>9</sup> Refer to <<http://www.census.gov/geo/www/tiger/ctychng.html#2000>> for more information.



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or local legislative districts. P.L. 94-171 required the Census Bureau to provide state officials with the appropriate data from Census 2000 by April 1, 2001.<sup>10</sup>

The Census 2000 Redistricting Data Program had three phases. Phase 1 was the Block Boundary Suggestion Project (BBSP); Phase 2 was the Voting District Project (VTDP); and Phase 3 was the release of Census 2000 redistricting data.

The BBSP enabled appropriate officials in the 50 states to identify selected features as must-hold block boundaries. Similar programs were developed for specific American Indian lands (federal American Indian reservations, off-reservation trust land, and 1990 census tribal jurisdiction statistical areas), the District of Columbia, and Puerto Rico. The District of Columbia program was called the Block Definition Project (BDP), and the Puerto Rico program was the Block Boundary Definition Project (BBDP). American Indian tribes conducted a BDP in 1997 as part of the Tribal Review Program.

In Phase 2, the VTDP, state officials delineated local voting districts and state legislative districts (SLDs) for both the upper and lower chambers of each state's legislature.

Phase 3 was the Census Bureau's delivery of the Census 2000 Redistricting Data (P.L. 94-171) Summary File. Data delivery began on March 12, 2001, and included the maps and/or the TIGER/Line® files that identified names, boundaries, and relationships of census geography down to the block level. The summary file contained detailed race and Hispanic-origin data for redistricting; data on geographic areas (voting districts, SLDs, and congressional districts); and breakdowns by state, county, county subdivision, place, American Indian areas, Alaska Native areas, Hawaiian areas, census tracts, and blocks.

The congressional districts (CDs) for which Census 2000 first presented data were those reported as the districts that existed for the 106th Congress—the congressional session that began in January 1999—and therefore in effect on January 1, 2000, the official date for the boundaries recognized for Census 2000.

The first Congress to reflect the effects of reapportionment and redistricting resulting from Census 2000 was the 108th, which began in January 2003. The Census Bureau provided Census 2000 data based on the congressional district boundaries that the states reported legally in effect for the November 2002 elections. Census 2000 marked the first time the Census Bureau provided states with state legislative district data. States could identify their legislative districts as part of Phase 2 of the Redistricting Data Program.

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<sup>10</sup> U.S. Census Bureau, "Strength in Numbers/Your Guide to Census 2000 Redistricting Data From the U.S. Census Bureau," July 2000, <<http://www.census.gov/rdo/data/009919.html>>. Also refer to <<http://www.census.gov/rdo/222/2000%20redistricting%20data%20program.htm>>.

Table 7-1.  
**Geographic Tabulation Entities for Census 2000: Standard**

Entities	Number of U.S. entities	Number of U.S., Puerto Rico, and Island Areas entities
United States .....	1	1
Census regions .....	4	14
Census divisions .....	9	19
State-level entities <sup>2</sup> .....	51	56
States .....	50	50
District of Columbia .....	1	1
Puerto Rico and the Island Areas <sup>3</sup> .....	(NA)	5
County-level entities .....	3,141	3,232
Counties, parishes, municipios, and similar entities (includes state-level entities that also serve as county-level entities [DC, Guam]) .....	3,087	3,178
Independent cities .....	43	43
Census areas (Alaska only) .....	11	11
County subdivisions .....	35,414	36,427
Minor civil divisions (MCDs) .....	29,388	30,361
Governmentally active MCDs .....	16,567	16,581
Governmentally inactive or nonfunctioning MCDs .....	8,206	9,163
Places treated as MCD equivalents <sup>4</sup> .....	4,597	4,599
American Indian reservations treated as MCD equivalents .....	18	18
Water-only MCD-equivalent areas (MCD records 00000) .....	97	137
Unorganized territories .....	305	305
Census county divisions .....	5,588	5,588
Census subareas (Alaska only) .....	36	36
Sub-MCDs (subbarrios in Puerto Rico) .....	(NA)	145
Places .....	25,157	25,512
Incorporated places (includes 7 consolidated city "balances") .....	19,452	19,528
Consolidated cities .....	7	7
Census designated places (CDPs) <sup>5</sup> .....	5,698	5,977
Representation in congress <sup>6</sup> .....	436	441
Congressional districts .....	435	435
Nonvoting delegates/resident commissioner (area coded 98) .....	<sup>6</sup> 1	<sup>6</sup> 5
No representation in Congress (area coded 99) .....	NA	<sup>6</sup> 1
State legislative districts <sup>7</sup> .....	5,112	5,112
Upper chamber districts <sup>8</sup> (includes 8 undesignated areas treated as upper chamber districts (districts coded ZZZ) <sup>9</sup> .....	1,536	1,536
Lower chamber districts (includes 8 undesignated areas treated as lower chamber districts (districts coded ZZZ) <sup>9</sup> .....	3,576	3,576
Voting districts <sup>7</sup> (includes 118 U.S. and 156 total undesignated areas treated as voting districts (districts coded ZZZZZ) <sup>9</sup> .....	127,605	129,319
School districts .....	14,404	14,409
Elementary <sup>10</sup> .....	2,703	2,703
Secondary <sup>10</sup> .....	472	472
Unified (includes 36 areas treated as unified districts [districts coded 99997 or 99998]) <sup>9</sup> .....	11,127	11,132
Other (in 5 states) <sup>10</sup> .....	102	102
Urban growth areas (Oregon only) .....	216	216
Metropolitan areas (MAs) <sup>11</sup> .....		
Metropolitan statistical areas (MSAs) .....	258	261
Consolidated MSAs (CMSAs) .....	18	19
Primary MSAs (PMSAs) .....	73	76
New England County MAs (NECMAs) .....	12	12
Central cities of metropolitan areas <sup>11</sup> .....	<sup>11</sup> 542	<sup>11</sup> 554
Central cities of MSAs .....	408	411
Central cities of CMSAs/PMSAs .....	134	143
Central cities of NECMAs .....	<sup>11</sup> 45	<sup>11</sup> 45

See footnotes at end of table.

Table 7-1.  
**Geographic Tabulation Entities for Census 2000: Standard—Con.**

Entities	Number of U.S. entities	Number of U.S., Puerto Rico, and Island Areas entities
Urban areas <sup>12</sup> .....	3,610	3,638
Urbanized areas (UAs) .....	452	465
Urban clusters (UCs) .....	3,158	3,173
Central places in urban areas .....	<sup>13</sup> 3,996	<sup>13</sup> 4,042
Central places in UAs .....	878	906
Central places in UCs .....	3,155	3,173
Census tracts <sup>14</sup> (includes 122 U.S. and 160 total water-only census tracts (census tracts numbered 0000 [or 000000]) .....	65,443	66,437
Block groups (BGs) <sup>14</sup> (includes 122 U.S. and 160 total water-only block groups (BGs numbered 0) <sup>15</sup> .....	208,790	211,826
Census blocks (includes 187,845 U.S. and 189,454 total water-only census blocks) .....	8,205,582	8,269,129
ZIP Code tabulation areas (ZCTAs) .....	33,048	33,178
5-digit ZCTAs .....	31,913	32,038
5-character generic ZCTAs (ZCTAs numbered nnnXX) <sup>16</sup> .....	329	331
5-character water-only ZCTAs (ZCTAs numbered nnnHH) <sup>16</sup> .....	806	809
3-digit ZCTAs <sup>16</sup> .....	884	887
Traffic analysis zones (includes 112 areas treated as traffic analysis zones (zones coded ZZZZZ) <sup>9</sup> .....	166,747	166,747
Public use microdata areas (PUMAs) <sup>17</sup>		
5-percent-sample PUMAs .....	2,071	2,101
1-percent-sample PUMAs (super-PUMAs) .....	532	540

<sup>1</sup> Puerto Rico and the Island Areas are not part of any census region or division. For recordkeeping purposes, the Census Bureau codes them to a "false" region (9) and division (0), but the Census Bureau does not present data for "Region 9" and "Division 0," nor do they appear in the TIGER/Line® files.

<sup>2</sup> Does not include the U.S. Minor Outlying Islands (FIPS state code 74). The nine component entities are shown only in Table 1 of the "Census 2000 U.S. Summary Report." Only Midway Islands (FIPS county code 300) appears in the Census 2000 version of the TIGER/Line® files; however, it is not included in the post-census (2002 and subsequent) TIGER/Line files. Even though they appear in the Census 2000 files, counts for Midway Islands are not included in this table for the following geographic entities: state (1), county (1), county subdivision (1), school district (2), census tract (1), block group (1), and census block (2).

<sup>3</sup> The Island Areas include American Samoa, Guam, the Northern Mariana Islands, and the Virgin Islands of the United States.

<sup>4</sup> Includes multiple records for places in more than one county; also includes false MCD records for Arlington County, Virginia; and Rose Island and Swains Island, American Samoa.

<sup>5</sup> CDPs include zonas urbanas and comunidades in Puerto Rico.

<sup>6</sup> Includes one nonvoting delegate each for the District of Columbia, American Samoa, Guam, and the Virgin Islands of the United States, and a resident commissioner for Puerto Rico. In addition, the Census Bureau's internal files record the fact that the Northern Mariana Islands has no representation in Congress.

<sup>7</sup> Includes only legislative districts and voting districts identified by officials in states that participated in the Census 2000 Redistricting Data Program, and officials in the District of Columbia and Puerto Rico.

<sup>8</sup> Upper chamber districts include Nebraska's unicameral districts.

<sup>9</sup> Refers to territory that was not assigned to any district or zone (no more than one per county) in a participating state. In many cases, the territory consists only of water area.

<sup>10</sup> The "other" category consists of 43 high school service areas (recorded as secondary districts) and groupings of these areas into 7 administrative districts (recorded as elementary districts) in Hawaii; 32 community school districts (recorded as elementary districts) in New York city; and 1 district in Massachusetts, 2 districts in South Carolina, and 17 districts in Tennessee that represent 20 unified school districts that are also shown as 20 secondary districts (using pseudo school district codes) for purposes of data tabulation.

<sup>11</sup> All MAs and their central cities for Census 2000 are those in effect on January 1, 2000, as announced by the federal Office of Management and Budget (OMB) on June 30, 1999. The central cities included in NECMAs are the same central cities included in MSAs and CMSAs/PMSAs, and therefore the NECMA counts should not be added to the other central city counts. The MAs and central cities do not reflect the entities that the OMB announced in 2003 based on new standards (published December 27, 2000) and data from Census 2000.

<sup>12</sup> In August 2002, the Census Bureau revised the inventory of urban areas after data tabulation, resulting in the following counts: Urban areas: 3,607 (United States); 3,634 (United States, plus Puerto Rico and Island Areas) Urbanized areas: 453; 465 Urban clusters: 3,154; 3,169 Central places in urban areas: 4,030; 4,074 Central places in urbanized areas: 879; 906 Central places in urban clusters: 3,151; 3,168

<sup>13</sup> Because a place that is identified as a central place can be located in more than one UA and/or UC, the total number of central places is smaller than the sum of central places in individual urban areas.

<sup>14</sup> Tribal census tracts and tribal block groups provide coverage at these geographic levels for selected American Indian reservations and off-reservation trust land, without regard to state or county boundaries. All territory included in a tribal census tract also is included in a nontribal census tract and block group; where a tribal census tract crosses a state or county line, the portion in each county represents a separate nontribal census tract. Similarly, a tribal block group that crosses a state or county line is tallied as a separate nontribal block group in each county. The two sets of numbers presented in this table one set for tribal entities and one for all entities are independent of each other, and must not be added together.

<sup>15</sup> BGs numbered 0 occur only in census tracts numbered 0000 (or 000000).

<sup>16</sup> For areas generally larger than 25 square miles for which the Census Bureau did not have sufficient information to determine 5-digit ZIP Codes, it used a generic 5-character ZCTA code consisting of the first 3 digits of the 5-digit ZIP Code(s) that served the area or nearby area(s), followed by a suffix of XX for land and land-and-water areas and HH for water-only areas. The 3-digit ZCTAs represent summations of data for areas based on the first 3 digits of the 5-digit/5-character ZCTAs.

<sup>17</sup> The counts do not include the one 10-percent PUMA each for Guam and the Virgin Islands of the United States.

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## American Indian, Alaska Native, and Native Hawaiian Geographic Entities

The Census Bureau provided census data for several types of geographic entities, both legal and statistical, that covered areas under the authority of American Indians, Alaska Natives, and Native Hawaiians. The Census Bureau's relationship with federally recognized American Indian tribes was based on the "Government-to-Government Relations With Native American Tribal Governments" memorandum issued on April 29, 1994.<sup>11</sup> The American Indian and Alaska Native Areas (AIANAs) Geographic Program for Census 2000 final criteria were published in the *Federal Register* on June 22, 2000.<sup>12</sup> The following sections explain the agency's Census 2000 operations for these entities.

**American Indian reservations and off-reservation trust lands.** In the fall of 1995, the Census Bureau and the BIA signed a memorandum of understanding establishing a boundary review procedure for Census 2000 that differed from that in place for the 1990 census.<sup>13</sup> The new procedure directed the Census Bureau to request that only tribal governments review and update the boundaries associated with a tribe. In the past, the BIA provided all the boundaries. Under the new understanding, the Census Bureau consulted with the BIA in this matter only to resolve conflicting claims.

In 1997, as noted above, the Tribal Review Program allowed certain American Indian tribes to review and revise the boundaries recorded in the TIGER® database. Federally recognized tribes with a reservation and/or off-reservation trust lands were included in the BAS beginning with the 1998 survey.

The Census Bureau modified its terminology for two entities: "tribal jurisdiction statistical area" became "Oklahoma tribal statistical area," and "joint area" was changed to "joint use area." Joint use area was expanded to include not only overlapping adjacent reservations and Oklahoma tribal statistical areas, but also one tribe's off-reservation trust land that was located within the boundary of another tribe's reservation.

**Oklahoma tribal statistical areas (OTSAs).** These statistical entities generally conformed to the boundaries of former reservations in Oklahoma. (All but the Osage Reservation were dissolved in the 2 or 3 years before Oklahoma attained statehood in 1907.) This enabled the federally recognized tribes in Oklahoma that did not have legally defined land bases—i.e., all but the Osage Tribe—to delineate areas corresponding to their former reservation boundaries for statistical data presentation purposes. The Census Bureau referred to these entities as tribal jurisdiction statistical areas in the 1990 census. The designation was changed to OTSA late in 1999 to avoid the perception that these statistical entities reflected a legal status.

**Tribal Subdivision Program.** In the 1980 census, the Census Bureau collected data for the legal subdivisions of 21 federally recognized American Indian reservations, based on boundaries provided by the tribes; these subdivisions were referred to as American Indian subreservation areas. The 1990 census did not include these entities, but tribal governments requested that they be recognized again for Census 2000. Accordingly, the Census Bureau offered the tribal subdivision program to federally recognized tribes who owned a reservation and/or off-reservation trust lands as well as to those Oklahoma tribes that defined an OTSA. The subdivision boundaries could encompass only the area within a reservation and/or off-reservation trust land, or an OTSA.<sup>14</sup>

**Tribal designated statistical areas (TDSAs).** TDSAs were statistical entities delineated for Census 2000 by federally recognized tribes (outside of Oklahoma) that lacked a legally defined land base. They were designed to encompass areas containing a concentration of tribal members and on which tribes conducted structured activities. The policy of considering TDSAs to comprise

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<sup>11</sup> *Federal Register*, Vol. 59, No. 85 (May 4, 1994).

<sup>12</sup> *Federal Register*, Vol. 65, No. 121 (June 22, 2000), pp. 39062–69.

<sup>13</sup> U.S. Census Bureau, Geography Division, "Memorandum of Understanding Between the Bureau of Indian Affairs and Bureau of the Census," February 28, 1996, and "Operational Plan for American Indian and Alaska Native Geographic Programs," October 30, 1996, p. 2.

<sup>14</sup> U.S. Census Bureau, "Tribal Subdivision Program Implementation," Boundary and Annexation Survey 2000/Chapter 1, Document 17, November 15, 1999.

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only federally recognized tribes marked a change from 1990, when both state and federally recognized tribes could delineate TDSAs. Statistical areas defined for state-recognized tribes were identified as state designated American Indian statistical areas in Census 2000.

A change in Census 2000 policy allowed TDSAs to cross state lines, though only one, the TDSA delineated for the Pokagon Band of Potawatomi in Indiana and Michigan, did so. Another change allowed a federally recognized Alaska Native tribe that was not legally recognized as an Alaska Native Village (and therefore not qualified to be delineated an Alaska Native Village statistical area) to be delineated a TDSA for Census 2000.

**State American Indian reservations and state designated American Indian statistical areas (SDAISAs).** Some state governments have established reservations for American Indian tribes that are not recognized by the federal government. A governor-appointed state liaison provided the legal boundaries for state reservations to the Census Bureau in Census 2000. The Census Bureau identified each state American Indian reservation with the name submitted by the state liaison. State liaison offices also identified state-recognized American Indian tribes that did not have a legal reservation. For these tribes, state liaison offices submitted SDAISA boundaries that generally encompassed a concentration of tribal members and in which there were structured activities for tribes.

### Alaska Native Regional Corporations (ANRCs)

ANRCs are corporate entities organized to conduct both the business and nonprofit affairs of Alaska Natives. The state of Alaska is divided into 12 ANRC areas, the boundaries of which the U.S. Department of the Interior established pursuant to the Alaska Native Claims Settlement Act. The Annette Islands Reserve is a separate reservation and is not included in an ANRC. As noted in the BAS and BVP sections of this chapter, the Census Bureau asked the 12 regional corporations to review the boundaries recorded for them in the TIGER® database as part of the 1999 and 2000 BAS.

### Alaska Native Village Statistical Areas (ANVSAs)

These statistical entities delimit the settled portion of Alaska Native Villages (ANVs). The official list of ANVs was provided to the Census Bureau by the BIA. The Census Bureau asked each ANV to review the 1990 census ANVSA, if applicable, and delineate a boundary that would represent a meaningful depiction of its settled area. Fifteen ANVSAs recognized for the 1990 census were not identified as ANVSAs for Census 2000 because the Census Bureau learned that they were not legally established as ANVs under the Alaska Native Claims Settlement Act.

### Hawaiian Home Lands (HHL)

These constituted public lands that were held in trust by the state of Hawaii for eligible Native Hawaiians; that is, people with at least one-half Hawaiian ancestry. Hawaiian Home Lands were, and continue to be, created pursuant to the Hawaiian Homes Commission Act, which the U.S. Congress passed in 1920. The federal legislation authorized the state to lease one or more tracts of land to Native Hawaiians for residential, agricultural, commercial, industrial, pastoral, and other activities identified by state law.

A Hawaiian Home Land is not a governmental unit, but rather a specific tract of state-owned land with a legally defined boundary. The 61 Home Lands covered some 205,400 acres (about 321 square miles) and varied in size from just over an acre to more than 52,000 acres (about 81 square miles).

Because data users identified a need for census information about these geographic entities, the Census Bureau agreed to recognize them for the first time in the data tabulations for Census 2000. The state's Department of Hawaiian Home Lands provided the Census Bureau with the home land names and digital maps of their boundaries.

## STATISTICAL GEOGRAPHIC ENTITIES

### The Statistical Areas Programs Dialogue

During the summer of 1993, the Geography Division (GEO) sought input from 1,345 data users to assist in planning the statistical geographic programs for Census 2000 and beyond. The

26-question survey drew 587 responses, or 44 percent of those contacted. The essential conclusion was that most respondents wanted the Census Bureau to maintain comparability of geographic entities with previous censuses. An additional outcome of the dialogue was support in several states for eliminating the minimum population threshold previously required for census designated places.<sup>15</sup>

Table 7-2.  
**Geographic Tabulation Entities for Census 2000: American Indian Area, Alaska Native Area, and Hawaiian Home Lands**

Entities	Number of entities
American Indian	
Federal American Indian with a land base .....	315
Federal reservations without off-reservation trust land (includes four joint-use areas related to federal reservations <sup>1</sup> ) .....	226
Federal reservations with off-reservation trust land .....	83
Federal tribes with only off-reservation trust land .....	6
American Indian tribal subdivisions .....	298
State reservations .....	11
Oklahoma tribal statistical areas (OTSAs) (includes four joint use areas related to OTSAs <sup>1</sup> ) .....	29
Tribal designated statistical areas (TDSAs) .....	9
State designated American Indian statistical areas (SDAISAs) .....	21
Tribal census tracts <sup>2</sup> .....	921
Tribal block groups <sup>2</sup> .....	1,681
Alaska Native	
Alaska Native Regional Corporations (ANRCs) .....	12
Alaska Native village statistical areas (ANVSAs) .....	205
Native Hawaiian	
Hawaiian Home Lands .....	61

<sup>1</sup> A joint-use area is territory administered, claimed, and/or used by two or more American Indian tribes.

<sup>2</sup> Tribal census tracts and tribal block groups provide coverage at these geographic levels for selected American Indian reservations and off-reservation trust land, without regard to state or county boundaries. All territory included in a tribal census tract also is included in a nontribal census tract and block group; where a tribal census tract crosses a state or county line, the portion in each county represents a separate nontribal census tract. Similarly, a tribal block group that crosses a state or county line is tallied as a separate nontribal block group in each county. The two sets of numbers presented in this table one set for tribal entities and one for all entities are independent of each other and must not be added together.

### Census Tracts and Block Groups

Census tracts are small, relatively permanent statistical subdivisions of a county or equivalent area that are generally delineated locally. Where local participation is not feasible, state representatives or geographic staffs in the relevant Census Bureau regional census center (RCC) delineate the census tracts.

Block groups (BGs) are statistical subdivisions of census tracts and are the smallest areas for which the decennial census tabulates sample data. BGs also are used to number census blocks within a census tract, the BG identification number being the first digit of all the census blocks defined within a BG. A census tract may contain as many as nine BGs. For Census 2000, the Census Bureau required that BGs be delineated in every county and equivalent entity in order to provide the framework for block numbering of Census 2000 data tabulation and presentation. Thus, if the BGs were not reviewed and updated locally, state officials or geographic staff in the RCCs did so.<sup>16</sup>

### Census County Divisions (CCDs) and Census Designated Places (CDPs)

CCDs have been used as statistical county subdivisions since the 1950 census and are part of the Participant Statistical Areas Program (see next section). They are statistical subdivisions of counties and are delineated by the Census Bureau in cooperation with state and local government officials for data presentation purposes. CCDs were established in 21 states that lacked legally established minor civil divisions (MCDs) or in county areas that lacked governmental or administrative purposes, had ambiguous or frequently changing boundaries, or were generally unknown to the public.

<sup>15</sup> U.S. Census Bureau, Geography Division, "Final Report—Statistical Areas Program Dialogue," December 15, 1999.

<sup>16</sup> *Federal Register*, Vol. 63, No. 6 (January 9, 1998), pp. 1422–25.

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CDPs are census reporting areas that are identifiable by name and have a marked concentration of population, but are not incorporated under state law. CDPs were reviewed and delineated for Census 2000 as part of the Participant Statistical Areas Program. In a significant change from preceding censuses, the Census Bureau did not require CDPs to meet minimum population thresholds in order to qualify for inclusion in census data tabulation. In addition, the Census Bureau determined that, unless warranted by special circumstances, CDPs should not encompass the entirety of an MCD. This change eliminated some CDPs that coincided with MCDs. Most of the CDPs thus eliminated were in the Northeast, from Pennsylvania to Maine. CDPs exist in every state and all the Island Areas except American Samoa.

The terms *zonas urbanas* and *comunidades* were used as terms for statistical place entities (equivalent to CDPs) in Puerto Rico.

### Participant Statistical Areas Program (PSAP)

The Census Bureau established the PSAP for Census 2000 to ensure that some of the most important and well-known statistical entities in the TIGER® database were relevant, current, and accurate. In July and August of 1995, the agency solicited state, local, and tribal officials to participate in this program; the program covered all states, the District of Columbia, and Puerto Rico. The Island Areas also participated in the PSAP, although statistical areas in these islands were delineated during meetings between agency staff and local officials, with follow-up through transmission of computer map files and lists.

For Census 2000, the Census Bureau ceased requiring local data-user communities to establish census statistical area committees, which traditionally included government officials, representatives of other organizations, and individuals interested in this program for their specific areas. Tribal involvement in the exercise was limited to federal tribes with a reservation and/or off-reservation trust lands and the tribes in Oklahoma that were in OTSAs.

One result of this change was the elimination of what was known as the census statistical area key person. Instead, the Census Bureau used a single designated-contact agency for each area. This agency was to work with other groups, including local and tribal officials and academics among others, to conduct the necessary review and delineation of statistical entities.

The Census Bureau also worked with the state data centers (SDCs) to encourage local participation, assist local government agencies, and, in some areas, perform the delineation and/or review. If no assistance was offered, the RCCs' geographic staffs reviewed and, when necessary, revised the boundaries of the statistical entities used for the 1990 census to bring them into agreement with block boundary features used for Census 2000.

After inserting the new information into the TIGER database, the RCCs gave local officials maps and files showing the results of the process and requested their review and revision. This activity was called the verification phase of the PSAP and was not formally included in previous censuses. Participants were asked to limit their changes to boundaries that were shown incorrectly, were no longer acceptable, or required relocation to maintain relationships between statistical and legal entities. The RCCs accepted some revisions in which new statistical entities were created due to local changes that had occurred since the original delineation or had been overlooked when the original plan was developed.

### Other Statistical Geographic Areas

**Traffic analysis zones (TAZs).** As part of the Census Transportation Planning Package, state departments of transportation, metropolitan planning organizations, and similar agencies in the United States delineated these special-purpose geographic entities for which they wanted the Census Bureau to provide transportation-related census data. The Federal Highway Administration paid the Census Bureau to provide it with TAZ data in special data files. These data were not included in the standard decennial census data files.<sup>17</sup>

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<sup>17</sup> U.S. Census Bureau, Geography Division, "Traffic Analysis Zones for Census 2000," January 12, 1998.

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**Urban growth areas (UGAs).** In 1973, as part of an effort to control “sprawl,” the state of Oregon passed legislation requiring incorporated places to identify boundaries in surrounding territories. Responding to a 1998 request for data about these areas, the Census Bureau agreed to recognize Oregon’s “urban growth boundaries” in Census 2000. The Census Bureau referred to the resulting geographic entities as “urban growth areas.” The boundaries were delineated cooperatively by state and local officials and were confirmed by legal documentation.<sup>18</sup>

**ZIP Code tabulation areas (ZCTAs).** ZIP Codes were established by the U.S. Postal Service (USPS) to expedite the delivery of mail. ZCTAs are generalized area representations of USPS ZIP Code service areas. They represent the primary USPS five-digit ZIP Code found in a given area. For those areas where it is difficult to determine the prevailing five-digit ZIP Code, the higher-level three-digit ZIP Code is used in lieu of a five-digit ZCTA code. Data were published for both three- and five-digit ZCTAs.<sup>19</sup>

**Metropolitan areas (MAs).** Included in the general term metropolitan areas were metropolitan statistical areas (MSAs); consolidated MSAs (CMSAs); primary MSAs (PMSAs), which were subunits of CMSAs; and New England county metropolitan areas (NECMAs). Census 2000 treated the NECMAs, which represented MAs in New England defined by county rather than by county subdivision, as a standard data tabulation area for the first time. The MAs and their central cities used for Census 2000 were those in effect on April 1, 2000, as reported in an official announcement by the federal Office of Management and Budget (OMB) on June 30, 1999.<sup>20</sup> These entities were based on the official standards published in the *Federal Register* by OMB on March 30, 1990.

## Urban/Rural

For the purpose of demographic analysis, the Census Bureau provided data for the urban and rural territory, population, and housing units of the nation; states and statistically equivalent entities; counties and statistically equivalent entities; and other geographic entities.<sup>21</sup> In the past, the term “urban” referred only to densely settled urbanized areas (UAs) with populations of 50,000 or more or to places outside urbanized areas that had populations of at least 2,500; everything else was rural.<sup>22</sup>

The Census Bureau decided to establish and report data for urban clusters (UCs) to improve differentiation between the urban and rural population in Census 2000. These statistical entities consisted of populations in densely settled areas containing between 2,500 and 49,999 people and included a geographic core (block groups or blocks with a population density of at least 1,000 people per square mile) and adjacent territory (primarily block groups and blocks with a population density of at least 500 people per square mile). This decision required the Census Bureau to change the urban classification for Census 2000 to include all territory, population, and housing units within both UAs and UCs as urban; together, these entities constituted urban areas. All other territory, population, and housing units were classified as rural. The Census Bureau did not automatically “grandfather” a UA from the 1990 census as a UA for Census 2000. Rather it required an area to qualify as a UA under the criteria implemented for Census 2000, or be classified as a UC.

The Census Bureau did not change the basic concept of UAs for Census 2000, but it did establish a secondary minimum population density requirement of 500 people per square mile for areas outside block groups and for those blocks constituting the urban core that had a minimum population density of 1,000 people per square mile. The Census Bureau also changed the density criterion for identifying urban territories within incorporated places. The 1990 census required a minimum of 100 people per square mile, but Census 2000 required a population density threshold of

<sup>18</sup> Refer to <<http://www.census.gov/geo/www/tiger/glossary.html#urbanandrural>> for more information.

<sup>19</sup> Refer to <<http://www.census.gov/geo/ZCTA/zcta.html>> for more information.

<sup>20</sup> *Federal Register*, Vol. 64, No. 125, p. 35547.

<sup>21</sup> Refer to <<http://www.census.gov/geo/www/ua/ua2k.html>> for more information. For more information on demographic analysis and its applications during Census 2000, see Chapter 10, “Testing, Experimentation, Evaluation, and Coverage Measurement Programs.”

<sup>22</sup> More specifically, an extended city for the 1990 census was an incorporated place that contained one or more land areas of at least 5 square miles with a population density under 100 people per square mile; such area(s) had to either comprise at least 25 percent of the place’s entire land area or a total land area of at least 25 square miles.



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500 people per square mile for such areas. However, the criteria no longer required that incorporated places be included in their entirety if they contained only small areas of sparse settlement. This resulted in many more incorporated places being identified as extended places—partially urban and rural—than in previous censuses.

Census 2000 allowed portions of CDPs to be classified as rural. Previous censuses included or excluded the CDPs in UAs in their entirety. This enabled the census to classify CDPs as extended places. This change resulted in 254 places—172 incorporated places and 82 CDPs—whose population exceeded 2,500 failing to qualify as urban clusters because they lacked the requisite number of people living in densely settled territory. These areas were classified as rural in Census 2000. Conversely, 305 places with populations less than 2,500, rather than being classified as rural, created nuclei of urban clusters.

“Jump” criteria enable an urban area to skip over undeveloped, sparsely settled habitable land and bodies of water in order to include additional territory that qualified as urban. The Census 2000 criteria extended this from the 1.5 miles used in the 1990 census to a more meaningful distance of 2.5 miles. The requirement for a jump across a generally uninhabitable area continued to be 5 road miles. Also, the Census Bureau changed the term “uninhabitable” to “exempted” to preclude disagreements about the meaning of uninhabitable. Another refinement was the creation of the term “hop” to define separations of one-half mile or less between densely populated blocks. Previous criteria defined any separation between densely settled areas as a jump and permitted only one jump in any specific direction. The number of hops allowed was undefined.

An additional change permitted major airports adjacent to qualifying areas to be included. A major airport was defined as one used by 10,000 boarding passengers annually.

On May 1, 2002, the Census Bureau officially announced the final inventory of UAs and UCs for Census 2000 in the *Federal Register*.<sup>23</sup> This notice also documented UAs whose names were changed because they were deemed less widely known. Subsequently, GEO determined that a few urban clusters and urbanized areas that were very close together should not have been delineated as separate entities. The Census Bureau issued two errata notices to document these revisions to UAs and UCs in the *Federal Register* on August 23 and November 20, 2002.<sup>24</sup>

### Public Use Microdata Areas (PUMAs)

The Census Bureau provided specially selected extracts of raw data (public use microdata samples [PUMS]) for large-population areas in each state, the District of Columbia, and Puerto Rico.<sup>25</sup> The Census Bureau worked with the SDCs to delineate the PUMAs for Census 2000 or to coordinate their delineation by metropolitan planning organizations, local and tribal governments, and other agencies. Every SDC participated in the Census 2000 PUMA Delineation Program. PUMAs are the areas from which the PUMS samples are taken. The area included in a 1 percent PUMA, also known as “super” PUMA, must have a population of at least 400,000, and the data is a sample of 1 percent of this population. The Census Bureau provided data for super-PUMAs in a national file that was based on a 1 percent sample of questionnaires. The 5 percent PUMAs are nested within the 1 percent PUMAs and must have populations of at least 100,000.

### Census Blocks

As the smallest and most numerous geographic units for which data are tabulated, census blocks are at the bottom of the geographic hierarchy.<sup>26</sup> Implementing a new strategy for Census 2000, the Census Bureau established and maintained two separate sets of block numbers—one for collection, the other for tabulation. Blocks for tabulation were renumbered to identify changes to feature patterns. (A feature pattern is a physical identifying element of blocks, such as a railroad track or culvert.) Tabulation numbers were expanded from three to four digits, and the assignment of numbers became one of the last geographic operations before tabulation processing.

<sup>23</sup> *Federal Register*, Vol. 67, No. 84, pp. 21962–67.

<sup>24</sup> *Federal Register*, Vol. 67, No. 164, pp. 54630–31; *Ibid.*, No. 164, p. 54631; *Ibid.*, No. 224, p. 70045–46.

<sup>25</sup> U.S. Census Bureau, “Guidelines for the Delineation of 5-Percent and 1-Percent Public-Use Microdata Areas (PUMAs),” n.d. This document is available at <<http://www.census.gov/geo/puma/puma2000.html>>.

<sup>26</sup> Refer to <<http://www.census.gov/geo/www/tiger/block.html>> for more information.

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## CENSUS 2000 COLLECTION GEOGRAPHY

### Collection Blocks

For Census 2000, a collection block consisted of a physical block listed or enumerated as a single geographic area, regardless of any political or statistical boundaries that passed through it. For precensus and census operations, boundaries of most legal and statistical entities within these blocks, such as county subdivisions and incorporated places, were disregarded. However, a collection block could not cross the boundary of a state or county, American Indian/Alaska Native/Hawaiian Home Lands area, or military installation. In Northeastern states, block boundaries also respected municipal boundaries.

The Census Bureau's geographic staff established units to organize, control, and implement the various data collection operations. In order to increase the efficiency of the precensus and enumeration processes, the Census Bureau also established collection geography independent from the tabulation geography. Tabulation geography refers to the various geographic areas for which data are being tabulated, for example political jurisdictions such as states and cities, statistical groupings such as blocks or tracts, and administrative groupings such as police precincts or school districts. The staff considered several factors in delineating collection areas, including the estimated number of living quarters to be visited, the type of operation, the accessibility of all the territory within an area, the number of square miles in the area, and the use of boundaries based primarily on visible features.

### Assignment Areas (AAs), Crew Leader Districts (CLDs), and Interim Census Tracts or Pseudo-Tracts

An AA was a geographic area established for a variety of field operations and consisting of one or more collection blocks. Crew leaders oversaw the work of field staff assigned to AAs. CLDs were delineated by the regional census center (RCC) geographic staffs by combining AAs. Interim census tracts, also referred to as pseudo-tracts, were new for Census 2000. The purpose of these tracts was to help field offices determine the location of residences of potential employees in order to assign them to areas near their homes. The tracts also identified areas that needed to be specially enumerated or visited for certain programs.

### Types of Enumeration Areas (TEAs)

TEA is a classification that reflects the various operations and the method of enumeration used to collect addresses and take the census of a collection block. Enumeration methods for Census 2000 included:

- Mailout/mailback for most housing units in areas where the U.S. Postal Service (USPS) could deliver mail to specific addresses.
- Update/leave or update/enumerate in areas where the Census Bureau had to create the address list because many mailing addresses did not identify the exact location of living quarters, and therefore delivery by the USPS to the desired address could not be assured.
- List/enumerate, taken in the traditional, face-to-face-interview manner in the nation's most sparsely settled areas, on most American Indian reservations and off-reservation trust lands, and in the four major Island Areas (American Samoa, Guam, the Commonwealth of the Northern Mariana Islands, and the Virgin Islands of the United States).

Coding collection blocks by TEA simplified the selection of areas that were subject to particular operations like address listing, block canvassing, or a variety of enumeration methodologies from the TIGER® database.

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The Census Bureau defined nine categories of TEAs:

- TEA 1: Areas where the Census Bureau performed block canvassing (a field operation to ensure the master address file contained a mailing address for every living quarter), followed by mailout/mailback enumeration.<sup>27</sup>
- TEA 2: Areas where the Census Bureau performed address listing to create a geocoded address list, followed by update/leave procedures. Generally, TEA 2 covered suburban, less densely areas where mail was delivered to at least some living quarters that used non-city-style mailing addresses, such as post office or rural carrier route box numbers. During update/leave operations, enumerators left the appropriate census questionnaire a long or short form at each housing unit (HU) while updating the address list and census block maps. All of Puerto Rico was assigned to TEA 2.
- TEA 3: Sparsely settled areas of the United States (except Alaska) and Island Areas where the Census Bureau conducted a conventional list/enumerate census. Housing units in TEA 3 generally used non-city-style addresses for mail delivery. For list/enumerate, the enumerators recorded addresses, updated and map-spotted census block maps, and completed the appropriate questionnaire at each housing unit. Military bases in TEA 3 areas were enumerated by this methodology.
- TEA 4: So-called “remote areas” of Alaska where a special list/enumerate procedure was conducted. These areas generally were accessible only by small plane, boat, snowmobile, 4-wheel-drive vehicle, dog sled, or a combination thereof. The enumeration was timed to occur before the spring thaw, which might have made travel to these areas difficult. Except for timing, procedures used in TEA 4 were similar to those followed in TEA 5.
- TEA 5: Rural areas for which the Census Bureau used the update/enumerate methodology. To ensure that American Indian lands were enumerated by a single procedure, the Census Bureau also reclassified those lands with a mixture of TEA codes as TEA 5.
- TEA 6: Military installations for which the Census Bureau performed a mailout/mailback operation because the U.S. Department of Defense had advised that virtually all family-type housing had city-style mailing addresses.
- TEA 7: Urban update/leave covered collection blocks reclassified from TEA 1 for questionnaire delivery by census enumerators because experiences encountered during block canvassing led to the belief that the delivery of mail to specific apartments was “problematic.”
- TEA 8: Urban areas enumerated by the update/enumerate method.
- TEA 9: Collection blocks that were reclassified as areas for address listing with enumeration via update/leave.

### **IMPROVING THE TIGER® SYSTEM**

The TIGER® system was the major geographic innovation of the 1990 census. In the decade leading up to Census 2000, the Census Bureau devoted considerable effort to improve its capabilities, coverage, currency, and positional accuracy.

The TIGER system provides all of the geographic products required to support taking the census, including the geographic framework for tabulating the results. It is also used to produce all of the geographic products published from the census. In addition to its value to the decennial census of population, the TIGER system provides the geographic support for all other Census Bureau censuses and surveys. Examples of the types of products generated by the TIGER system include detailed street maps used by the field staff, digital files that provide the inventory of all geographic entities needed for data tabulation systems, and maps that identify areas for which data are published.

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<sup>27</sup> Block canvassing consisted of field staff providing updates to the existing address list by physically navigating each block within an AA. TEA 1 covered most housing units and represented areas that had city-style mail delivery by house number-street name.

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The impact of the TIGER system in the decade of the 1990s went far beyond meeting the geographic support needs of the Census Bureau. Starting before the 1990 census, the Census Bureau released extracts of the database periodically to the public. This public version is known as the TIGER/Line® data set. Even with the limitations of the TIGER data, the public availability of a national geospatial database, free of any licensing or distribution restrictions, was a major impetus to the growth of the commercial geographic information system (GIS) industry in the United States.<sup>28</sup> Public adoption of TIGER/Line also created public pressure on the Census Bureau to release periodically improved versions of the database. Additionally, commercial GIS acceptance of the TIGER/Line format opened up new possibilities for exchanging up-to-date geospatial data between the Census Bureau and its governmental and commercial partners and provided the Census Bureau with feedback regarding the accuracy of the TIGER database.

The core of the TIGER system consists of two major elements: (1) the TIGER database of geographic features that represent the nation's roads, railroads, water features, landmarks, etc. and (2) the boundaries of legal and statistical areas and information on housing unit location—stored as either house-number address ranges or points. The original TIGER database, created for the 1990 census, reflected the features' networks and boundaries as they existed at that time. The positional accuracy requirements for the features in the database, and therefore the products produced from it, increased significantly from the needs of the 1990 census, reflecting the changes that had occurred continuously since then.<sup>29</sup> To meet the needs of the changed environment the TIGER database would face in 2000, the Census Bureau set out on an exploratory program of research, testing, and updating described below.

Assessing the potential usefulness of new geospatial technologies, such as the global positioning system and considering new “business practices,” such as increased operational collaboration between partners in the governmental and private sectors, were early goals of the exploratory program.

Cooperative research and development agreements (CRADAs)<sup>30</sup> were accords between the Census Bureau and one or more private companies to pursue common research or development interests. CRADAs were among the business practices the Census Bureau pursued. CRADAs involved no funds transfer and had been used by a number of other government agencies. The Geography Division (GEO) participated in several CRADAs designed to improve the TIGER database and explore new approaches to data dissemination.

### Evaluating the Use of Global Positioning System (GPS) Technology

**The Lutherville Pilot Project.** In mid-1990, the Census Bureau informally agreed to work with the U.S. Geological Survey (USGS) and U.S. Postal Service (USPS) to test ways of improving the accuracy of the geographic coordinates while updating the feature network and attributes in the TIGER® database. The goal was to upgrade the geographic records of the Census Bureau and the USPS—two agencies with a great interest in having complete, accurate address files and information about the road network—thereby resulting in a common geographic database.

The anticipated end result of this effort was the creation of a geographic database that included (1) an updated feature network, with more accurate coordinates obtained by GPS technology and (2) an update of the address ranges for roads on which structures used city-style addresses (those addresses that consisted of a house number and road name for postal delivery). Participating agencies also hoped to demonstrate how combining staff expertise could benefit both agencies. Proposed sources of information included not only documented information from the USPS and

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<sup>28</sup> D.F. Cooke, “Topology and TIGER: The Census Bureau's Contribution,” *The History of Geographic Information Systems: Perspectives from the Pioneers*, (Upper Saddle River, NJ: Prentice Hall, 1998), pp. 47–57.

<sup>29</sup> U.S. Census Bureau, Kristen O'Grady and Leslie Godwin, “The Positional Accuracy of MAF/TIGER,” unpublished. ACSM Annual Conference, March 2000, <<http://www.census.gov/geo/nod/positionalaccuracy.pdf>>.

<sup>30</sup> See Census Bureau press release announcing public/private partnership, “Census Bureau, Geographic Data Technology Launch New Geographic Data Initiative,” November 18, 1996; the Cooperative Research and Development Agreement, November 13, 1996; and the first statement of work, “Spatial Data Acquisition and Exchange Program.”

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GEO, but anecdotal knowledge from individual letter carriers. The Census Bureau and the USPS chose the delivery area of the Lutherville, MD, post office (ZIP Code 21093) for the pilot project because it was conveniently located for both agencies' headquarters staff, and it contained both urban and rural areas.

From September 24 to 27, 1990, crews with personnel from the Census Bureau, USPS, USGS—which provided database design support and assistance with GPS-related activities—and two contractors (Trimble Navigation and GeoResearch, Inc.) drove every street and road in the test area, updating the road network information and recording about 80,000 coordinate values that identified the endpoints and shapes of the roads in the database. The accuracy of the coordinate values obtained this way was checked against 20 selected points in the delivery area that were professionally surveyed by USGS staff. The test showed that it was technically possible to obtain 50 percent of the coordinates to within 5 meters of their actual location and to rely upon a mathematical process to assign acceptable values to all other locations. Subsequent adjustment of the coordinates in the TIGER database greatly improved the accuracy and representation of map features in the area of study.

Census Bureau staff carried out additional fieldwork and database updates in 1991. Completed in spring 1992, the Lutherville project showed that GPS technology could be used to improve map accuracy, but at a great cost in staff time and money. Through the project the Census Bureau also gained knowledge about using USPS information sources to help build and maintain its address file, before the agency gained access to the USPS's delivery sequence files (DSFs) (see Chapter 8, "Addresses and Questionnaire Printing and Mailing"). In addition, the test identified problems in field operations and provided suggestions for improvement.

**The Hampshire and Newberry Counties tests.** Building on experience gained in the Lutherville project, the Census Bureau intended the Hampshire County, WV, and Newberry County, SC, tests to educate personnel in improving the spatial accuracy of the TIGER® database with data captured using GPS technology. In addition, the test would investigate the viability of collecting the locations (latitude and longitude coordinates) of housing units and other structures for insertion in the TIGER database. The Hampshire County test was completed in December 1997 and Newberry County in June 1998. The Census Bureau benefitted from the expertise of several private geospatial companies that participated in these two tests through the CRADA process.

Technical difficulties having to do with an inability to maintain contact with the GPS satellites invalidated the Hampshire County data, as did procedural errors. This created the need for additional testing to obtain the required information and led to the Newberry County test.

The Census Bureau chose Newberry County, SC, as the replacement test site for a number of factors:

- The location was sufficiently different in character from the Hampshire County site.
- The size was such that it could be covered within a 2-week time frame.
- The county was relatively close to headquarters, which reduced travel costs.
- The county had digital orthophoto quadrangles (DOQ)—aerial photographs corrected to remove spatial distortions in the image—that were taken since 1990.<sup>31</sup>
- The county was selected as a Census 2000 Dress Rehearsal venue.

The Lutherville and Newberry tests provided Census Bureau staff with valuable practical experience conducting field operations for GPS data collection. Analysts placed 3,723 anchor points in the Newberry County test. They showed that DOQs were an efficient medium for use in data collection. However using GPS with DOQs revealed a need for software improvements, image enhancement tools, and improved analyst interpretive skills.

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<sup>31</sup> DOQs provided a necessary independent and spatially accurate source against which the captured GPS coordinates could be checked.

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**GPS TIGER® accuracy analysis tools (GTAAT) evaluation.** The spatial accuracy of the features in the TIGER® database varies widely depending on the source of the information from which the features are derived. In many cases, information about the accuracy of a specific source is not available. Where such information is available, errors committed in capturing it or inserting it into TIGER may result in the information not being reflected accurately in the database. This presents problems both for users of geospatial products and for the Census Bureau's efforts to improve the accuracy of the TIGER database.

In many cases, the Census Bureau consults a number of sources to get all the information for a feature in an area—for example, the position of the feature from one map, the feature name from another source, and address information from a third source. This means that the individual features may have come from sources with different levels of accuracy. Thus, maps created from the TIGER database cannot claim that all of the features have the same level of accuracy. The TIGER database accuracy is improved through Census Bureau acquisition of more accurate sources of information. As part of the effort to obtain such information, the agency must be able to evaluate the accuracy of each feature in the current TIGER database as well as all potential sources of new information to be used for updating.

To this end, the Census Bureau's Geography Division (GEO) contracted with a private company (HTE-UCS, Inc.) to develop the GTAAT to evaluate the spatial accuracy of geospatial data sets. From November 1999 through February 2000, the Census Bureau conducted a series of tests to evaluate the GTAAT. It conducted single tests in a county or parish in each of these states: Arizona, California, Florida, Louisiana, Nevada, Ohio, Pennsylvania, and Vermont. Criteria for selecting the sites were the availability of digital spatial files, updates from a variety of Census Bureau operations (Master Address File Geocoding Office Resolution, Local Update of Census Addresses, etc.), convenient transportation access, and varied terrain (to evaluate GPS signal reception).

The first test was conducted in November 1999 in Windham County, VT. This site was chosen to field test the software and procedures prior to visiting the remaining seven sites. Experiences gained from earlier GPS tests improved the effectiveness of the Vermont test with increased reliability of GPS-related equipment (losing contact with a satellite was far less of a problem); more compact and easier-to-use equipment; more user-friendly; software and vehicles more suited to the terrain. Furthermore, the Vermont test showed the value of precise, well-written procedures, in contrast to many procedures for earlier tests, which were poorly documented and required that changes be made in response to problems as they were encountered. The Vermont test was the only one of this series that covered an entire county. The other tests were conducted in selected 1990 census tracts (statistically defined subdivisions) within a single county or parish.

The tests collected highly accurate coordinates using GPS technology as well as field identification for feature points in the TIGER database. Frequently, the feature points were road intersections and were referred to generically as "anchor points." The anchor points were considered to be the true positions of these feature points for this test. After establishing the anchor points, the team performed statistical analysis on the differences between the TIGER database coordinates and the anchor point coordinates.

The team also analyzed the source and spatial accuracy of TIGER database features and, as a rule, found significant variations in accuracy depending upon the source. Sources consulted can be put into three categories: pre-1990 census, post-1990 digital exchange, and other pre-2000 update operations. The first two categories were the more spatially accurate of the three, because the potential data sources involved received far more thorough review for accuracy and more rigorous capture procedures. The updates added in many of the pre-2000 operations (described below) were hand-drawn or captured using less precise digitizing methods. The field staff collecting the data were not highly trained in mapmaking, and succeeding update operations compounded the errors committed as a result of earlier imperfections.

The Vermont project provided the first detailed, quantifiable measures of spatial accuracy for the features in the TIGER database. It also strongly reinforced the need to bring the information in the TIGER database up to a uniformly high degree of spatial accuracy.

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**Impact of the tests of new technology.** The GTAAT tests proved the effectiveness of using GPS technology and DOQs to collect highly accurate locations of roads and living quarters. Unfortunately, the information could not be transferred readily to the existing TIGER® database. Uncertain accuracy of individual features in the existing TIGER database was a primary reason for this failing. The problem could not be solved simply by adding the more accurate features directly to the existing database because this could disrupt the features' positional relationships to each other. For example, a new feature could appear on the wrong side of an existing feature because the existing feature's coordinates were inaccurate. It was also difficult to determine if a new feature actually existed in the TIGER database but in an inaccurate location. In such cases adding the new feature created a duplicate in the database.

Although a limited number of updates were added to the TIGER database as a result of these tests, widespread adoption of these technologies would require substantial changes to existing hardware and software and operational procedures. The Census Bureau decided that it lacked the time to make the necessary changes and apply the results from the application of GPS or DOQ technology to the TIGER database. Therefore, it decided to delay large-scale implementation of these approaches until after Census 2000, when they could be included as part of a planned, large-scale initiative to improve overall TIGER accuracy.

### Programs to Update the TIGER® Database Prior to 2000

The Census Bureau has been updating the TIGER® database by adding new features (roads, boundaries, etc.) and deleting those that no longer exist on an ongoing basis ever since the TIGER system's creation. The level of effort at any given time has varied due to operational needs and funding. Included below are descriptions of the principal update and improvement efforts that have involved both internal Census Bureau staff activities as well as those done in conjunction with outside organizations.

GEO, the Field Division (through its regional staff), and the Census Bureau's National Processing Center (NPC) are partners in the TIGER update effort. GEO directs and coordinates the efforts of the other divisions. It has also developed the Geographic Update System for X Windows (GusX), which is computer software that allows decentralized and interactive viewing, updating, correcting, and analyzing of the information in the TIGER database.

**Update activities resulting from 1990 census operations.** At times during the 1990 census, field staff were required to update and correct their maps and address lists based on what they observed. These updates did not always make it into the TIGER® database in time to be among the products based on the 1990 field operations. Beginning in 1991, the regional census centers (RCCs) updated and corrected map features with information obtained from the list/enumerate, the Post-Census Local Review, and the count question resolution operations.

**Field operations to update the TIGER® database.** The Census Bureau undertook a number of programs intended to improve the information in the TIGER® database. These programs are examined in other chapters, but it is worth noting here that all had a major impact on the geographic content of the TIGER database: boundaries, base features and names, and the related address ranges. The Census Bureau maintained address information in two separate databases—TIGER and the master address file (MAF)—for all operations related to Census 2000. For a variety of reasons (see Chapter 8, “Addresses and Questionnaire Printing and Mailing”), the information in the two databases was not always consistent. The address updating operations described below provided information primarily for the TIGER database.

Many of these operations involved attempts to identify and obtain useful reference materials from local governmental and commercial sources. To this end, the Census Bureau entered into a CRADA with Geographic Data Technology, Inc. (GDT) on November 13, 1996, to combine previously separate efforts.<sup>32</sup> The joint effort sought to determine the most effective means for the Census Bureau to develop working partnerships with local governments.

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<sup>32</sup>Census Bureau press release, “Geographic Data Technology Launch New Geographic Data Initiative,” November 18, 1996; the Cooperative Research and Development Agreement, November 13, 1996; and the first statement of work, “Spatial Data Acquisition and Exchange Program.”

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**Improving consistency between the address control file (ACF) and the TIGER® database.** At first glance, information in the ACF, which the Census Bureau used to take the 1990 census, appears similar to that contained in the TIGER® database. But address information updates obtained during 1990 census operations were not always applied to both databases equally. In 1993 and 1994 the Census Bureau performed two matches and merges between the ACF and the TIGER database in an effort to remove inconsistencies.

**Feature and Reference Source Assessment Survey (FARSAS).** The goal of this survey was to identify usable government and nongovernment reference sources that could help the Census Bureau locate city-style mailing addresses that it could not geocode. Earlier attempts to match such addresses to the TIGER® database failed if road names and/or address ranges were not known to the Census Bureau or had been recorded in a way the database could not recognize. Information included in sources obtained by the FARSAS enabled the agency to record street-name and address-range information that improved the database. When this information was entered into the TIGER database, the Census Bureau could match the city-style addresses in its address file to the address ranges in the database, meaning that the addresses could be geocoded. Based on the information gleaned from the 1993 Address System Information Survey (see Chapter 8, “Addresses and Questionnaire Printing and Mailing”) and earlier surveys, the regional office (RO) staff began in late 1994 to telephone each agency that reported that all or part of the area(s) it served had, or was converting to, city-style mailing addresses. The survey continued well into 1995.

**TIGER® Improvement Program (TIP).** In late 1994, the Census Bureau launched an operation to have planning organizations and local, metropolitan, and tribal governments in areas with city-style mailing addresses locate clusters of addresses that could not be geocoded in the TIGER® database. The assumption was that officials in these jurisdictions would know their areas better than the Census Bureau and would know the names of new roads or revised existing roads and could better locate addresses. The purpose of this 1994 operation was to reduce the Census Bureau workload in terms of the TIGER Improvement Program, which would begin the following year. All governmental units (GUs) were offered the opportunity to participate in the TIP. The Census Bureau especially encouraged participation by jurisdictions in which a substantial number of city-style mailing addresses remained uncoded after the 1994 match of the U.S. Postal Service’s delivery sequence file (DSF) addresses to the TIGER database.

Beginning in April 1995, the ROs printed lists of clusters of addresses in participating GUs that could not be geocoded. The ROs also provided these GUs with instructions and detailed TIGER system-derived maps showing the city-style address range recorded in the database for each side of a street segment.

TIP participants were asked to update the Census Bureau records by annotating the maps and lists based on records in their offices and were encouraged to carry out field checks. The geographic staff in the ROs, and later in the RCCs, inserted the updates and corrections into the TIGER database and flagged incorrect information in the address file. As a result, the computer could geocode many previously unmatched addresses.

The program wound down in 1997, but a few agencies offered to perform a second review, and the Census Bureau received the last TIP materials in September 1998. A total of 4,985 GUs agreed to participate in the program, but only 2,190 (44 percent) returned materials to the Census Bureau by the original cutoff date of mid-April 1998. After the information had been inserted into the TIGER database, each participating GU was sent a courtesy copy of updated maps covering its jurisdiction.

**Master Address File Geocoding Office Resolution (MAFGOR).** The ROs undertook the MAFGOR operation in an effort to geocode the city-style mailing addresses that the Census Bureau obtained from the USPS, but the effort was hobbled by the inability to match the USPS addresses to records in the TIGER® database. (A few areas were assigned to GEO and the National Processing Center for resolution). The Census Bureau hoped that MAFGOR could, for ROs and RCCs in areas that were not participating in the TIP and lacked a computerized geographic database of addresses (see AMAFGOR, below), assist geographic staff in finding each street and address range. These “missing” streets and addresses appeared in lists as clusters of uncoded addresses.



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To carry out MAFGOR, the ROs went to great lengths to obtain copies of new address reference materials and to identify sources that might have additional information. RO staff reviewed diverse information obtained from various sources, such as governmental and commercial maps, atlases, address registers, postal directories, etc., for other operations. The staff supplemented this by asking knowledgeable agencies and organizations for additional information and clarification. GEO provided the RCC geographic staff with guidelines on the recommended quality of the materials, but the final decision of what sources to use was left to the RCC staff.

Using the address reference materials in combination with the cluster lists (addresses grouped by ZIP Code) and a map image from the TIGER database of the area on a computer screen, staff attempted to provide address information for each cluster by inserting updates and corrections into the TIGER database or by flagging errors they identified on the cluster lists. Resolved clusters enabled GEO to geocode the related addresses because the computer could match them to the new information in the database.

The Census Bureau began preparatory work for MAFGOR in 1993 and tested it throughout 1994. It was used in preparation for the 1995 test censuses planned for New Haven, CT; Oakland, CA; and Paterson, NJ. By February 1995, MAFGOR was underway in all ROs. MAFGOR continued in all RCCs following the delivery and processing of each new address file from the USPS. After ROs had established the “blue line,” the area for which a mailout census was planned, MAFGOR was limited to areas within that boundary. MAFGOR was put on hold during the block canvassing operation, when census employees checked the addresses for all blocks within the blue line. Beginning in November 1999, the Census Bureau implemented a major MAFGOR effort following receipt and processing of the September 1999 DSF. The effort was continued until late May 2000 following the processing of each new file from the USPS. The RCCs carried out MAFGOR for more than 1,080,000 clusters in 2,123 counties. Because the Census Bureau wanted to use this operation to try to match addresses received after Census 2000, MAFGOR continued beyond May, even though most resolutions after that time were too late to be used for Census 2000. Because the agency continued to receive addresses that did not match the TIGER database, MAFGOR continued beyond operations that supported Census 2000 operations.

**Automated Master Address File Geocoding Office Resolution (AMAFGOR).** Many jurisdictions in the country had developed their own geospatial digital files (computerized map files that contained street features and their attributes) to assist them in carrying out their various governmental functions. The Census Bureau identified this as another information source that could help update current street and address information in the TIGER® database.

The process of capturing information from these sources was called Automated Master Address File Geocoding Office Resolution (AMAFGOR). In simplest terms, AMAFGOR called for matching and transferring features and their attributes from non-Census Bureau data sets, known generically as digital exchange (DEX) files, to the TIGER database. Some AMAFGOR files were developed using versions of the TIGER/Line® files and may have included TIGER/Line identification codes (a nationally unique identification code assigned to each line segment in the TIGER database) as well as Census Bureau classification codes for the various types of street features. Having these data elements in common with TIGER simplified extracting AMAFGOR file information for use in the TIGER database.

GEO began exploratory discussions and testing of these files early in 1991. Once the operation was made feasible, GEO sought to test it by using a local file to update the TIGER database to ensure its maps were as current as possible. For a variety of reasons, the Census Bureau could not find a suitable local file to test. Therefore it began production with DEX files in spring 1996 without having conducted a test run.

Headquarters and RO staff identified government agencies that had the desired files via the FARSAS, MAFGOR, and other operations that had put the Census Bureau in contact with knowledgeable officials. The procurement of commercial files for areas lacking good reference sources

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was conducted using the U.S. Department of Commerce's Concept of Operations (CONOPS) acquisition process.<sup>33</sup> Through CONOPS, the Census Bureau awarded a contract in September 1997 to purchase such files from one source, Geographic Data Technology, Inc. (GDT). The contract with GDT ensured that DEX files would meet agency requirements in terms of compatibility with the TIGER database. GEO staff evaluated each potential file from the vendor for feature accuracy and completeness in comparison to existing TIGER data for that area. The Census Bureau purchased only those files that surpassed the TIGER data. Compatibility enabled the Census Bureau to use a file immediately to perform efficient automated matches of the file's information against the master address file (MAF).

If a DEX file for an area matched more address ranges than the information in the TIGER database, the Census Bureau used that DEX file to merge the missing street and address information into the TIGER database. Upon completing the merge, GEO verified the quality of the updated information in the database and the ROs or RCCs interactively cleaned up residual errors. These steps constituted some or all of the AMAFGOR process, which was intended to improve the information in the TIGER database while requiring less manual intervention than needed in conventional methods and to help the Census Bureau geocode many of the city-style addresses in the MAF for the areas covered by DEX files.

If addresses remained that the database could not geocode, verifying their locations and information became part of the MAFGOR operation. Like MAFGOR, AMAFGOR was an ongoing process to support the continuing need to update the TIGER database and the MAF—not only for Census 2000, but for subsequent censuses and surveys.

As part of the CRADA, GEO and GDT agreed to attempt to develop an efficient DEX system that would enable both to share geographic files received from local governments. After initial analysis, GEO determined that it could not divert the resources from Census 2000 preparations that were needed to continue with the additional DEX system development. The Census Bureau planned to resume the program when sufficient resources were available.

**Targeted map update (TMU).** Because the ROs and RCCs could not find the needed information for all uncoded city-style mailing addresses in the office via the MAFGOR operation, the Census Bureau created TMU, a field operation to resolve this problem. TMU was limited to areas within the blue line (the area for which a mailout census was planned) because address listing operations that were already setup could handle this task for areas outside the blue line. As with MAFGOR, the goal was to update information in the TIGER® database without altering individual addresses in the MAF.

The first attempt made by the Field Division to resolve problems stemming from the uncoded addresses involved trying to obtain information from local sources identified by the RCCs as having information that could be found only at that source. This might be a government agency a tax assessor's office, the police or fire department, etc. whose records were in a form not easily copied for use in MAFGOR. In order to reduce intrusiveness and possible duplication of effort, (since some agencies and organizations were contacted during prior Census Bureau operations), each RCC specified that enumerators must receive clearance before visiting any of these places. The staff also was instructed to get assistance resolving uncoded addresses from post offices (as identified by ZIP Code) serving the area.

If problems remained, the staff was directed to:

- Try to find the streets and address ranges in the field.
- Determine the proper geographic code for the addresses.
- Use the maps to add and correct streets and address ranges.

RCCs attempted to resolve every uncoded address on the list, and they used the materials gathered both to update the TIGER database and to flag erroneous records in the MAF. The information enabled the staff to match, and therefore geocode, most of the problem addresses.

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<sup>33</sup> The Census Bureau changed this terminology to "A Streamlined Acquisition Process" (ASAP) in 1998.

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Before conducting the actual TMU operations, staff from headquarters, the National Processing Center (NPC), and the Charlotte RCC visited Shelby County, KY; Chatham County, NC; and Union County, SC, in September and October 1997.

From September 1998 to January 1999, the Census Bureau performed TMU in 6 counties in the Atlanta region, 43 in the Charlotte region, and 29 in the Philadelphia region. The goal was to obtain accurate map and address information of the mailout/mailback area by the time block canvassing began in early 1999. Work in some counties was completed too late for the information to be processed into the TIGER database in time to be used for Census 2000 block canvassing.

The Census Bureau continued to perform TMU as needed to attempt to geocode residual address problems that MAFGOR could not resolve. Local census office participation included an effort covering about 1,300 counties that began in early October 1999 and continued through January 2000. The RCC attempts to resolve address problems via TMU continued from early March through early May 2000. The effort extended to many of the same counties visited for earlier TMU efforts.

These field reviews included addresses that the computer could not geocode from the late-delivery DSFs and other late address operations (see below). TMU continued in a few areas beyond early May, but those resolutions generally were too late for use in Census 2000. For these phases of TMU, the Field Division dealt with almost 45,000 clusters (address groupings with the same street name, ZIP Code, and hundred-range house numbers) in some 1,800 counties.

**Census map preview (CMP).** From late 1996 through 1997, the CMP program provided relevant maps that showed the streets recorded at that point in the TIGER® database. These maps were provided to every GU that was not offered the opportunity to update this information by the TIP, Tribal Review Program, or the 1997 Boundary and Annexation Survey. The Census Bureau asked local government officials to update the maps to show missing or misnamed streets, delete nonexistent streets, and correct or add city-style address ranges for any street segment.

Except for unnamed streets, highlighted in purple, the maps were like those the Census Bureau provided to GUs for the 1997 BAS. The GUs annotated the maps and returned them to the ROs, where the maps were used to update the TIGER database.

The scheduled CMP completion date was August 1997, but maps continued to trickle in well into 1998, as GUs completed their reviews. Of the 27,467 GUs the Census Bureau contacted, 10,150 (37 percent) responded.

**Address Listing Map Review (ALMR).** ALMR helped the Census Bureau toward its goal that roads and streets shown on the maps listers would use for the 1998 address listing operation be as accurate, complete, and current as possible. To accomplish this, ALMR encouraged local and tribal officials of GUs located outside, or split by, the blue line to identify incorrect and missing streets and street names on the Census Bureau maps provided to them. The GUs included in this effort contained areas outside the initial mailout/mailback area and consisted primarily of outlying areas where the USPS did not deliver mail to house-number and street-name addresses.

The Census Bureau requested that GU officials return information about city-style mailing address ranges existing in their jurisdictions. The Census Bureau also asked the officials to identify the city-style addresses at points where a road intersected the GU's legal boundary. This would enable the Census Bureau to update the TIGER® database in time for the address listing of the GUs. The Census Bureau placed special emphasis on obtaining cooperation from GUs that had not responded to, or participated in, previous attempts to acquire this type of information.

Beginning early in January 1998, the ROs and RCCs sent letters to officials of the 30,200 eligible local and tribal governments, requesting them to annotate and return a copy of a Census Bureau map of their areas. Of the more than 8,000 GUs that expressed interest in the ALMR, a total of 7,564 participated in the program. The Census Bureau asked participating officials to use the maps from the 1998 BAS for this purpose or, if appropriate, the Census Bureau provided them with special maps derived from the TIGER database.

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ALMR began in late January and continued into February of 1998. The Census Bureau asked local and tribal officials if any nonparticipating GUs had undergone changes to the street network or address system since the most recent update and requested them to provide a current street map or digital map file for the GU or to identify sources that might have the desired information.

The Census Bureau planned to complete ALMR by the beginning of April, but received the last update eligible for inclusion in the TIGER database in time for use in the census address listing operation on May 5, 1998. The agency continued to update the database as new information arrived from participating GUs through the remainder of the year. Of the 8,024 GUs that offered to participate or were interested in participating, 6,327 GUs (79 percent) actually worked with the Census Bureau to return annotated maps, provided other information, or reported that the agency's maps were accurate.

**Geocoding Accuracy Assessment (GAA).** The Census Bureau intended the small-sample GAA survey, conducted February through March of 1998, to assess the accuracy of address ranges in the TIGER® database.

The survey included 600 geocoded city-style addresses in 18 metropolitan areas and 6 nonmetropolitan areas. GEO provided each RO or RCC with lists of basic street addresses selected from the MAF, together with maps of the areas in which the addresses were believed to be located. RO staffs were asked to find each address in the field, enter a map spot and its preselected map spot number on the map to show the location of the address, and annotate the list to indicate that the address was found, did not exist, or could not be located. The addresses' block assignments were matched against those recorded for the addresses in the TIGER database.

In May 1998, GEO staff reconciled most of the mismatched and uncoded addresses found by RO/RCC staffs. In the end, 15,416 (95.2 percent) of the original 16,200 addresses were listed in the field and 99 percent of these could be geocoded. Of the geocoded addresses, 13,751 (90.1 percent) matched the TIGER database geocoding at the block level.

The addresses were not selected using a scientific sampling process specifically designed to provide national estimates of geocoding accuracy, so applying the results from this study on a nationwide basis was not valid. However, the study did meet its goal of providing a useful general assessment of the geocoding capabilities of the TIGER database and helped identify necessary improvements. One improvement identified was the need for better address ranges in the TIGER database. This led GEO to implement the Automated Address Range Program (see below). The study also helped GEO improve its imputation algorithm for splitting address ranges where legal boundaries obtained as part of the Boundary and Annexation Survey intersected roads with address ranges.

**Automated Address Range Program (AARP).** First implemented in March 1999, the AARP was a fully automated process created by the Census Bureau to achieve a consistent address-to-block number relationship between field-verified city-style addresses in the master address file and the address ranges in the TIGER® database. The AARP ran automatically during the address reconciliation phase of Census 2000 whenever newly recorded city-style addresses created new address ranges in the database. Its corrections were subject to a quality assurance review.

Using field-checked residential addresses in the MAF, the AARP expanded existing ranges to create new address ranges related to street features in the TIGER database. Implementation of AARP involved two phases:

- The initial address-range load, which entailed matching MAF addresses and the TIGER address ranges and reconciling differences.
- AARP postprocessing, which consisted of a series of improvements to address ranges and road names (including alternate identifiers).

Postprocessing converted actual ranges to potential ranges (e.g., if 121, 125, 131, and 137 were the only addresses in the 100-range on the odd-numbered side of a street, the database would show a potential range of 101–199), checked consistency of odd and even ranges along a series

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of segments of the same street, standardized street names, eliminated unnecessary address ranges and anomalies, and applied ZIP Codes to new ranges. The USPS's ZIP+4 file (see Chapter 8, "Addresses and Questionnaire Printing and Mailing") provided the information needed to split address ranges based on ZIP Code.

The Census Bureau also used AARP to suppress address ranges containing a single address. Such ranges could occur where a single existing house number was the only address on one side of a street segment or the house number was out of parity or sequence with the other addresses on the same side of a street. For example, an address of 103 as the only odd-numbered address on the even-numbered side of the 100s-range of a city block would be out of parity. However, in March 2000, the Census Bureau's Disclosure Review Board, believing that address information in the TIGER database fell under the confidentiality restrictions of Title 13, U.S. Code, instructed GEO to suppress single addresses from publicly available products such as the TIGER/Line® files. This had the effect of forbidding the Census Bureau from publicly recognizing the existence of a specific single address. It could, however, release the range of potential addresses along a street that may or may not reflect the addresses actually in use on that street.

In previous censuses, most Census Bureau addresses came from public sources, thus address ranges recorded in the TIGER database were believed not to be subject to Title 13 confidentiality requirements. The TIGER database improvement operations prior to Census 2000 resulted in many addresses coming from the Census Bureau's field operations. The opinion was that this put address information in the same confidentiality status as the statistical data collected about individuals. Implementing this decision required GEO to make sure that AARP attempt to include more than one address in each of its address ranges, but this was not always possible.

### Other Programs Affecting TIGER® Content

Programs the Census Bureau instituted to improve its address list and geographic information also resulted in improvements to the map features and names in the TIGER® database. These programs (which are discussed in Chapter 8, "Addresses and Questionnaire Printing and Mailing") included the Boundary and Annexation Survey, the Tribal Review Program, the Census 2000 Redistricting Data Program, the Participant Statistical Areas Program, and the Local Update of Census Addresses. Depending on the program, information derived from these operations was entered into the TIGER database by staff either in the National Processing Center or the RCCs. When all map-related revisions were included in the TIGER database, the Census Bureau could locate and link the related addresses that had been added to the MAF. In addition, GEO constantly ran edits and quality checks of the information in the database. For example, in mid-1999, the division reviewed codes that classify the types of features in the database; this review resulted in the discovery and removal of numerous irrelevant, obsolete, and rarely used codes.

**Updates from Census 2000 field operations.** During the 1990s, the Census Bureau conducted a variety of field operations that provided updates to the TIGER® database. Most of the updates were to very limited geographic areas. However those updates conducted immediately prior to the census resulted essentially in nationwide activities.

**Special censuses.** During intercensal years, the Census Bureau took censuses of local jurisdictions on a cost-reimbursable basis. Jurisdictions requesting special censuses typically had experienced considerable population growth since the previous census. An officially certified population count from the Census Bureau documenting the increase could significantly affect the amount of government funding a jurisdiction may receive.

These enumerations usually were conducted in the traditional door-to-door method. Enumerators used maps prepared by the Census Bureau to find their way around their assigned areas, noting corrections and updates to the map features and names as they went. The Data Preparation Division's National Processing Center entered this information into the TIGER® database. However, the Census Bureau did not use the information gathered to update its address file. To avoid interference with preparations for Census 2000, the Census Bureau suspended taking special censuses after mid-1998.

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**Census 2000 field test program.** As it had in the decade before each of the preceding four decennial censuses, the Census Bureau conducted a series of tests of methodology, content, and design to develop the optimum operational plan for conducting Census 2000. The tests also provided an opportunity for a limited amount of updates to features and addresses for the TIGER® system. The operational details of those tests and their geographic support requirements are discussed in Chapter 2, “Planning the Census.”

**Census 2000 Dress Rehearsal.** In 1997, the Census Bureau began conducting portions of the Census 2000 Dress Rehearsal. These processes continued through 1998, with a focus on the Dress Rehearsal Census Day of April 1, 1998. The goal was to test the operational plan for Census 2000, including all of the preliminary operations that start more than a year before the actual census. The dress rehearsal sites were Sacramento, CA; Menominee County, WI; and 11 counties (plus a small portion of a twelfth) including and in the vicinity of Columbia, SC. Street and address information added, deleted, and corrected for the various dress rehearsal operations were added to the MAF and the TIGER® database. Dress rehearsal activities are discussed in Chapter 2, “Planning the Census.”

**Precensus operations.** As part of the final preparations for a decennial census, the Census Bureau conducts a series of field operations. The specific operations may vary from census to census, but they begin taking place at some point before Census Day and always include the collection of updates to features and addresses. These updates are used in the geographic products supporting the census. Updates from precensus operations that contributed to the TIGER® database are discussed here. The operational details of those activities and their geographic support requirements are discussed elsewhere in this chapter.

Address listing operations began in March 1998 in areas classified by the Census Bureau as TEA 2 (type of enumeration area). These areas were outside the so-called “blue line” where city-style addresses were the rule. In all or part of 2,944 additional counties, including the 78 municipios in Puerto Rico, the Census Bureau listed addresses in three waves from July 30 through December 31, 1998. The Wisconsin and South Carolina dress rehearsal sites were not relisted for this operation.

The operation consisted of the participating field staff noting in an address register the address or location description of each potential dwelling unit, the relevant collection block number, and significant information for each living quarter. In addition, the field staff assigned a map-spot number to each residential structure, drew a map spot, entered its number at the approximate location on the census block map, and updated and corrected the block maps. The NPC keyed the addresses and their map spot numbers into a master address file update file (MAFUF) (see Chapter 8), and inserted map changes into the TIGER database. The NPC electronically scanned the address listing maps to provide map images that were the basis for digitizing the map spots; this ensured that the spots and their associated numbers were inserted as accurately as possible into the TIGER database. For maps that could not be scanned primarily separate, hand-drawn sketch maps of densely developed areas the NPC digitized the map spots and inserted their numbers, together with the added and corrected street information, into the TIGER database.

Block canvassing operations began in January 1999. Field staff checked the completeness and collection-block assignments of the addresses in mailout/mailback areas, where the USPS delivers virtually all mail to city-style addresses. For the most part, this operation was confined to areas classified as TEA 1 in all or part of 2,096 counties; it also took place in TEA 6, which applies to military bases located in TEA 2 areas. The NPC keyed the address updates and revisions into a MAFUF and inserted map changes into the TIGER database. Field staffs’ revisions to the address-to-block number relationship, which were recorded in the MAF, were used to correct the address range information in the TIGER database, thereby assuring consistency with the MAF.

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## The Use of Map Spots for Housing Units

In many areas—termed noncity-style mailing address areas—the addressing system does not allow for easy, unambiguous identification and comprehensive listing of individual housing units. This makes it very difficult to develop the complete list of housing unit addresses needed for a mailout/mailback census. The problem is most common to rural areas where units may be located along an unnamed road (or one with no road signage) or where they are not assigned individual house numbers (or none are displayed). Even where units are assigned post office box numbers, the units themselves may not be visibly numbered or the numbers may be assigned to an individual or household for mail pick-up at the post office.

The Census Bureau began testing and implementing the use of map spots before the 1990 census as a way of mitigating this problem. Census Bureau field staffers conducted these map spot tests, while performing address-listing operations in areas with noncity-style mailing addresses. They entered uniquely numbered map spots on the enumerator maps in the approximate location of each residential structure. This provided the Census Bureau with a surrogate housing unit identification system that enabled the creation of a complete list of housing units. That list could be used by field staff in subsequent operations.

The Census Bureau assigned each map spot within a specific numeric range in the database to the type of living situation it represented: housing, special place/group quarters, or military housing. This enabled GEO to provide maps displaying the locations of special types of living situations for the appropriate field operations.

The Census Bureau determined that having these map spots in the TIGER database so that they could be displayed on printed maps at any stage in the census operations would be useful. Operational considerations precluded this, so the Census Bureau stored this information in an auxiliary database.

The Census Bureau digitized map spot information from the 1997 address listing operation in the Columbia, SC, and Menominee County, WI, sites into the TIGER database for use in the dress rehearsals. The Census Bureau also generated maps showing the map spots and numbers for the 1998 Local Update of Census Addresses (LUCA) and update/leave operations. Census enumerators annotated additions and corrections to the map spots. This information was digitized into the database for new maps to be used in both dress rehearsal and Census 2000 operations. The Census Bureau entered map spot information from the 1998 address-listing program in other parts of the United States and all of Puerto Rico into the database so that the information would appear on maps generated for subsequent operations. In addition to address listing of areas, Census 2000 required enumerators to assign map spots and numbers in list/enumerate areas. This information was digitized into the TIGER database after the maps were sent to the NPC.

## Entering Map Updates Into the TIGER® Database

As a rule, NPC staff manually inserted map corrections and additions into the TIGER® database. This operation consisted of reviewing updates on field maps and recording that information into a portion of the TIGER database shown on a computer screen. This method required a minimum of hardware (no digitizing table) and specialized software. However, it presented opportunities for degrading the spatial accuracy of the TIGER database by adding the inherent inaccuracy of the office clerks' "eyeballing" approach of transferring map information from field staffs' hand-sketched feature location to the computer screen. As noted earlier, correcting the resulting inaccuracies in the TIGER database was a goal of the GPS research activities.

Because the Census Bureau identified most residential structures outside of city-style addressing areas nationwide with map spots and numbers, a quick and accurate process for entering information gathered during address-listing operation, as well as in subsequent field activities, was essential. The NPC was central to this process. It electronically scanned annotated block maps to provide map images that were used as the basis for digitizing the map spots. Rather than having to deal with large numbers of individual block maps in various states of disrepair after their usage in the field, the NPC process let clerks view scanned maps on computer screens and digitize each map spot and its number by simultaneously touching the location of the map spot on the screen

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and clicking the map spot number from a list with a mouse. This ensured that the spots and their associated numbers were incorporated as accurately as possible into the database. The clerks recorded the map-spot numbers at the same time. The results of this procedure were twofold:

- The location of each map spot was calculated automatically in reference to the coordinates of the corner points of the map shown on the screen.
- The calculation and entry into the database were performed in a batch operation as each county was completed.

The NPC digitized the map spots and inserted their numbers from the original maps, together with any updated street information, into the TIGER database. Quality control clerks reviewed the maps from all stages of the operation to ensure that the map spots appeared in the correct geographic relationship to the streets and roads in the database. To ensure that the TIGER database contained the same information as the MAF, the NPC reviewed the results of an edit that matched map-spot numbers in the MAF and the TIGER database.

Block maps also were scanned for use in two census field operations that required enumerators to record map spots: the update/leave and update/enumerate operations. The maps used in these operations displayed the many map spots and numbers obtained during address listing, so they were at a larger scale than those used in the address-listing operation. This resulted in the near doubling of the number of maps that the NPC needed to review. To minimize the need for clerks to look at all these maps, the scanning program was improved so that each scanned map appeared on the computer screen simultaneously with the same map area currently recorded in the TIGER database. By looking at the two maps overlaid on one another, clerks could identify and insert both feature changes and map-spot changes without handling the field maps. The information was again entered into the database in a batch process, with the computer automatically calculating the coordinate values of map spots and feature changes in relation to the values of each map's corner points. The results were reviewed for completeness and accuracy. A subsequent edit ensured that map-spot numbers in the MAF appeared in the TIGER database.

The Census Bureau used the term “remote Alaska” to refer to the most sparsely settled areas of Alaska as depicted on maps annotated by enumerators. The maps were digitized by GEO staff. All other digitizing and scanning operations including digitizing all information for the other list/enumerate areas were carried out in the NPC. While input from other operations was digitized into the TIGER database as the annotated maps and time became available, NPC did not scan the list/enumerate maps because it received them just as it was completing the update/leave maps and beginning work on the update/enumerate maps. Rather than overwhelm the NPC with work, GEO chose to use NPC's limited available scanning equipment to record the larger workload from the update/enumerate areas. As result of GEO's decision, map updates received from the nonresponse follow-up and coverage improvement follow-up operations were not digitized until the summer of 2001, long after the maps for Census 2000 were finalized.

### **Geographic Products to Support the Census 2000 Field Operations**

The Census Bureau developed a wide variety of geographic products to support the Census 2000 data collection operations. Often these products were included as part of census test activities (described in Chapter 2, “Planning the Census”) carried out in the years leading up to the census. The products, which included files listing geographic entities, address lists, and maps, also were used in the many field operations related to conducting Census 2000.

**Census tests.** The first large-scale test was in 1995 in three areas (Oakland, CA; Paterson, NJ; and six parishes centered around Natchitoches in northwestern Louisiana). In 1996, the Census Bureau conducted a test census in seven scattered census tracts in Chicago and two American Indian entities (Acoma Pueblo, NM, including off-reservation trust lands, and Fort Hall Reservation, ID).

For these tests the Census Bureau produced several series of maps for each field operation, including recruiting, update/leave, LUCA, nonresponse follow-up, tribal review, rural address listing, and Integrated Coverage Measurement. Typically, each operation required multiple map types



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and page sizes to support various facets of the work. There were five basic map types for Census 2000 field operations:

- **Entity-based map** (36 by 42 inches, color): Field office supervisors and crew leaders used these maps to determine assignments for field staff and to plan and manage the field operations. For multicounty local offices, staff could tape county maps together to form a wall map of the entire area or stack maps together in an atlas format. These maps featured:
  - Local census office (LCO) boundaries (if applicable).
  - Map grid of assignment area boundaries and numbers.
  - Location and names of major highways.
  - Location and names of major hydrography.
  - Location and names of features coincident with boundaries.
  - Boundaries and names of selected legal and statistical entities.
- **Locator map** (11 by 17 inches, black and white): Locator maps showed the location of a geographic entity within a larger area to help crew leaders and field staff identify the location and determine a route of travel to it. These maps included the following features:
  - Subject entity (which was marked by shading).
  - Roads, hydrography, railroads.
  - Names of linear features and names of geographic entities.
- **Assignment area map** (11 by 17 inches, black and white): Crew leaders and field staff used these maps to identify the boundary of each assignment area and the block to be visited or the city-style address ranges to be checked for the street segments within it. These were also used to annotate updates and corrections. The following features appeared on the map:
  - Area outside subject assignment area (which was marked by shading).
  - Roads, hydrography, railroads, and other linear and area features.
  - Boundaries and names of selected geographic entities.
  - Names of linear and area features.
- **Block map** (11 by 17 inches, black and white): Field staff used these maps to identify the boundary of the block. These maps were also used to determine a route of travel around and within a block and to annotate map spots and numbers and map updates and corrections. These maps included the following features:
  - Area outside the subject collection block (which was marked by shading).
  - Roads, hydrography, railroads, and other linear and area features.
  - Boundaries and names of selected geographic entities.
  - Names of linear and area features.
  - Map spots (selected operations).
- **Street index** (printed on the related map or a separate sheet): Field staff used street indexes to find named roads on the map. Indexes provided a list of all named roads in alphanumeric order.

The Census Bureau produced a series of geographic reference files (GRFs) that provided information about the geographic framework for the field operations. These files also were integrated into the field-map production system. In addition to GRFs' use in field operations, they were produced for data-tabulation operations. This effort is described in more detail in Chapter 6, "Data Capture and Processing."

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**Census 2000 Dress Rehearsal.** In 1998, the Census Bureau conducted the Census 2000 Dress Rehearsal at the earlier-noted sites of Menominee County, WI; Sacramento, CA; and 11 counties (and part of a twelfth) in South Carolina. This operation tested the plans and process for taking the census.

As with earlier census test programs, the Census Bureau produced several series of maps and GRFs for dress rehearsal field operations. Each operation typically required multiple map types and page sizes (either 11 by 17 inches and 36 by 42 inches) to support various facets of the work.

**Census 2000.** The Census Bureau produced a variety of map products, address products (see Chapter 8, “Addresses and Questionnaire Printing and Mailing”) and GRFs to support the census field operations. The various field operations associated with Census 2000 required a large volume of maps. Beginning with recruiting and other operations in the year before Census Day and continuing through the follow-up and evaluation activities, the Census Bureau produced more than 41.7 million 11 by 17 inch map sheets. It also produced over 1 million 36 by 42 inch large-format maps. The large-format maps were produced on plotters in the regional census centers (RCCs). The 11x17 inch maps were printed on laser printers either in the RCCs or in LCOs, as appropriate.

### Map Production

The following general description of the map production operation explains how most of the maps were produced for data collection and TIGER® updating.

GEO's mapping staff relied on extensive customer consultation to develop the map content, design, and scale to meet the required specifications. As part of this process, staff developed a production system that combined map design parameters, the appropriate extract from the TIGER database, a production control system, and a quality assurance review. Field offices (RCCs and LCOs) initiated and controlled production of the maps through a multistep process that produced a single Map Image Metafile (MIM)® for each map sheet.

Field office staff checked a small sample of the maps produced. Maps with problems were referred to GEO for resolution. As the field staff needed maps for specific operations, they printed the requested map from the MIM using custom-designed map printing software. The maps were designed to print to sizes of 11 by 17 inches or 36 by 42 inches depending on their purpose. The smaller maps were printed on laser printers, while the larger maps were printed on large-format plotters.

The MIM concept resulted from the Census Bureau's experiences after the 1990 census. Maps for that census were printed using commercial plotters and from files stored in a proprietary format readable only by specific plotters from a particular manufacturer. This approach was also used for the reproduction of public map products of census tracts and blocks. The manufacturer discontinued the map-making equipment during the 1990s and went out of business a short time later. The existing maintenance contract lapsed. This left the Census Bureau no easy way to reproduce maps that met customer requests.

Switching to MIM files offered a clean solution. The MIM file was simply a detailed description of a map in ASCII format. Since the format is well documented, it is a fairly straightforward task to write a plotting utility that works best when new hardware becomes available. This meant that MIMs and the maps they represent were relatively immune from problems posed by technological change.

**Chapter 8.****Addresses and Questionnaire Printing and Mailing**

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# Chapter 8: Addresses and Questionnaire Printing and Mailing

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## IMPROVING THE ADDRESS FILE

### Introduction

In November 1990, the Census Bureau established a committee to develop recommendations on how to improve Census 2000 over the 1990 census, in ways that would also control costs. One of the critical considerations was a redesigned mailing list. Because the address list would serve as the basic control for the census, one of the agency's goals was to ensure that Census 2000 would be more accurate and complete while being more cost-efficient than the 1990 census. To this end, the Census Bureau established a goal of re-using city-style mailing addresses from the 1990 census and developing partnerships with the U.S. Postal Service (USPS) and knowledgeable state, regional, local, and tribal governments.<sup>2</sup> Accordingly, in November 1990, the Census Bureau and the USPS established an interagency Joint Committee for Census Planning to undertake cooperative efforts for enumerating much of Census 2000 by mail.<sup>3</sup> The Census Bureau also sought to determine the availability of address lists and address-range information from local governments. This would obviate the need for the Census Bureau and the USPS to undertake many of the operations used during the development of the address list for each of the previous three censuses. The Census Bureau also wanted to be able to incorporate non-city-style addresses into its automated address operations and to integrate all its censuses with the agency's automated geographic system, the Topologically Integrated Geographic Encoding and Referencing system (TIGER®) database.

### Origin of the Census 2000 Address File

The Census Bureau estimated that it would have to manage about 119 million residential addresses for Census 2000, including Puerto Rico (1.4 million) and the four major Island Areas (114,000). In 1998, the Geography Division (GEO) created a master address file (MAF) as the repository for every residential mailing address, physical/location description, etc., that it could obtain.<sup>4</sup> GEO had already prepared a limited MAF in 1995 for use in the areas covered by a Census 2000 test census and in 1997 to support the dress rehearsal and the beginnings of the American Community Survey.<sup>5</sup> This file contained both residential and nonresidential addresses. The MAF was the basis for the decennial master address file (DMAF), which was limited to residential addresses that could be linked successfully to the TIGER® database. The DMAF served as the control file for taking the census and tabulating the data.<sup>6</sup>

<sup>1</sup> See, U.S. Census Bureau, "The Reengineered 2000 Census," May 19, 1995; and Chapter 2, "Planning the Census," especially the section entitled, "Task Force for Designing Census 2000."

<sup>2</sup> City-style mailing addresses were those to which mail was delivered based on the structure's house number and street or road name.

<sup>3</sup> See, "Agreement Between the United States Bureau of the Census and the United States Postal Service," signed by Anthony M. Frank for the USPS on November 20, 1990, and by Barbara Everitt Bryant for the Census Bureau on November 21, 1990.

<sup>4</sup> See, U.S. Census Bureau, "Census 2000 Address Listing Operation," Information Memorandum No. 80, November 7, 2000; cover memorandum dated November 14, 2000.

<sup>5</sup> See Chapter 2, "Planning the Census," for details.

<sup>6</sup> U.S. Census Bureau, "The Decennial Master Address File (DMAF)," Information Memorandum No. 51, June 20, 2000, cover memorandum dated June 26, 2000.

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The initial MAF was a product of the merger of three files:

- All city-style mailing addresses recorded in the 1990 census address control file.
- The USPS's delivery sequence file.
- The USPS's ZIP+4 file.<sup>7</sup>

**1990 census address control file.** Following the 1990 census, the Census Bureau retained a substantial number of the addresses that it had recorded and that the GEO coded for the census. The agency also integrated the addresses from its 1990 census file of special places and group quarters into the address control file (ACF). However, these addresses were not carried to the MAF because the Census Bureau decided to start fresh with the Census 2000 inventory of these facilities. GEO performed extensive programming from 1993 to 1997 to develop the file structure of the MAF and to improve the TIGER database to facilitate an effective matching and merging of the information in the ACF, the other address files described below, and the TIGER database. The Census Bureau has estimated that almost 71.4 million addresses—61.6 percent of the total addresses in the final Census 2000 housing inventory—were provided from the ACF without subsequent action needed.<sup>8</sup>

**Delivery sequence file.** In 1993, the USPS introduced a delivery sequence file (DSF), a nationwide database of the residential and nonresidential addresses served by the USPS. The May 1994 DSF contained more than 137 million addresses; of the 120 million residential addresses in that file, about 99.3 million were city-style, including 22 million multiunit addresses (apartments in an apartment house, mobile homes in a trailer court, etc.). The initial address coverage used by the Census Bureau for the previous three decennial censuses had been limited to what was available from commercial vendors for the urban cores of metropolitan areas. The DSF consisted of numerous data tapes, and the sheer volume required considerable computer-processing time; e.g., for the November 1999 DSF, GEO needed 2 days to process 32 tapes. A statutory change was needed to give the Census Bureau access to the DSF (see below), and the Census Bureau and USPS had to agree on and implement a standard format for the representation of mailing addresses. The implementation took place early in 1994. In June 1994, the Census Bureau obtained its first copy of the DSF, the May 1994 version. However, because the USPS was not authorized to let others retain the information in the DSF, the Census Bureau could not keep these addresses. The agency used this DSF to test its ability to match the information in the file to both the ACF and the TIGER database. By special agreement with the USPS, the Census Bureau was allowed to use the May 1994 DSF as a source for updating the ACF to create a MAF for the few areas enumerated via the mailout/mailback (MO/MB) methodology for the 1995 test census.<sup>9</sup>

As part of the agreement, the Census Bureau provided the USPS with approximate latitude/longitude coordinates for the addresses that GEO could match to its records in the TIGER database. The USPS planned to use this information to help automate a restructuring of its delivery routes. The Census Bureau found that it could match—and therefore geocode—almost 70 million city-style addresses from the DSF to street/road names and address ranges in the TIGER database. The addresses it could not geocode exposed two possible situations: (1) a shortage of street features, street/road names, and/or address ranges in the TIGER database and (2) erroneous addresses in the DSF. The latter reflected addresses that no longer existed or had been misrecorded by local post offices when they prepared the list of city-style addresses for their area. Based on the match, the Census Bureau created a tally of addresses that was used to estimate workloads for the task of having the regional offices (ROs) and regional census centers (RCCs) try

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<sup>7</sup> U.S. Census Bureau, Census 2000 Information Memorandum No. 102, "Program Master Plan: Census 2000 Master Address File," February 28, 2001, cover memorandum dated May 1, 2001.

<sup>8</sup> U.S. Census Bureau, "Census 2000 Topic Report No. 8: Address List Development in Census 2000," March 2004, pp. 1–6, 25.

<sup>9</sup> Memorandum of understanding between U.S. Census Bureau and U.S. Postal Service, June 1994.

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to resolve the unmatched addresses; i.e., those GEO could not geocode. The information on non-matching ranges of addresses also was used to begin the TIGER Improvement Program (TIP) and Master Address File Geocoding Office Resolution (MAFGOR) operations.<sup>10</sup>

Public Law (P.L.) 103-430, the Census Address List Improvement Act of 1994, directed the USPS to give the Census Bureau the information it needed to carry out its periodic censuses and surveys. Its passage on October 31, 1994, enabled the two agencies to come to an agreement regarding the Census Bureau's use of the DSF addresses for census purposes; the agencies signed the formal memorandum of understanding on June 1, 1995.<sup>11</sup> Later that month, the Census Bureau obtained an April 15, 1995, version of the DSF. GEO now could use this file to upgrade and expand the ACF, supplementing the addresses already in that file. Where GEO found that some ACF addresses were similar but not identical to those in the DSF, it used the USPS version of the addresses to improve the "deliverability" of the questionnaires to be sent through the mail. GEO also used the information to update the inventory of nonmatching cases that the Census Bureau had to attempt to resolve through both the TIP and MAFGOR operations.

The Census Bureau did not want to get a copy of every DSF as it was issued. Instead, it obtained a DSF on request from the USPS in April and September 1996, May and November 1997, September 1998, and April, September, and November 1999.<sup>12</sup> Also, the Census Bureau used the information in some DSFs only selectively, depending on impending operations. For example, it used the September 1996 DSF as a source for updating the MAF for the dress rehearsal in Sacramento, CA, and the area within the Columbia, SC, MO/MB area.

Because some post offices were as much as 6 months and more late entering new addresses into the DSF and because some letter carriers did not provide information in the proper way to ensure that addresses were added to the USPS database, the file did not reflect new residential occupancy and construction consistently for all post offices.<sup>13</sup> In June 1999, the USPS informed the Census Bureau that it would make a special comprehensive effort to update the DSF in July. Accordingly, the USPS implemented:

- National Edit Book Week, a week-long national initiative (June 19 to 25, 1999) during which every carrier validated his/her route's address information and reported all incorrect and missing information. The results appeared in the September 1999 DSF.<sup>14</sup>
- Edit Book Track Software II, a new and improved tracking system that the USPS began using in July 1999 to enable it to monitor the address reporting activity for all routes in the nation on a monthly basis.
- Requiring post offices to report addressing activity monthly, including reporting of no activity; previously, post offices could report the information quarterly.
- A new software program that, on a flow basis, evaluated the approximately 40 million change-of-address records received annually from postal customers. The goal was to identify addresses that were not in the DSF database or were flagged as nondelivery or vacant locations.
- An additional step in its Address Element Correction service, a computer program that improved the presentation of addresses, to attempt to resolve addresses that the Census Bureau could not match to its database. For example, of the 4,833 addresses added as a result

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<sup>10</sup> U.S. Census Bureau, "The Census Bureau's Master Address File (MAF): Census 2000 Address List Basics," March 1999 and "MAF BASICS 2000," undated, available at <<http://www.GeographyDivision.census.gov/mob/homep/mafbasics.html>>. See Chapter 7, "Census Geography and the Geographic Support System," for descriptions of TIP and MAFGOR.

<sup>11</sup> Memorandum of understanding between U.S. Census Bureau and U.S. Postal Service, signed by Robert G. Krause on behalf of the USPS on June 1, 1995, and by Joel L. Morrison for the Census Bureau on May 31, 1995.

<sup>12</sup> However, it did not process the April 1999 file because the costs and operations involved could be expected to duplicate already geocoded information the Census Bureau was getting from the LUCA and block canvassing operations.

<sup>13</sup> For example, addresses added by USPS letter carriers in preparation for the dress rehearsal revealed that 430 addresses still did not appear in the DSF 7 months later.

<sup>14</sup> The USPS performed National Edit Book Week again during the week of January 10, 2000, with the added addresses included in a "transaction file"—a file of "postal route activity" that reported only mailing addresses the USPS had added to its records since the previous DSF—rather than providing another complete DSF. The USPS provided the transaction file electronically to the Census Bureau in the first week of February 2000.

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of the casing check (an identification of addresses for which letter carriers did not have a preaddressed questionnaire to put in their sorting case of the addresses on their route) for the dress rehearsal, the Census Bureau was unable to match 1,445 (30 percent) against the DSF. By imposing this program, the USPS found and improved 1,015 (70 percent) of these addresses. (The other 430 were the aforementioned addresses that apparently were not in the DSF.)

As a result, subsequent DSFs were more complete than the previous versions. The last complete DSF the Census Bureau received in time to be used in Census 2000 was an April 2000 version (received on April 20). This allowed the agency time to unduplicate new residential DSF addresses against the addresses provided by the New Construction program (see New Construction program section in this chapter) and to try to geocode them in time for enumeration during Coverage Improvement Follow-up (see Coverage Improvement Follow-up section in this chapter).

The DSF became larger with each delivery as a result of new residential construction, automation of additional post offices, and establishment of city-style mailing addresses in areas that did not previously have them. Because of the time needed to run this file, the Census Bureau considered using the USPS's monthly record of added and deleted addresses instead. In the end the Census Bureau decided to process updated DSFs and planned to continue to do so after Census 2000 to help keep its address file current for use in future operations.

**ZIP+4 file.** Since the 1980s, the USPS has sent the Census Bureau the ZIP+4 file, a computer file of about 28 million address ranges (and their related street or road names) with their associated ZIP+4 codes. In preparation for Census 2000, GEO matched the street (or road) name/address range records in this file to street/road name and address range records in the TIGER database. This provided the database's address ranges with 4-digit ZIP add-on codes and helped identify missing address ranges. However, inclusion of the ZIP+4 information in the database added many additional address range breaks, because changes in a ZIP+4 code can occur anywhere along a line segment. As a result, the Census Bureau removed the codes from the file in 1995. It did use the ZIP+4 file to update the 9-digit ZIP Codes recorded in the MAF whenever it updated the MAF from an address source. Nevertheless, it did not use the ZIP+4 codes associated with the addresses in the MAF for the Census 2000 mailout of questionnaires. Instead, the agency relied on the vendors who performed the mailout operation to add this item to the postal addresses. Beginning in 1993–94, GEO did use the ZIP+4 file as the source for inserting 9-digit ZIP Codes into each release of the TIGER/Line files. The ZIP+4 file also provided the basis for processing the Automated Address Range Program (see Chapter 7).

The USPS also maintained a computer file in which it recorded monthly updates and revisions to its 5-digit ZIP Codes. GEO used this file to update the ZIP Code information in both the TIGER database and the MAF, a process called Automated ZIP Code Update/Recode. The USPS also regularly provided the Census Bureau with a copy of its Delivery Statistics File, which GEO used to provide the approximate number of addresses by ZIP Code to the planning and control operations that required such information. In addition, the USPS provided another of its standard monthly products, the City-State File, which related each 5-digit ZIP Code to its post office name. Because the MAF addresses included only ZIP Codes, this file enabled the Census Bureau to derive the post office names for printing on questionnaire labels and address listing pages.

In addition to the information obtained from the USPS, GEO also obtained a Block-to-ZIP File from Geographic Data Technology, Inc., with the agreement that the Census Bureau would use the file only for internal purposes. This September 1997 file served to identify the functional extent of ZIP Codes for precensus operations, based on 1990 census blocks; at the time, the agency's own records of ZIP Codes were neither complete nor reliable. The Census Bureau used the file to help determine "blue line delineation" (see "Blue Line Delineation" section in this chapter), target areas for mapping update activities, etc. The agency also obtained an April 1999 version of the file to improve its ability to provide ZIP-related information for precensus field operations.<sup>15</sup>

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<sup>15</sup> This was an extension of an existing, 5-year cooperative research and development agreement (CRADA) announced on November 18, 1996 (see U.S. Census Bureau, "Census Bureau, Geographic Data Technology Launch New Geographic Data Initiative," CB96-19) and the CRADA agreement signed on November 13, 1996.



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As a result of the above operations, GEO created the initial MAF, which covered only type of enumeration area (TEA) 1,<sup>16</sup> in early 1998. Subsequent field operations provided the addresses for other areas. From time to time, an extract of geocoded residential mailing addresses from the MAF was provided to the Decennial Systems and Contracts Management Office (DSCMO), which added fields for information it needed to control and track the census. This was called the decennial master address file (DMAF). It was used for Census 2000 to identify the housing units that would be sent the sample questionnaire, to prepare a file from which contractors could print address labels for the census questionnaires, and to assign identification numbers to addresses. The DMAF also supported other purposes, including response check-in, tracking and reporting of activities related to individual addresses, and the universes for follow-up operations. GEO delivered the first MAF extract to the DSCMO on a flow basis during July 1999 for 39 counties and statistically equivalent entities covered by the American Community Survey; the Geography Division delayed the second delivery until August 15 so that updates for counties in which the Census Bureau was doing a late field check of addresses related to the Local Update of Census Addresses (LUCA) program (see LUCA section in this chapter) could be included. Additions, deletions, and corrections flowed into the MAF from census operations and Delivery Sequence Files; new and revised addresses were geocoded automatically where possible, and map spot information was recorded for addresses located outside the MO/MB area. This information was used to update the DMAF from time to time. GEO delivered the last MAF extract for use in data collection on September 9, 2000, and the final tabulation extract, which included the tabulation blocks to facilitate tabulating and presenting the data, in November 2000. Later that month, the DSCMO provided GEO with the final status (i.e., in or out of the census) of all addresses in the DMAF. Note that as of March 2001, some 27,844,000 MAF addresses had not been delivered to the DMAF: 2.4 millions were coded as duplicates, 11.2 million could not be located and therefore could not be geocoded, 3.9 million were considered to be invalid, and 8.2 million were nonresidential; another 2.1 million were not transmitted for other reasons. Some of these may have been delivered with good information to the DMAF after being recorded from various field operations.<sup>17</sup>

### Special Places/Group Quarters

Special places represent situations where unrelated people live together in housing different from the typical house, apartment, etc.; group quarters are the individual residential facilities within special places. Examples of group quarters include dormitories on a college campus and wards in a prison or hospital. Nursing homes and motels are examples of special places, but in Census 2000, the Census Bureau treated the same facility as both a special place and a group quarters. Some facilities that consisted only of housing units, such as campgrounds, also were treated as special places. As noted earlier, the Census Bureau decided not to re-use the ACF addresses for these living quarters. From April 1996 through May 1997, the Population Division updated its inventory of these facilities from various sources. From November 1997 through June 1998, it created such an inventory for Puerto Rico. In seven batches from late February through mid-August 1999, GEO geocoded as many of the addresses as it could. However, because the existence of the special places and their addresses had not been verified, GEO did not add the addresses to the MAF at this time. Using maps produced from the TIGER® database, census personnel from the RCCs made personal visits—as part of the Census 2000 Facility Questionnaire Personal Visit Operation—from late April through early November 1999 to obtain selected information about the special places and their group quarters, including verifying and correcting the address. They also mapped the location of those that did not have a city-style mailing address, as well as selected

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<sup>16</sup> Type of enumeration area referred generally to the way addresses in an area received their mail. Type 1 TEAs generally consisted of addresses identified by street number/street name and with mail delivered by the USPS.

<sup>17</sup> U.S. Census Bureau, “Program Master Plan: Decennial Master Address File (DMAF),” Census 2000 Informational Memorandum No. 51, June 20, 2000; Miriam D. Rosenthal, “Census 2000 and the U.S. Postal Service Delivery Sequence Files,” in *Proceedings of the Annual Meeting of the American Statistical Association*, Atlanta, GA, 2001; Frank A. Vitrano, Robin A. Pennington, and James B. Treat, *Address List Development in Census 2000, Topic Report No. 8*, TR-8 (Washington, DC: U.S. Census Bureau, 2004); and Robin A. Pennington and Cynthia Rothhaas, “Final Status of Addresses on the Census 2000 Address List: Analysis of the Address List-building Process,” in *Proceedings of the Annual Meeting of the American Statistical Association*, August 5-9, 2001.

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ones in MO/MB areas. From late November to mid-December 1999, GEO inserted the addresses into the MAF, and then attempted to geocode them. However, some local census offices (LCOs) later submitted information for 324 additional special places/group quarters in 54 counties, barely in time for inclusion in the enumeration. The DSCMO, in late August 2000, sent these addresses to GEO to match, geocode, and enter into the MAF, and then deliver to the DMAF.

Using the information shown on Census Bureau maps and lists that incorporated the information from this operation, the Field Division's local knowledge update operation performed a similar, subsequent review at the LCO level in January and February 2000. This took advantage of the personal knowledge and detailed sources (e.g., telephone and other directories) available at this local level. GEO subsequently inserted the new information into the MAF, and then geocoded the city-style addresses for use in the census.<sup>18</sup>

### Blue Line Delineation

The "blue line" is a boundary that separates groups of census blocks in which the vast majority of housing units receive their mail at city-style addresses from areas in which non-city-style addresses predominate. Areas inside the blue line are those the Census Bureau can include in the MO/MB census because the agency can prepare a computerized file of geocoded city-style addresses to be used for mail delivery of questionnaires in that area.<sup>19</sup> From late 1995 through the first half of 1996, GEO computers identified a preliminary blue line for Census 2000. It was based on the 1990 Tape Address Register (TAR) area—the area in which the Census Bureau was able to take the 1990 census by mail—plus ZIP Codes that had more than 90 percent city-delivery addresses. Then it was expanded to include blocks that contained a predominance of city-style mailing addresses in other ZIP Codes based on street and address-range information that had been added to and corrected in the TIGER® database and on geocoded city-style mailing addresses that had been added to the MAF from the DSF.

The database's 6.96 million blocks and the related 102.4 million housing units (HUs) at this point fell into the following categories:

- Inside the blue line: 3.4 million blocks (49 percent), 79.84 million HUs (78 percent).
- Outside the blue line: 2.4 million blocks (35 percent), 13.84 million HUs (13.5 percent).
- Needing further research (blocks with 50 to 90 percent city-style addresses): 1.1 million blocks (16 percent), 8.6 million HUs (8.4 percent).
- No ZIP Code match (and therefore also needing research): 12,306 blocks (0.2 percent), 113,070 HUs (0.1 percent).

The TIGER database was able to display on maps the location of the blue line and to identify the blocks that required further research. The regional office geographic staff could view this information on their computer terminals, which enabled them, beginning late in 1996, to adjust the initial

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<sup>18</sup> U.S. Census Bureau, Census 2000 Information Memorandum No. 41, "Program Master Plan: Census 2000 Group Quarters Enumeration," February 1, 2000, cover memorandum dated February 22, 2000; Census 2000 Information Memorandum No. 69, "Program Master Plan: Census 2000 Local Update of Census Address Special Place Program," July 21, 2000, cover memorandum dated August 28, 2000; Census 2000 Information Memorandum No. 113, "Program Master Plan: Census 2000 Special Place/Group Quarters Inventory Development," July 2001, cover memorandum dated September 10, 2001; Kimball Jonas, "Group Quarters Enumeration," Census 2000 Evaluation No. E.5, Revision 1, August 6, 2003; and Florence Abramson, *Special Place/Group Quarters Enumeration, Topic Report No. 5*, TR-5 (Washington, DC: U.S. Census Bureau, 2004).

<sup>19</sup> The limit of the mailout/mailback (MO/MB) census is referred to as the "blue line" because blue pencil was used to delimit this area when such a boundary was drawn for the first time for the 1970 census. Some housing units (HUs) within the MO/MB area choose to use a post office box for their mail delivery. For such an HU, if mail is addressed to its house-number/street-name address (as the census questionnaire inevitably would be, because that is how the Census Bureau records the address in the MAF), the USPS will return the mail to the sender as "undeliverable as addressed." Therefore, for Census 2000, the questionnaire was returned to the Census Bureau. The HU then became part of the universe of HUs that were visited by enumerators in follow-up operations. Another problem in MO/MB areas related to last-minute wholesale changes of addresses in an area. In order to avoid duplicate mailings to the same address, the MAF retained the old addresses. The USPS continued to deliver mail to such addresses for at least 1 year after implementing the changes.

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blue line interactively in the database to include blocks that they knew had, or soon would have, a predominance of city-style mailing addresses (even though these blocks might not be on city delivery routes) and to delete blocks where they knew this was not the case, or where individual blocks were isolated from the rest of the MO/MB area. They also could adjust the blue line to take into account the type of development (if any) in a block and the validity of individual excluded blocks within the blue line, as well as to “smooth” this boundary by eliminating unusual indentations and protrusions. The result was a set of initial blue lines that delimited the boundary between areas for which the Census Bureau would perform operations such as address listing (outside) and verifying the agency’s inventory of city-style addresses (inside). This refinement process basically was completed by mid-1997, but adjustments continued into early 1998. At that time, a total of 2,096 counties contained area within the blue line, of which 173 were entirely within the blue line. The Census Bureau estimated that about 94 million addresses (80.5 percent of all HUs) were located within the blue line.

The enlargement of the area within the blue line, which was also known as type of enumeration area (TEA) 1, enabled the Census Bureau to geocode city-style addresses automatically for a larger area than before. This concomitantly reduced the area, and the number of living quarters (LQs), for which the Census Bureau had to obtain and geocode addresses by address listing, where enumerators must visit each HU to leave a census questionnaire or enumerate the HU.

After completion of the address listing operation, the Census Bureau had planned to identify by computer a small number of address-listed census blocks in which virtually all the HUs received their mail at city-style addresses. The geographic staff in the RCCs would review these blocks to consider whether it would be appropriate to include any of them within a redefined final blue line. However, this plan was dropped when the Census Bureau determined that the process would have required major, time-consuming development of new software.

When the Census Bureau was preparing the address lists for the LUCA program, it found problems with the addresses in some blocks. Accordingly, after the geographic staff reviewed these blocks, they shifted many of them into the address listing and update/leave (U/L) areas; these blocks constituted an additional phase—Wave 4—of the address listing operation. To specifically identify these blocks in the TIGER database, the Census Bureau reclassified them from TEA 1 to TEA 9, which revised the location of the blue line in selected counties to encompass a somewhat reduced area. The final number of counties that included area within the blue line (TEA 1) was 2,121, of which 147 were entirely within the blue line.<sup>20</sup>

### Filling the Gaps in the Address File

The Census Bureau soon discovered that the DSF did not contain every residential city-style address in the MO/MB areas, so it had to take steps to identify the missing addresses. The agency undertook a number of programs to locate sources that might provide the missing addresses for the MAF and, after geocoding, for the DMAF for use in Census 2000. The Census Bureau also initiated several programs that would ask local and tribal governments (the agencies that usually assign both street/road names and structure addresses) to help the Census Bureau expand and improve the content of the MAF.

**Address System Information Survey (ASIS).** Conducted in 1993 and again in 1996, the ROs undertook this telephone survey to try to determine (1) the types of addresses (city-style and non-city-style) that existed in a county or, for New England, in a city (place) or town (minor civil division), (2) whether the city-style addresses were used for mail delivery, (3) whether street/road names and city-style addresses were displayed where they exist (i.e., street signs at intersections and house numbers on structures), and (4) whether city-style addresses were being established or

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<sup>20</sup> U.S. Census Bureau, “Program Master Plan: Census 2000—1998 Address List Review Program,” Census 2000 Informational Memorandum No. 32, November 23, 1999; U.S. Census Bureau, “Program Master Plan: Address Listing Operation,” Census 2000 Informational Memorandum No. 80, November 14, 2000; and U.S. Census Bureau, “Assessment Report: Census 2000—1998, 1999, and Special Place Local Update of Census Addresses and New Construction Programs,” Census 2000 Informational Memorandum No. 140, July 21, 2003.

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expanded to replace non-city-style addresses in all or part of the governmental unit (GU). The survey was limited to those GUs for which the Census Bureau's records showed more than 5 percent of the mailing addresses to be non-city-style, or that reported in previous surveys that a portion of the GU was served by non-city-style mailing addresses. The 1993 survey covered 2,775 counties, but the number dropped to 2,153 counties for the 1996 survey because GEO had learned, either from the 1993 ASIS or subsequent information, that many counties had changed their address system to city-style addresses.

The purpose of the survey was to determine the appropriateness of including all or parts of a county in the Census Bureau's efforts to obtain city-style addresses and address-range information (where this information was not available already) and, as a corollary to that, the best methodology to use for conducting Census 2000 in the county. The surveys revealed that almost 1,800 counties recently had converted, or planned to convert by the year 2000, some or all of their addresses from non-city-style to city-style.

In March 1999, the Census Bureau decided that it would not update its files as the result of any new city-style addressing systems that were brought to its attention. The old address system was already included in the MAF and TIGER®, and the agency did not know unequivocally which specific addresses had been superseded. It did not want to simply include the new addresses at this stage, because this could result in mailing two questionnaires to many residences.

**Rural Addressing Program (RAP).** This activity was intended to identify areas with new city-style address systems, to implement adding and incorporating these addresses into the MAF and TIGER, and to consider the feasibility of using local information to insert geocodable non-city-style addresses into these two files, primarily by using rural directories and atlases. Input came from the 1993 ASIS. GEO obtained about 400 directories and atlases, but after extensive review and discussion of the various aspects of the program by a committee and several working groups composed of staff of the Geography and Field Divisions and other interested divisions, the Census Bureau decided not to pursue the matter further. The information-gathering aspect of the program was replaced by the 1996 ASIS.

**Program for Address List Supplementation (PALS).** In an effort to build and update its list of city-style mailing addresses, the Census Bureau decided to ask for assistance from state, local, and tribal governments, councils of government, and metropolitan and regional planning agencies. It announced the program in an August 1996 mailout conducted by the Data Preparation Division (DPD). The announcement asked that recipients return a form to indicate their interest in participating. The partnership specialists at the ROs also contacted GUs in an attempt to encourage them to take part in the program. The Census Bureau asked that a GU submit a current address list, preferably only city-style residential addresses in computer-readable form, to the RO that served its area. However, the ROs would accept a paper list if that was the only option. A GU that was participating in the TIGER improvement program was asked to hold the list until it had completed its work on that program, because that would improve the success of the match of the address list to the address ranges in the TIGER database. The agencies were permitted to submit multiple lists, simultaneously or over a period of time, if they served more than one GU or were able to follow up with updated or expanded files.

The plan was that when an RO received a computer-readable list, it would process the list into a standardized format prescribed by the GEO if the submitting agency had not already done so. This would facilitate the match of the addresses, first against the MAF and then to the TIGER database. The ROs were to send paper lists to the DPD, where clerks would key the information into computer files. The DPD was to send the files to the ROs for formatting and then transmission to the GEO for the matching operation. After processing a list, the Census Bureau would return a disposition list to the contact person at the GU who could see how the agency dealt with each address.

Receipt of address lists began in spring 1997. However, after reviewing the lists from several hundred governments, the GEO determined that it could not deal effectively or efficiently with the variety of formats and the significant number of nonstandard address conventions in these materials. The Census Bureau decided to drop this effort to update and correct the MAF in favor of obtaining such information from the LUCA program (see the next section). The ROs telephoned

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and followed up with a letter to each participant detailing this change in plans. Nevertheless, the Census Bureau reformatted and processed many of the files it received so the addresses could be matched against the MAF, and it provided a disposition listing of the submitted addresses to those GUs that wanted the opportunity to see what difficulties the Census Bureau had with its file. These disposition listings could be useful to the GU in preparation for the official address review for the LUCA program. The PALS addresses for Sacramento did prove to be compatible with the requirements, so the agency added those addresses to the MAF in preparation for that city's inclusion in the Census 2000 Dress Rehearsal.<sup>21</sup>

### Addresses From Precensus Operations

In addition to the specific programs that used local sources to find mailing addresses to add to the MAF, the Census Bureau undertook several address-related field operations in preparation for Census 2000. Unlike previous censuses, the agency planned to carry forward all the address information derived for and from Census 2000 for use with its future censuses and surveys.

**Test censuses.** The Census Bureau conducted a census test in three areas in 1995 (Oakland, CA; Paterson, NJ; and six rural parishes in northwestern Louisiana). It also did preparatory work for New Haven, CT, but eventually dropped this city from the test for budgetary reasons. The Census Bureau conducted test censuses for three more areas in 1996: in two American Indian entities (Acoma Pueblo and off-reservation trust land, NM, and Fort Hall Reservation, ID) and in seven scattered census tracts in Chicago.

Map and address range updates and corrections from precensus GEO coding operations in the urban sites were entered into the TIGER® database, but not those resulting from the actual test censuses. As noted earlier, the changes to map features as a result of the address listing operation in Louisiana were entered into a special benchmark file, but, due to time constraints, GEO did not insert them into the database. Census Bureau staff also recorded map spot information in the benchmark file so that appropriate maps could be generated for subsequent operations in the test census, but did not enter that information into the database itself. The DPD inserted into the MAF addresses that had been added, deleted, and corrected as a result of the various operations carried out prior to, but not as a result of, the test censuses.

**Dress rehearsal.** Street and address information added, deleted, and corrected for the various operations carried out in 1997–98 for the Census 2000 Dress Rehearsal was added to the MAF and the TIGER database. For the dress rehearsal, the Census Bureau for the first time digitized the map spots (and their numbers) into the TIGER database so that maps printed for subsequent operations would have the information.

**Address listing.** For the 1995–96 test censuses, the Census Bureau sent staff into the field with address registers and census block maps. Agency instructors taught the listers to record specific information about the mailing address and location of every living quarters in their assigned areas. In March 1998, the Census Bureau began listing addresses outside the early blue line—i.e., in areas classified as TEA 2—for the 39 counties included in the American Community Survey in 1999. For Census 2000, the Census Bureau listed addresses in all or part of 2,944 additional counties, including 78 municipios in Puerto Rico. The listing took place in three waves during 1998: July 30–September 11, October 8–November 19, and November 9–December 18. Address listers conducted a fourth wave for those blocks reclassified as TEA 9 (see Chapter 7, “Census Geography and the Geographic Support System”) in three subwaves from February 2 to May 21, 1999, with data capture completed by the end of June. For the national listing operation, the Census Bureau did not relist addresses in Menominee County, WI, and the 11 counties in South Carolina whose addresses were listed, and subsequently checked and updated during the U/L operation, for the dress rehearsal.

Many of the mailing addresses in TEA 2 were non-city-style, even where Living Quarters (LQs) had house-number/street-name addresses that enabled emergency services and others to locate a residence quickly and systematically. The Census Bureau estimated that there would be about 22 million HUs in the address listing areas, or 19.1 percent of the nation's housing. The work of listers

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<sup>21</sup> U.S. Census Bureau, “The Census Bureau's Master Address File (MAF): Census 2000 Address List Basics,” March 1999, pp. 10–11.

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included listing specific information for each habitable residential structure on address listing pages in an address register, assigning a map spot number and mapping a map spot and its number for each residential structure, and updating and correcting the block maps. The National Processing Center (NPC) keyed the addresses and their map spot numbers into a master address file update file (MAFUF) and inserted map changes into the TIGER database.<sup>22</sup>

**Block canvassing.** For the Census 2000 Dress Rehearsal, the Census Bureau checked addresses inside the blue line only at selected multiunit structures (targeted multiunit check [TMUC]) and in specific blocks where it believed that the agency's list of city-style mailing addresses was likely to be incomplete (targeted canvassing [TC]). These two special, one-time operations were replaced by block canvassing for Census 2000 because the Census Bureau determined that it needed to perform a full-scale canvass of addresses for all blocks within the initial blue line—just as it had done in the prec canvass operation for the 1990 census. This would ensure that, for the areas in which the USPS delivers virtually all mail to city-style addresses, the agency had accurately recorded every residential mailing address and the block in which each was located. However, the NPC did key the address additions, deletions, and corrections from the TMUC and TC operations so they could be entered into a MAFUF and then applied by the GEO to the MAF.

Beginning in January 1999, block canvassing took place in areas classified as TEA 1 in all or part of 2,096 counties. Only 147 of these counties were coded entirely to TEA 1 and therefore were block-canvassed in their entirety. Block canvassing also took place in TEA 6, which applied to pre-identified military bases located in TEA 2 areas. In addition to verifying the completeness and accuracy of the Census Bureau's mailing list, the field staff updated and corrected the TIGER-based maps to reflect what they found on the ground. The work took place in three waves based on expected weather conditions in the various parts of the nation. (The number of addresses provided from the MAF by the GEO to the DSCMO for printing in the address registers used for block canvassing appears in parentheses.)

Wave 1: mid-January–beginning of February 1999 (33 million, or 35 percent)

Wave 2: mid-March–mid-April 1999 (44 million, or 47 percent)

Wave 3: mid-April–mid-May 1999 (17 million, or 18 percent)

The regional census centers (RCCs) and about 90 census field offices conducted the first two waves; early opening local census offices (LCOs) carried out Wave 3 and a later supplemental Wave 4. The total number of addresses in the three waves was more than 94.3 million. Although every residential structure on the ground was to be checked to ensure that its address appeared on a listing page, the enumerators were given special instructions for this operation. They were to try to get an interview with an inhabitant to check the address of every multiunit structure, of every HU without a house number as part of its mailing address, and at one of every three listed freestanding single-family houses. In the latter case, when an enumerator visited a designated address he or she verified the addresses of the two adjacent houses and the number of HUs at each address. If an address did not appear on the list, the enumerator conducted an interview and, if necessary, recorded the missing structure's address. Using an excerpt of the DMAF, the Technologies Management Office flagged every address to be visited and identified each one with an asterisk next to the address on the address listing page in the address register.

The block canvassing operation provided 9.5 million additional residential addresses and 69,500 additional special place addresses, as well as 2.4 million corrections and over 8.2 million doubtful addresses (nonexistent, uninhabitable, duplicate, nonresidential, etc.). Because the Census Bureau did not want to discard possibly good addresses that the enumerators had misclassified, but also wanted to have the cleanest address list possible, the agency checked the accuracy of an estimated 1.4 million deleted addresses by including them in the LUCA Field Verification operation

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<sup>22</sup> U.S. Census Bureau, "Program Master Plan: Census 2000 Address Listing Operation," Census 2000 Informational Memorandum No. 80, November 14, 2000; Megan C. Ruhne, "The Address Listing Operation and Its Impact of the Master Address File," Census 2000 Evaluation No. F.2, January 30, 2002; and Frank A. Vitrano, Robin A. Pennington, and James B. Treat, "Address List Development in Census 2000," *Census 2000 Topic Report No. 8*, March 2004.

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(see LUCA section below). It also had to establish special rules for dealing with a significant number of added addresses that matched addresses already in the MAF but were assigned to a different census block, or addresses for apartment buildings or trailer courts that were identified as single-family HUs.

The NPC keyed the address updates and revisions into MAFUFs and inserted map changes into the TIGER database. Revisions to the address-to-block-number relationship, which were recorded in the MAF, were used to correct the address range information in the TIGER database, thereby assuring consistency with the MAF. To ensure the accuracy of this information, the Census Bureau imposed a “reconciliation edit” on the block canvassing information to identify and resolve discrepancies between the block canvassing MAFUF and the geographic records in the database. Using a block canvassing MAFUF, the block canvassing address registers, and the assignment area (AA) maps, staff in the NPC reviewed disposition lists that identified the mismatches. Mismatches included several basic situations:

- The block/feature-name combination for an added address did not match the TIGER database.
- The lister did not provide a block number.
- An apartment building or trailer park used a name rather than a house-number/street-name address.
- An HU was located in a block offset from the address’s street feature.
- A feature name was spelled differently from its listing in the TIGER database.
- The name of an added feature did not appear in the TIGER database.

The NPC resolved about 645,000 addresses, and flagged unresolvable cases, which they referred to the RCCs’ geographic staffs for resolution by creating “key geographic locations” or by using the MAFGOR process and field revisits. The RCCs revised and updated the MAF and the TIGER database with information obtained from the block canvassing operation through July 1999.<sup>23</sup>

**Post-Block Canvassing TIGER® Update (PBCTU).** The NPC flagged edit problems that they could not resolve. From April through July 2000, the PBCTU operation continued the review of the nonmatch disposition lists, followed by an integrated update of the MAF and the TIGER database based on the findings of that review. Field Division (FLD) submitted just over 650,000 unresolvable problems to the RCCs for resolution, primarily via reference to MAFGOR materials. The RCCs reviewed only those records that had already been researched during the previous update of the TIGER database or that had been checked in the field and required a revision of the MAF rather than TIGER. They updated only the block numbers and street/road names associated with almost 300,000 addresses in the MAF; no TIGER updates were performed at this stage. The residual cases were deferred for further review based on the output from the edits for the Automated Address Range Program (AARP) operation. Completion of the PBCTU enabled the GEO to proceed with the AARP in time for an updated database to be available for the coverage improvement follow-up operation. FLD had requested that the results be included in time for the nonresponse follow-up operation, but requirements of other projects prevented the GEO from doing so.

**American Community Survey (ACS).** The Census Bureau undertook this post-Census 2000 survey in order to provide annual current data for the social and economic characteristics of the population of the nation and selected geographic entities. However, the agency began the survey on a test basis in 4 counties in November 1995 and in 36 counties beginning in 1999. It conducted the Census 2000 Supplementary Survey using ACS methodology in 1,203 additional counties during 2000 so it could compare national and state estimates with the data from the Census 2000 long-form questionnaires. These ACS field operations used maps derived from the TIGER database and a sample of addresses selected from the MAF. The field work revealed a small number of addresses that did not exist or had changed. These corrections were not carried to the MAF

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<sup>23</sup> U.S. Census Bureau, “Block Canvassing Operation Requirements Overview,” June 1, 1998; “Census 2000 Block Canvassing Operation,” Census 2000 Informational Memorandum No. 10, April 13, 1999; and Joseph A. Burcham, “Block Canvassing Operation,” Census 2000 Evaluation No. F.5, April 5, 2002.

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or TIGER for Census 2000 because it was anticipated that they would duplicate corrections found during regular census operations; furthermore, they were not considered to be part of Census 2000. The ACS field staff also noted the need for a few corrections to the map information, but there was no mechanism for reporting this officially or carrying it into TIGER.<sup>24</sup>

**Local Update of Census Addresses (LUCA)** (also referred to as **Address List Review**). Until Congress passed P.L. 103-430, the Census Address List Improvement Act of 1994, it was illegal for the Census Bureau to show its address list to anyone who was not a sworn agency employee. One purpose of this legislation was to ensure a more accurate census by authorizing the USPS to provide as much address and related information and assistance to the Census Bureau as possible. In addition, the legislation allowed local and tribal government officials the opportunity to review previously restricted address information so they could improve the accuracy and completeness of the Census Bureau's address list. However, because the addresses continued to be covered by Title 13 of the U.S. Code, the reviewers had to comply with the agency's confidentiality requirement; i.e., although they could review the addresses, they could not share them with anyone else, nor were they allowed to use them to update or improve their own records or to take any enforcement action. The people who expected to work with the address materials for the local and tribal governments had to sign a confidentiality agreement before the Census Bureau would allow a governmental unit (GU) to participate in the program; in addition, anyone who subsequently worked with the materials had to sign the agreement first. The GU provided the appropriate RCC with the signed confidentiality agreement, followed by updated copies to cover any additional people who worked with the addresses. The Census Bureau asked each GU to identify one person to serve as the primary liaison for the program.<sup>25</sup> The program was officially referred to as Address List Review, but it was more popularly known by the acronym LUCA (for Local Update of Census Addresses).

The benefits of participating in the LUCA program were several. Most important was that local and tribal officials had an opportunity to review the Census Bureau's addresses and maps before the census took place. Possible errors identified and reported at this stage were relatively easy to check and correct if necessary; once past this stage, problems could be more difficult to resolve. Furthermore, the officials who chose to participate developed a better understanding of the procedures and concepts involved in taking a census. A considerable amount of goodwill and understanding developed between the participants, the state and metropolitan agencies assisting them, and the Census Bureau as a result of the interaction that took place during this operation. Although many GUs chose not to participate, those that did contained an estimated 85 percent of all addresses in the United States. Those that did not participate, but reviewed the materials, became aware that the census was imminent and that the Census Bureau had made an effort to let them help improve it and to show them how they might contribute in the future; a nonparticipating GU could also make arrangements for a participating GU or agency to include the area when the latter performed its review.<sup>26</sup>

The Census Bureau first tested the LUCA program in the 1995 test census sites and the 1996 Chicago and Acoma Pueblo test sites, and did so again for the dress rehearsal sites. The LUCA for the test sites was carried out by the DSCMO, which controlled the address file at this time (subsequent address list and map reviews were under the auspices of the GEO). These reviews, which began 8 months prior to the census tests, included the same operations discussed below for the Census 2000 LUCA, with the exception of an appeal process. For the test censuses, all five areas participated. For the dress rehearsal, both the city of Sacramento and the Menominee tribe agreed to participate in LUCA, but only 31 of the 60 eligible GUs in the South Carolina site participated in

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<sup>24</sup> U.S. Census Bureau, "Meeting 21st Century Demographic Data Needs—Implementing the American Community Survey: July 2001," Report 1: Demonstrating Operational Feasibility.

<sup>25</sup> See U.S. Census Bureau, "Local Update of Census Addresses (LUCA) Program—Address List Review: Confidentiality and Security Guidelines," and U.S. Census Bureau, *LUCA Technical Guide*, Chapters A-2, A-9, and B-4.

<sup>26</sup> U.S. Census Bureau, "Program Master Plan: Census 2000–1998 Address List Review Program," Census 2000 Informational Memorandum No. 32, November 23, 1999; U.S. Census Bureau, "Program Master Plan: Census 2000 Master Address File," Census 2000 Informational Memorandum No. 102, May 1, 2001; and Karen L. Owens, "Evaluation of the Local Update of Census Addresses 98 (LUCA 98), Census 2000 Evaluation F.3." April 16, 2003.



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LUCA; however, because of the participation of the city of Columbia, SC, the participating GUs contained 98 percent of the HUs enumerated for the 1990 census. After the completion of LUCA, but before the census tests, Census Bureau representatives visited each test site for a debriefing in which participants provided feedback as to how LUCA might be improved.<sup>27</sup>

For Census 2000, the Census Bureau invited local governments and American Indian tribes that were recognized by the federal government and had a land base (i.e., a reservation and/or off-reservation trust land) to verify the accuracy and completeness of their portion of the agency's address file and to review, update, and correct the agency's map information. This included the tribes in Oklahoma, even though only the Osage Tribe had an officially designated land base. Those tribes and local governments that expressed interest in the program were invited by mail to participate in training workshops (see below). Those that said they would participate but did not respond further, and those that declined to attend, were sent a follow-up letter offering them another opportunity to participate. Three different letters of invitation were sent, depending on whether the GU was entirely within TEA 1, entirely outside TEA 1 (except list/enumerate areas), or covered by both types. The invitation announced and explained the program, urged participation, and asked for an official liaison to serve as the contact person for this program. The RCCs' partnership specialists and geographic staff emphasized to government officials the importance of LUCA at meetings devoted to programs and operations for Census 2000. The RCC staff also telephoned nonresponding GUs to find out if they had received the letter and to encourage the GUs to participate; if necessary, the RCCs sent another copy of the letter and the related information. The Census Bureau involved the State Data Centers in the program, working with them to encourage GUs in their respective states to take part and keeping them up-to-date on the progress of participating GUs.

**LUCA 1998.** The first GUs that could participate were those located entirely or partly within the initial blue line; i.e., they contained blocks classified as TEAs 1 and 6 at that time. (Later, some of these areas were reclassified as TEAs 7 and 8.) These were the GUs for which the Census Bureau had geocoded house-number/street-name mailing addresses in its records for some or all of their blocks. Because the addresses of these GUs were already available in the MAF, LUCA could be performed first in these areas; accordingly, the Census Bureau referred to this operation as LUCA 1998. Those GUs that did not contain TEA 1 were asked to participate in the Address List Map Review. However, GUs with fewer than 20 percent of their blocks in TEA 1 were also asked to participate and postpone LUCA participation until LUCA 1999. Of the 679 that were asked about delaying their participation until LUCA 1999, 78 declined; i.e., they preferred to review two partial files for their communities: TEA 1 blocks for LUCA 1998 and the other blocks for Supplemental LUCA (see section below).

In February 1998, the Data Preparation Division sent a letter, signed by the appropriate regional director, to the highest elected official or other appropriate person for each GU. The letter explained the LUCA program and was accompanied by related program materials. In June 1998, all nonrespondents were sent a closure letter to confirm that they would not be participating, thereby giving them one last chance to participate. Also in June, officials who agreed to take part in the program were sent a confidentiality agreement. Finally, letters were sent to all GUs that agreed to participate but had not identified a liaison and/or submitted a confidentiality agreement. GUs that did not return a response and/or an agreement to the Census Bureau could not participate.

The Census Bureau determined how many residential addresses were in its file for each GU that contained TEA 1, and it provided this information to the RCCs. RCCs could share the counts with local and tribal officials, who could use the information to get an idea of how many addresses they needed to review and how many they estimated were missing, and therefore estimate how

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<sup>27</sup> See for example, Bettye Moohn, "1995 Census Test Results Memorandum No. 3, An Assessment of the Operational Effectiveness of the Local Update of Census Addresses Program Part 1—Urban Test Sites," July 7, 1995; Diane F. Barrett, "1995 Census Test Results Memorandum No. 10, An Evaluation of the Local Update of Census Addresses Program and the Master Address File—Urban Test Sites," October 24, 1995; and Bettye Moohn, "1995 Census Test Results Memorandum No. 19, An Assessment of the Operational Effectiveness of the Local Update of Census Addresses Program Part 2—Rural Test Sites," January 17, 1995 [sic, 1996].

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big a project they could expect this to be for their area. This could help GUs ensure that they would be prepared to proceed with the work—that is, they would have the time, space, staff, and funds needed—once they received the Census Bureau’s materials.

The Census Bureau asked participants in LUCA 1998 to update and correct its list of addresses for their GUs; delete nonexistent addresses; verify and, if necessary, correct the census block number to which the Census Bureau had assigned an address or group of addresses; enter missing addresses on special “add pages”; annotate the TIGER-derived maps to correct errors and omissions for features and their names; identify address ranges on the maps for added features that had city-style mailing addresses; and then return the materials to the appropriate RCC. To this end, the Census Bureau sent maps that showed the legal boundary recorded for the GU in the TIGER database and the census collection block numbers for the area within and adjacent to the GU. The address list showed the residential mailing addresses, both city-style and non-city-style, that the agency had on record for each census collection block in the GU. The GUs were to annotate errors on the lists, including identifying erroneous block assignments, and to use “add pages” or electronic files to report missing residential addresses and their blocks. They were also sent a list of the number of addresses in each block; this could obviate the need for a participant to check the individual addresses if the aggregate number of addresses agreed with the counts.

The Data Preparation Division<sup>28</sup> began sending the work materials for LUCA 1998—lists of addresses by block, counts of addresses by block, and appropriate maps—to participating GUs in May 1998. Materials were still being sent to late participants and selected others in late March 1999. GUs that announced their intention to participate by the end of November 1998 were allowed up to 3 months to review the list of addresses and the maps. They were to provide their response to the appropriate RCC. The Census Bureau required the last GUs to return their materials by March 15, 1999, unless the Census Bureau itself was at fault in the timely delivery of materials, in which case a GU had to provide the results of its review by July 5. The Census Bureau conducted a field verification from late July through October 1999, so that the NPC would have all results available for keying by the beginning of November. The agency completed the MAF update in late November, and the TIGER update in late December. Participants in LUCA 1998 added 5.3 million apparently new addresses, but only a little more than 3 million (58 percent) of these were retained for the census; however, the agency estimates that all but 505,530 of these addresses would have been found by Census 2000 operations. Participants also deleted some 490,600 addresses, but the Census Bureau did not delete any address until it was confirmed not to exist or not to be residential by a field check.<sup>29</sup>

**LUCA 1999.** This operation covered GUs that contained address listing areas (TEAs 2, 5, and 9) for which geocoded addresses and the associated maps became available in early 1999; i.e., after the agency had inserted into the MAF and the TIGER database the addresses, map spots and numbers, map corrections, and related information obtained by the address listing operation. LUCA 1999 included Puerto Rico. The Census Bureau mailed invitations to local and tribal governments from mid-September to early October 1998. The GUs had to inform the Census Bureau of their intention to participate by March 12, 1999.

For LUCA 1999, the Census Bureau provided an address list (participants were given a choice of a paper or electronic version), a count of addresses by block, and a set of maps that included the map-spotted living quarters. The agency asked the GUs to review and, if appropriate, challenge the count of addresses for each block, rather than the actual addresses. They also were asked to correct and update the Census Bureau’s maps. The agency mailed out the materials beginning in mid-January 1999. However, processing delays prevented a few address lists from going out until

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<sup>28</sup> The Census Bureau changed the name of this division to the National Processing Center (NPC) in 1998.

<sup>29</sup> U.S. Census Bureau, “Census 2000 Information Memorandum No. 32, Program Master Plan: Census 2000—1998 Address List Review Program,” November 23, 1999; U.S. Census Bureau, Census 2000 Information Memorandum No. 102, Program Master Plan: Census 2000 Master Address File, May 1, 2001; U.S. Census Bureau, “Assessment Report: Census 2000—1998, 1999, and Special Place Local Update of Census Addresses and New Construction Programs,” Census 2000 Informational Memorandum No. 140, July 21, 2003, pp. 1–3, 9, 11; and Karen L. Owens, “Evaluation of the Local Update of Census Addresses 98 (LUCA 98),” Census 2000 Evaluation F.3. April 16, 2003.

as late as mid-August, and mapping delays meant that a few maps were not sent until early September. The Census Bureau gave GUs 6 weeks to conduct their review, with the last submission of materials to arrive by May 12, 1999; this date slipped to early October for GUs that received their LUCA materials late. Puerto Rico was on a separate schedule, with review conducted from May 17 to July 12. Forty-eight percent of the participating GUs challenged the address counts for 117,000 blocks, although a small number of these were duplicates because of overlapping GU boundaries. The challenges affected almost 2.2 million addresses in the United States and 35,563 in Puerto Rico. Census Bureau employees—called listers—reviewed the challenged blocks, and as a result, the Census Bureau added 328,174 addresses in the United States and 9,874 in Puerto Rico; 280,503 (about 85.5 percent) and 7,525 (about 76 percent), respectively, of these were retained for the census. The listers deleted 139,540 and 2,520 addresses, respectively, that, after being field-checked, were not used for the census.<sup>30</sup>

**LUCA training.** The RCCs scheduled workshops to explain the LUCA 1998 and 1999 programs to participants, but attendance was not mandatory. The workshops discussed concepts, the schedule, and confidentiality; trained the participants on how to read the Census Bureau's maps and use the address list and counts; and reviewed the various options for accomplishing the review and providing the required information. After being trained by RCC staff, some State Data Centers and other organizations also provided this training for local and tribal government officials. Since the procedures were different, there were different workshops for LUCA 1998 and LUCA 1999. Because LUCA 1999 covered areas where city-style addresses generally were not used for mail delivery, trainers had to show the participants how to use the Census Bureau maps that displayed map spots to identify the location of living quarters (LQs) associated with the address list and how to use the block counts to determine the need to challenge the agency's information. However, many addresses in LUCA 1999 did use city-style addresses, either for mail or for emergency services. Some GUs could participate in both LUCA 1998 and LUCA 1999 because they were split by the blue line.<sup>31</sup>

**Participation in LUCA 1998 and LUCA 1999.** All local and tribal governments located entirely or partially within the blue line were eligible to participate in LUCA 1998, while those in address listing areas were eligible to participate in LUCA 1999. GUs split by the blue line generally were eligible to participate in both. (However, some GUs were moved to the Supplemental LUCA program.) Eligibility and participation were as follows:

	LUCA98	LUCA99	Both	Total
Eligible for the program . . . . .	9,241	22,043	7,536	38,820
Expressed interest in participation . . . . .	8,463	8,845	2,676	19,984
Were sent maps and lists . . . . .	6,241	9,023	2,378	17,642
Subsequently dropped out. . . . .	224	588	10	822
Provided updates (or confirmed that no changes were needed). . . . .	5,681	4,368	1,011	11,060

The GUs participating in LUCA 1998 contained about 90 percent of the residential addresses available for review in TEA 1; for LUCA 1999, the GUs contained more than 62 percent of the HUs recorded by the Census Bureau in TEA 2. Of the 7,536 GUs eligible for both programs, 979 decided to receive materials only for LUCA 1998 and 1,144 only for LUCA 1999. More GUs were sent maps and lists for LUCA 1999 than expressed interest because, despite the alleged disinterest, they returned the confidentiality agreement that had been sent to them. Of the 2,378 GUs to which the Census Bureau did send the materials for both programs, 39 formally dropped out of

<sup>30</sup> U.S. Census Bureau, "Program Master Plan: Census 2000—1999 Address List Review Program," Informational Memorandum No. 33, November 23, 1999; U.S. Census Bureau, "Assessment Report: Census 2000—1998, 1999, and Special Place Local Update of Census Addresses and New Construction Programs," Census 2000 Informational Memorandum No. 140, July 21, 2003, pp. 3–4, 9, 12–13; and Karen L. Owens, "Evaluation of the Local Update of Census Addresses 99 (LUCA 99)," Census 2000 Evaluation F.6. May 14, 2002.

<sup>31</sup> U.S. Census Bureau, "Assessment Report: Census 2000—1998, 1999, and Special Place Local Update of Census Addresses and New Construction Programs," Census 2000 Informational Memorandum No. 140, July 21, 2003, p. 10.

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only the 1998 program and 130 dropped out of only LUCA 1999. Of course, any GU that did not formally drop out may have simply decided not to do the work—but it may have found that another agency would do the work for the GU. Because the territory of some GUs or agencies overlapped either geographically or jurisdictionally, the coverage for GU participation was understated because a subsequent survey (see below) revealed that the addresses for 28 percent of nonparticipants were reviewed by a GU that did participate; similarly, 21 percent of participants that did not provide updates said their information was provided by another GU. Another 30 percent did not reply because they claimed they had no changes to report.<sup>32</sup>

**Supplemental LUCA.** The Census Bureau discovered a number of problems regarding the LUCA program. For 679 GUs mentioned above, the Census Bureau's address records had significantly fewer addresses in TEA 1 areas than the number of HUs tabulated in the 1990 census or the agency's 1996 estimates for the same areas. Most affected GUs agreed to a single review of all addresses in LUCA 1999. However, in November 1998, the Census Bureau decided to delay participation of most of these GUs in LUCA until the agency could improve its address list via the block canvassing operation; the Geography Division had flagged the TEA 1 blocks to identify them for inclusion in LUCA 1999. The Census Bureau placed the appropriate blocks for these GUs into a separate operation called the Supplemental LUCA 1998 program.

In addition, for 100 GUs in TEA 1 that were at the edge of or split by the blue line, the RCC's geographic staff reviewed the address file for each GU, and recoded all (for 39 GUs), some, or none of the blocks from TEA 1 to TEA 9, thereby placing the recoded blocks outside the blue line. As a result, instead of the addresses in these blocks being verified and updated via block canvassing, the Census Bureau implemented a previously unscheduled fourth wave of address listing. The recoding also changed the Census 2000 enumeration of these blocks from the MO/MB methodology to U/L. The GUs were reassigned to Supplemental LUCA so that they could review the housing counts after completion of Wave 4 of address listing.

The Census Bureau determined that several other GUs had not been given the opportunity to participate in LUCA, while others had already signed up, but were found to have address or block numbering problems. For them to participate in the LUCA program, they had to be included in Supplemental LUCA. These GUs included parts of each of the dress rehearsal sites, a county that had recently established city-style addresses, a jurisdiction whose agreement to participate in LUCA was delayed in the mail for 8 months, 89 newly established GUs, 686 GUs containing blocks that the Census Bureau had missed for either LUCA 98 or LUCA 99, and eight Indian tribes that shared a reservation with another tribe but had not been invited to participate in the original program.

As a result, Supplemental LUCA 1998 included not only areas that were originally in LUCA 1998, but areas that should have been involved in LUCA 1999. Accordingly, this operation followed the same procedures as LUCA 1998 and/or LUCA 1999, depending on whether an address list was improved via block canvassing or created by address listing.

From early June through mid-September 1999, the Census Bureau sent letters inviting most of the affected GUs to participate in this program. A few GUs were dealt with separately when the agency discovered a specific problem. The lateness in implementing Supplemental LUCA 1998 left the Census Bureau no time to conduct separate workshops for this operation; instead, the mailout included a separate explanation of this phase of LUCA as a supplement to the LUCA 1998 and LUCA 1999 technical guides. The last addresses from Supplemental LUCA were inserted into the MAF at the end of June 1999. As a result, the Census Bureau did not ship the necessary materials to the participants until late August through early October 1999. Most GUs were allowed 6 weeks to review, annotate, and return the materials to the appropriate RCC—i.e., by the end of November 1999—but by special agreement, the South Carolina dress rehearsal entities were allowed 3 months, until early January 2000. A total of 2,015 GUs—1,813 of them entirely or significantly in

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<sup>32</sup> Karen L. Owens, "Evaluation of the Local Update of Census Addresses 98 (LUCA 98)," Census 2000 Evaluation F.3., April 16, 2003, and Karen L. Owens, "Evaluation of the Local Update of Census Addresses 99 (LUCA 99)," Census 2000 Evaluation F.6. May 14, 2002.

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block canvassing areas—were included in Supplemental LUCA 1998. Field verification for the challenged blocks in these GUs took place from October 20 to late January 2000.<sup>33</sup>

**The LUCA operation.** The Census Bureau provided each participating GU with:

- A list (either a paper printout or a computer-readable file on compact disc, floppy disk, or computer tape) of the addresses recorded in the MAF for each block in a GU.
- Tallies of those addresses by both Census 2000 collection block number and 1990 census tabulation block number.
- A set of maps that showed the collection blocks and the most current legal boundary recorded in the TIGER database for the GU.
- A listing that showed on which map sheet(s) each collection block appeared.
- A technical guide that contained instructions on performing the LUCA review.

The address lists used two types of forms, depending on whether or not the GU was a tribal government; one displayed the high-level geographic information related to the Census Bureau's standard geographic entities (county, county subdivision, incorporated place), while the other displayed tribal-related information. For the dress rehearsal LUCA, all addresses—city-style and non-city-style—were intermingled on a single list. The Census 2000 operation used two different types of pages for city-style addresses and non-city-style addresses, because the Census Bureau found that dress rehearsal LUCA participants were confused by the mixture of address types on a single list and the separate method of responding to each type. The GUs in LUCA 1998 and Supplemental LUCA 1998 also received a set of add pages on which to record missing addresses. GUs that chose to receive their address information electronically did not receive the add pages because they could report missing addresses via the electronic file.

For LUCA 1998, when GUs returned updated and corrected address and map information, the RCCs verified the information against what its field staff reported during the block canvassing operation.

The Census Bureau originally planned to update the MAF with the updates from LUCA, and then have all the addresses checked during the block canvassing operation; however, only some of the updates were incorporated into the MAF before block canvassing had to proceed. Beginning in April 1999, the RCC staff performed a second on-the-ground check of all disputed addresses in selected blocks, called the LUCA Field Verification operation.<sup>34</sup> The Census Bureau also planned to undertake a reconciliation process for LUCA 1998, in which an RCC would contact a GU in an attempt to resolve some or all of the disputed addresses, but it dropped the idea because of problems in coordinating the logistics of such an operation in the limited time available. The list of addresses covered by the verification operation included all the addresses recorded in the MAF for the block, including those added by the GU, but these (and any other changes the GU made) were flagged for special attention by the field staff ("listers"). The field verification operation also checked residential addresses deleted during the block canvassing operation to ensure that they really should not appear in the MAF; these addresses were flagged for special attention on the listers' address lists. Originally, the Census Bureau was going to perform field verification for a sample of the disputed addresses, but it dropped this idea after determining that the results would neither validate nor invalidate the unsampled addresses. If the agency decided to recanvass blocks in a GU, the RCC was instructed to complete this work within 30 days. Field verification began at the end of July 1999 and was completed by the end of October. All information found by this operation was added to the MAF<sup>35</sup> and the TIGER database, as appropriate, by the National Processing Center (NPC). The Census Bureau retained all disputed addresses in the MAF with a flag and did not actually delete them unless and until confirmed with a site visit by field staff.

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<sup>33</sup> Karen L. Owens, "Evaluation of the Local Update of Census Addresses 98 (LUCA 98)," Census 2000 Evaluation F.3., April 16, 2003, pp. 4–5 and U.S. Census Bureau, "Assessment Report: Census 2000—1998, 1999, and Special Place Local Update of Census Addresses and New Construction Programs," Census 2000 Informational Memorandum No. 140, July 21, 2003, pp. 2–3.

<sup>34</sup> *Federal Register*, Vol. 63, No. 12 (January 20, 1998), p. 2950.

<sup>35</sup> The Census Bureau did not key each new address or address revision directly into the MAF. Instead, staff (usually at the NPC) used a specified format to key new addresses and revisions into a file, which the agency's Decennial Systems and Contract Management Office (DSCMO) converted into a master address file update file

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The Census Bureau then provided each GU with a written detailed feedback/final determination of its findings, which the agency tried to produce within 30 days. The Census Bureau sent the final determination materials to participating GUs from the end of October 1999 through the end of February 2000. For collection blocks in TEAs 1, 6, 7, and 8, these materials included the final address list, a summary of the number of address updates accepted and not accepted, the number of residential addresses in each block before and after the LUCA process, a “transaction report” listing all address updates submitted by the participant and their disposition by the Census Bureau, and a map of the GU showing all census features and collection block numbers recorded in the TIGER database; the maps did not show map spots.<sup>36</sup>

For LUCA 1999, the Census Bureau also planned to do reconciliation/field verification, which would entail a complete recanvass of blocks that participants identified as having an incorrect count of residential addresses. As for LUCA 1998, the Census Bureau planned a reconciliation process that would try to resolve disputed counts by reviewing problem addresses with GUs, but as noted above, time did not permit carrying it out. For field verification, each block served as a separate assignment area for a lister. For each unresolved disputed block, a lister was given a list of the information recorded for each housing unit during address listing with a computer-produced copy of the map-spotted block map. The listers visited each assignment area—i.e., block—where they checked, by interview and observation, the information for each housing unit they found against the information recorded in an address register and on a census block map. They recorded corrections and omissions both in the register and on the map, as appropriate. The Census Bureau planned to complete this operation within 21 days. All information found by this operation was added to the MAF and the TIGER database, as appropriate, by the NPC. Within 30 days, the agency provided detailed feedback/final determination information for the disputed blocks to the GUs that had challenged the counts, together with a new set of maps. However, GUs that returned the LUCA materials late did not receive this information, and the Census Bureau did not perform field verification for those areas. Field verification began in early May 1999, with the bulk of the cases completed by June 19 and the remainder by the end of August; for Puerto Rico, the recanvass was performed during August 18 to 30. The Census Bureau sent the final determination materials to participating GUs from the end of September 1999 through late February 2000.<sup>37</sup>

As the LUCA operation was winding down, the Geography Division held a debriefing on November 4, 1999, of geographers from six RCCs. There was general agreement on a number of major problems:

- The Census Bureau provided insufficient support of the LUCA program, the RCCs did not have enough knowledgeable people, and too many areas at headquarters were involved.
- The Census Bureau relied too heavily on local/tribal governments’ ability to use electronic files.
- The RCCs needed to have more freedom to control the operation for their area, including modifying the training materials to reflect situations in their areas.
- The control system did not work well, primarily because it was too inflexible, resulting in some RCCs maintaining a shadow control file that they felt better served their needs.
- Having some GUs deal with two types of LUCA programs created operational problems.

(MAFUF) that stored the information until all the addresses for a job had been entered. When the Geography Division was ready to merge the completed file into the MAF, the DSCMO transferred the appropriate MAFUF(s) to the Geography Division to enter via a batch process. Each time a job started with a fresh file, a new MAFUF was created. The Geography Division could merge one, several, or many such files at one time.

<sup>36</sup> *Federal Register*, Vol. 64, No. 125 (June 30, 1999), pp. 35550–51; U.S. Census Bureau, “Census 2000 Informational Memorandum No. 32, Program Master Plan: Census 2000—1998 Address List Review Program,” November 23, 1999; U.S. Census Bureau, Census 2000 Informational Memorandum No. 102, Program Master Plan: Census 2000 Master Address File, May 1, 2001; U.S. Census Bureau, “Assessment Report: Census 2000—1998, 1999, and Special Place Local Update of Census Addresses and New Construction Programs,” Census 2000 Informational Memorandum No. 140, July 21, 2003, pp. 1–3, 9, 11; and Karen L. Owens, “Evaluation of the Local Update of Census Addresses 98 (LUCA 98),” Census 2000 Evaluation F.3., April 16, 2003.

<sup>37</sup> *Federal Register*, Vol. 64, No. 125 (June 30, 1999), pp. 35551–53.

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- Changes in the program and delays in delivery of materials caused problems for both the RCCs and the GUs and strained relations with some of them.

The Census Bureau did not conduct LUCA for blocks slated for the list/enumerate procedure. LUCA was a precensus activity, and in list/enumerate areas, the addresses and counts were not available for review until the enumeration was completed and all the enumerator updates and addresses were entered into the TIGER database and the MAF. Thus, approximately 282,000 collection blocks in all or part of 1,215 GUs in 187 counties and statistically equivalent entities in 19 states were not subject to review via the LUCA process. Instead, the Census Bureau initiated a number of quality assurance checks to ensure that enumerators did not miss any housing units in list/enumerate areas, use the wrong type of questionnaire, identify occupied housing units as vacant, etc.; these are discussed later in this chapter. In the remote areas of Alaska, the team leader responsible for the enumeration—who occasionally served as the enumerator—asked the leader(s) of the village or community, after being sworn to uphold census confidentiality, to check the list of HUs and group quarters after the team leader felt that the enumeration was complete. This served, in effect, as a special approach to an address list review.<sup>38</sup>

**The LUCA appeals process.** If a GU disagreed with the content of the final list of addresses or address counts, the GU had the right to attempt to prove that the addresses and/or streets existed by challenging the Census Bureau's decisions through an appeals process. The Census Address List Appeals Office, an independent, temporary federal office not affiliated with the Department of Commerce, reviewed the appeals. This office was established by the administrator of the Office of Information and Regulatory Affairs (OIRA, part of the federal government's Office of Management and Budget [OMB]) in consultation with both appropriate Census Bureau staff and the chief statistician of the OMB. The OMB published the appeals process (and, indeed, the entire LUCA process) in the *Federal Register* on June 30, 1999.<sup>39</sup> A GU had to file its appeal within 30 calendar days after the Census Bureau sent the address list and maps for detailed feedback/final determination. To assist in the review of 1998-style challenges, the Census Bureau provided the Appeals Office with CD-ROM files on a flow (weekly) basis of the same detailed feedback lists and detailed feedback processing reports that it provided to participants. The Appeals Office received the first challenges on October 7, 1999. It planned to resolve all appeals of LUCA 1999 materials by January 14, 2000, so that any addresses it added could be used for the U/L operation, and LUCA 1998 materials before Census Day. However, because of the late shipment and local review of the materials for many GUs, the latter date for resolution slipped to late April 2000. The last appealed addresses were added to the MAF in June. The late addresses were either mailed a questionnaire if they were processed before Census Day (April 1, 2000) or field-checked and, if appropriate, enumerated during the coverage improvement follow-up operation (see below).

For LUCA 1998, a total of 697 participants appealed, but 52 of these appealed after the deadline and were denied as untimely. Thus, the Appeals Office processed 645 LUCA 98 appeal cases. GUs challenged a total of 322,914 addresses, of which the Appeals Office accepted 302,507. For LUCA 1999, 700 participants appealed, of which 80 appealed late and were denied as untimely. For the 620 LUCA 1999 cases that were processed, the Appeals Office reviewed a total of 23,465 addresses and accepted 19,529. These figures include 46 GUs that challenged the Census Bureau's records for both LUCA 1998 and LUCA 1999. As a result of the appeals process, the Census Bureau was directed to add, and attempt to enumerate, 322,036 residential addresses that met its standards for inclusion in the MAF. The GEO was unable to geocode 1,644 addresses despite the best efforts of the Master Address File Geocoding Office Resolution and Targeted Map Update operations; although these addresses could not be submitted for enumeration, GEO stored them in the MAF with a special flag. GEO inserted into the TIGER database all addresses that appellants showed with a map spot, both inside and outside the blue line; the few that were inside the blue

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<sup>38</sup> U.S. Census Bureau, "Program Master Plan: Census 2000—1999 Address List Review Program," Informational Memorandum No. 33, November 23, 1999; U.S. Census Bureau, "Assessment Report: Census 2000—1998, 1999, and Special Place Local Update of Census Addresses and New Construction Programs;" Census 2000 Informational Memorandum No. 140, July 21, 2003, pp. 3–4, 9, 12–13. Karen L. Owens, "Evaluation of the Local Update of Census Addresses 99 (LUCA 99)," Census 2000 Evaluation F.6. May 14, 2002.

<sup>39</sup> *Federal Register*, Vol. 64, No. 125, pp. 35547–58.

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line represented non-city-style mailing addresses. Census 2000 field operations found that 141,580, or just over 44 percent, of the 320,392 geocodable addresses qualified as housing units for inclusion in the census.

**Survey of participation in LUCA.** In order to improve the effectiveness of the LUCA program for future operations, the Census Bureau contracted with Anteon Corporation to conduct a survey of a sample of 3,265 local and tribal governments that were eligible to participate in the 1998, 1999, and Supplemental LUCA programs. From February to March 2001, Anteon tested its survey form on two GUs in each of the following categories: nonparticipants (2,045 GUs in the survey), participants that did not provide updates (820), and participants that provided updates (400). A nonparticipating GU was defined as one that did not receive an address list and/or map because it did not sign a confidentiality agreement or dropped out of the program before the materials were sent. A disproportionately higher portion of the sample was directed toward nonparticipants and nonrespondents because of the importance of finding out how the Census Bureau might encourage them to participate in or respond to a future LUCA.

Beginning on April 9, 2001, the NPC sent letters notifying the highest-elected officials (but not the LUCA contact persons) that their local or tribal governments had been selected to participate in the survey; the following week, the NPC mailed the survey forms, together with a cover letter signed by the Director of the Census Bureau, that were tailored to each of the three categories; and 1 week after that, sent thank-you/reminder postcards. The agency asked the GUs to respond within 2 weeks of receipt of the materials. During the week of April 30, the NPC sent a follow-up cover letter and another copy of the appropriate questionnaire to GUs that had not responded; this letter again requested a response within 2 weeks. The various correspondence provided a toll-free number for assistance. Anteon received 1,398 responses—42.8 percent of the GUs contacted—by its final deadline of June 22. Responses were received from 226 (56.5 percent) of the surveyed GUs that provided updates, 349 (42.6 percent) that did not provide an update, and 823 (40.2 percent) of nonparticipants. Anteon did not tabulate an additional 85 survey forms received in the 10 weeks after that date—which increased the response rate to 45.4 percent—but provided the GEO with a summary of the information contained in those responses.

Those that did participate in LUCA indicated the main reason why was that their area had experienced significant changes in the housing inventory—one can infer that they wanted to be sure that the Census Bureau was aware of all their new residential addresses—and they had a readily available source of addresses. Nonparticipants and nonrespondents noted that the main drawbacks to participating or responding were lack of funds and/or personnel and the volume of work, including insufficient lead time to obtain the necessary funds and staff and to assemble the information—and then actually doing the work. Some did not have a readily available source of address information for their area, while others had concerns with signing the confidentiality agreement and/or ensuring the security of the information. A total of 53 GUs—21.4 percent of nonparticipants that responded—reported that another level of government covered their area in its participation; thus, one can surmise that the addresses for a substantial number of GUs were reviewed for LUCA even though they themselves did not participate directly. Many of the smaller GUs reported that there was no change in their housing inventory. Despite the several mailings and follow-up related to LUCA, 60 percent of nonparticipants did not recall being invited or contacted about the program. Overall, 66 percent of the respondents that remembered the program indicated overall satisfaction with it—regardless of whether or not they had participated—and 78 percent said they would be interested in participating in future LUCA-type programs; for those that actually had provided updates, the corresponding numbers were much higher: 86 and 94 percent, respectively.<sup>40</sup>

**LUCA special place program.** Special places were not covered by the regular LUCA program. In mid-November 1999, the NPC sent an invitation letter to 18,458 GUs that had previously provided a confidentiality agreement for the LUCA program (regardless of whether they actually performed

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<sup>40</sup> Karen L. Owens, "Evaluation of the Local Update of Census Addresses 98 (LUCA 98)," Census 2000 Evaluation F.3. April 16, 2003, pp. 14–26; Karen L. Owens, "Evaluation of the Local Update of Census Addresses 99 (LUCA 99)," Census 2000 Evaluation F.6. May 14, 2002, pp. 13–17.



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the review). For five GUs for which the Census Bureau did not have the name of an official to contact, the appropriate RCCs sent the invitation separately by November 29. The purpose of this program was to verify that the Census Bureau's records accurately included all special places in each GU, thus ensuring that the residents of these facilities would be enumerated for Census 2000. The review applied only to special places, not to the individual facilities—dormitories, wards, etc.—that constitute group housing within a special place. The Census Bureau asked the GUs to respond to the invitation by December 3 (December 6 for municipios in Puerto Rico, and December 15 for the five GUs invited by the RCCs) if they wanted to participate in this program.

A total of 3,731 GUs offered to participate in the program; of these, 32 had not participated in the regular LUCA Program. The Census Bureau, from mid-December 1999 through early January 2000, sent these GUs a list of the names, addresses, physical/location descriptions (if appropriate), collection block numbers, and related information for the special places known to exist within their boundaries. The Census Bureau provided the list only as a paper product; an electronic file was not an option. GEO created this list by integrating into the MAF the special places in the DSCMO's November 1999 special place control file. The Census Bureau also provided a block-numbered map if a GU had not retained the map it used for the LUCA program or if it had not returned materials and therefore did not receive the latest version of the agency's map of the area for detailed feedback/final determination. These maps did not include map spots. Both the address lists and the maps were printed and mailed by the NPC.

GEO prepared a technical guide that explained how the GUs were to perform the work. As with LUCA, a participant was to identify errors and omissions. A GU had 4 weeks from the date of receipt of the list and map to review and return the materials to its RCC—i.e., late January to early February 2000. For a few GUs, the Census Bureau extended the deadline to as late as April 26, and RCCs accepted submitted materials through May 5. A total of 1,960 GUs returned address lists and/or add pages to the RCCs.

The Census Bureau did not conduct a detailed feedback/final determination operation for, nor did the appeals process apply to, the LUCA special place program. Instead, the RCCs passed the changes on to the LCOs for review and, if appropriate and timely, inclusion during the local knowledge update operation.<sup>41</sup>

**New Construction program.** In April 1999, the Census Bureau decided to implement a program that would supply information about housing that was constructed in MO/MB areas between the time of the LUCA program and Census Day. (This procedure was not necessary in other areas because the agency's field staff visited the HUs in areas on or about Census Day and updated the address list.) The Census Bureau initiated this program to help allay fears expressed by local and tribal governments that the census would miss new HUs in these areas where, except for input from the late delivery sequence files (DSFs), the address list used for the mailout had not been updated since the block canvassing and LUCA operations.<sup>42</sup>

In mid-October 1999, the RCCs sent letters inviting the 18,690 GUs that were eligible to participate in LUCA 1998—that is, those that contained blocks whose HUs predominantly used city-style mailing addresses (TEAs 1, 6, 7, and 8)—to provide mailing addresses for HUs that were newly built or expected to be completed for occupancy by Census Day. Thus, this program offered a final opportunity for GUs to help update the Census 2000 address list. It also provided a second chance for participation by those GUs that did not take part in LUCA 1998. The Census Bureau did exclude one type of geographic entity that it had permitted to participate in LUCA 1998: Oklahoma tribal statistical areas. These did not have a legally defined land base, and the associated tribes should not have been included in the earlier program.

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<sup>41</sup> U.S. Census Bureau, "Program Master Plan: Census 2000 Local Update of Census Addresses Special Place Program," Census 2000 Informational Memorandum No. 69, August 28, 2000; U.S. Census Bureau, "Assessment Report: Census 2000—1998, 1999, and Special Place Local Update of Census Addresses and New Construction Programs," Census 2000 Informational Memorandum No. 140, July 21, 2003, pp. 4–5.

<sup>42</sup> The New Construction program laid the groundwork for the Census Bureau's Community Address Updating System, a program that will help update the MAF in preparation for the 2010 Census.

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As in LUCA, each GU that chose to participate had to complete and submit a confidentiality agreement (even if the GU had done so previously) before the Census Bureau would send a copy of its map of the GU and the related list of addresses. The GUs originally had until November 1, 1999, to respond, but because of the importance of this program, the Census Bureau sent a follow-up closeout invitation letter to all nonresponding GUs during the first half of November. The letters set November 24 as the final date for GUs to inform the Census Bureau of their intention to participate. However, the RCCs accepted confidentiality agreements if they were actually in hand by December 3 (matching the final date for accepting participation in the LUCA Special Place program). A total of 5,877 GUs agreed to participate; 2 others returned confidentiality agreements, but then withdrew from the program. Of these, 833 had not participated in the LUCA program. (A few of these did not have the opportunity to participate because they came into existence after that program was underway.)

The participants had the choice of receiving the list of addresses on paper or electronically; 2,810 (48 percent) chose to receive paper. Separate lists reported the number of HUs in each census block and provided a block-to-map relationship. A new set of maps was provided to each participant, together with a new block-to-map relationship list. The NPC prepared and shipped all materials, including a training guide. Unlike with the LUCA program, the Census Bureau did not offer workshops to help the GUs understand this program, because time did not permit such an effort.

The GUs were asked to update the maps for missing streets and to provide any new (or missing) residential city-style mailing addresses, together with their census collection block numbers, on a specific form or in a computer-readable format. The Census Bureau began producing the outgoing materials on December 16, 1999, which was the effective date for the GUs included and the legal boundaries used. The NPC sent materials for the New Construction program from mid-January through mid-February 2000—generally, after the GEO had input the latest information from the November 1999 DSF into the MAF—with replacements and missing materials provided by late March. Between February 14 and 25, the Census Bureau sent a reminder letter about the program and deadline. To this end, GEO provided a list of participants' fax numbers to the agency's Technologies Management Office, which used its automated fax capability to distribute the letter to participants. The RCCs mailed the letter to participants for which GEO did not have a usable fax number. The Census Bureau sent the letter to 7,434 highest- elected officials and/or program liaisons, of which 7,055 (95 percent) were faxed successfully. The first reply was received 10 days after the mailout, although the participants could submit their information postmarked no later than April 3, 2000; 2,857 GUs actually did so. The GEO tracked participation in this program via the geographic program participant database (see Glossary). As with LUCA, long after the operation was over, the Census Bureau determined the need to remind the liaisons of their responsibility to return or destroy the address lists and map-spotted maps.

Six GUs decided to submit information for the New Construction program even though they had not provided confidentiality agreements, nor had the Census Bureau provided them with new maps and address listings. The agency accepted the addresses that met the requirements of the program.

Several GUs did not show block numbers that would identify the location of some or all of the addresses they provided. The Census Bureau attempted to geocode these addresses automatically. For approximately 8,000 addresses that the computer could not geocode for 22 participating GUs, the RCCs attempted to do so by using in-house reference sources (i.e., a Master Address File Geocoding Office Resolution [MAFGOR]-type operation), requesting information from the GUs and other local contacts, and, if necessary, undertaking field checks. Often, this required adding new streets and/or address ranges to the TIGER database. This operation was completed on April 28, 2000, and the RCCs completed posting the information to a master address file update file (MAFUF) on May 5. Despite the RCCs efforts, the agency could not geocode 812 addresses in 14 of the GUs. The Census Bureau did not include the uncoded addresses in any Census 2000 follow-up operation because they could not be assigned to specific geographic areas for field work, and the RCCs had already tried and failed to find them. It is likely that these addresses did not exist, and included housing that had not yet been constructed but for which a GU had an address in its records.

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The RCCs entered the map changes into the TIGER database by May 26 and the addresses into a MAFUF by May 31. GEO then unduplicated and merged the new addresses into the MAF, and geocoded them for inclusion in the decennial master address file (DMAF). All files were processed or reprocessed successfully by June 2. The Census Bureau kept the valid added addresses obtained by this program separate, to be visited by enumerators after the census was under way (as part of the coverage improvement follow-up [CIFU] operation). The goal was to ensure that an HU really did exist at each added address on Census Day and to enumerate it at that time if it qualified for inclusion. This was not a LUCA program, and thus was not subject to challenges through the OMB's Census Address List Appeals Office. Because all New Construction addresses were subject to a field check during the CIFU operation, permitting challenges would serve no purpose—nor would there have been time for a challenge to be reviewed and acted on. The Census Bureau estimated that this operation would add some 350,000 address records to the census, but it actually added 371,812 acceptable addresses; however, the CIFU operation deleted 196,792 (53 percent) of these, leaving 175,020 as apparently valid adds from the New Construction program.<sup>43</sup>

**Confirmation of destruction of Title 13 materials.** Long after the LUCA and New Construction programs were over, the Census Bureau decided it had to be sure that the confidential materials—address lists and map-spotted maps—provided to each of the 18,905 local and tribal governments for these programs had indeed been destroyed or returned to the appropriate RCC. The technical guide for each program contained a destruction form that a participant was to return when the work had been completed; alternatively, the participant was asked to return the maps and address list. To remind the participants of this requirement, and to ensure that they had followed through, the Census Bureau faxed a reminder letter, signed by the appropriate regional director, and a destruction form to the program liaison for GUs for which the agency did not have a record of having received either a destruction form or the materials for each program. If appropriate, a different reminder letter, without the form, was sent to the highest elected official of a participating GU. GEO provided the Census Bureau's Technologies Management Office (TMO), which had automated fax capability, with a list of fax numbers for specific participants. The TMO faxed the letters and forms in five waves from late July through mid-September 2000. The inclusion of a GU in a specific wave was based on the LUCA program(s) it had participated in and whether it had participated in the LUCA Special Place and New Construction programs, as follows (the second day was used to re-fax to addresses that failed the first day's transmission):

- Wave 1: July 24-25, to 2,356 GUs that had received these materials for the LUCA 1999 program
- Wave 2: August 10-11, to 6,666 GUs that had received these materials for the LUCA 1999 program or the LUCA Special Place program
- Wave 3: August 24-25, to 7,139 GUs that had received these materials for the LUCA 1998 program
- Wave 4: August 28-29, to 6,835 GUs that had received these materials for the LUCA 1998 program or the New Construction program
- Wave 5: September 11-12, to 6,808 GUs that had received these materials for the New Construction Program<sup>44</sup>

For this program, the Census Bureau sent 29,804 faxes to program liaisons and elected officials in 14,903 GUs. For those GUs for which the Geography Division did not have a fax number (approximately 4,040 GUs) or the fax number failed (approximately 1,800 GUs), the NPC mailed the appropriate materials. The mailings took place in two shipments, one on August 17-18 and the second on September 18-19. The letter reminded the program liaisons and highest elected officials that, if

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<sup>43</sup> *Federal Register*, Vol. 64, No. 125 (June 30, 1999), p. 35551; U.S. Census Bureau, "Program Master Plan: Census 2000 New Construction Program," Census 2000 Informational Memorandum No. 68, August 4, 2000; U.S. Census Bureau, "Assessment Report: Census 2000—1998, 1999, and Special Place Local Update of Census Addresses and New Construction Program," Census 2000 Informational Memorandum No. 140, July 21, 2003, pp. 5-6.

<sup>44</sup> Supplementary LUCA participants were included with the LUCA program that applied to their type of address area: LUCA 1998 or LUCA 1999.

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they had not already done so, they MUST at this time destroy the materials or return them to the appropriate RCC. It asked the liaisons to confirm that the appropriate action had taken place by certifying this information on the destruction form and mailing the completed form to the NPC or faxing it to a toll-free number in the TMO. If a GU preferred, it could send the materials to the RCCs at this time. A GU received only one fax or mailout, with a destruction form that listed each program—LUCA 1998, LUCA 1999, Supplemental LUCA, Special Place LUCA, and/or New Construction—for which the GU had received the appropriate materials, but for which GEO did not have a record of either destruction or return of these materials. If a GU had submitted a form or the materials for only one program, but had participated in others, the GUs response was incomplete. The GU then received a fax/mailout that identified the offending program.

The NPC faxed a copy of each form it received in the mail to the TMO. The TMO forwarded the faxed responses to the Statistical Research Division, which processed them into the Census 2000 control system before transmitting them to the GEO. The NPC sent the forms to the GEO, which checked its records and then passed them on to the FLD for aggregation and forwarding to the appropriate RCCs for their files. The RCCs recorded the dates on which participants returned forms or materials in a LUCA/NC Destruction Forms Returns Production Control System.

For 6,621 GUs, GEO did not have a response form by September 21 for all the programs in which the GUs participated. GEO and the TMO followed up with those GUs on September 25-26 with a sixth wave of faxing. These GUs required 12,072 faxes to 6,095 liaisons and 5,977 elected officials; these did not include 526 liaisons and 644 officials for which the Census Bureau did not have a valid fax number, and so although the liaison in a GU got the materials, the official might not have, or vice versa. As in the previous faxes and mailings, the liaisons received a letter and the destruction form, while the officials received only a letter. The letter did not specify that September 21 was a deadline; the Census Bureau applied this cutoff date based on when (September 22) the GEO had to provide the TMO with the file of addressees for the Wave 6 faxes.

From October 13 to 16, the NPC printed and shipped to the RCCs a new set of destruction forms for the 6,463 GUs for which the GEO still did not have response records. Beginning on October 16, the RCCs telephoned and/or visited either the program liaison or, if appropriate, the highest-elected official. GEO asked the RCCs to try to complete all phone calls by November 24, and RCCs in turn informed the nonresponding participants that they must return the completed forms or the Title 13 materials no later than December 8. This follow-up operation included those GUs that had not responded to a mailout—that is, GUs that the Census Bureau could not contact via fax—and therefore were not included in Wave 6. It also included GUs for which the NPC received 920 destruction forms. NPC faxed the forms to the TMO. Unfortunately, the TMO did not receive them, but meanwhile the NPC had inadvertently destroyed the forms before they could be re-sent. Therefore, if a GU told the RCC caller that it had sent in a signed form to the NPC, the RCC checked to be sure that the GU was in the first mailout. If so, the RCC recorded this response as fulfilling the requirement even though the Census Bureau did not have a completed form in hand; if not, the RCC requested that the GU submit another copy of the signed destruction form. Also, if the liaison or elected official was no longer with the GU, and the new contact person knew nothing about the program, that person, after checking with appropriate staff and records, could complete the destruction form statement by rewording it to say that (s)he was not aware of any Title 13 materials being on site. The RCCs were asked to complete a Telephone Follow-up Record for each contact with a participant and to send a copy of all of these forms to GEO at the end of the operation. RCCs also entered updated information about dates and contacts in the geographic program participant database on a flow basis and were instructed to record dates of return of forms or materials in the control system by December 15. The Census Bureau emphasized that name information in the program participant database for the highest-elected official of each nonrespondent GU had to be as complete and accurate as possible by that date.

In March 2002, the Census Bureau still did not have a record of either a completed destruction form or the required materials for 169 GUs and had received only a partial response from 4 others. After some consideration, the Census Bureau decided to have the regional offices (ROs) contact the nonresponding participants to determine what they had done with the materials; the RO staff accepted verbal “get it in writing.” Through January 2003, only 16 GUs remained unresolved.

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Any GU that still had not destroyed or returned its Census 2000 materials—or satisfied the Census Bureau that it had done so—was to be offered only limited participation in the LUCA program for Census 2010; for example, such a GU might be permitted to see only housing unit counts by block and be allowed to review the address list and map-spotted maps for its area only in the presence of agency staff.

**Administrative records.** For previous censuses, the Census Bureau had considered using administrative records from sources such as the Internal Revenue Service, Social Security Administration, and welfare programs to identify addresses that could be used to supplement its address list. Using these records was considered again for Census 2000, but the same problems resurfaced, such as addresses that were not appropriately formatted, might not represent the location of the associated HUs, could not be limited to MO/MB areas, might not be current, etc. As a result, the Census Bureau was not able to work these records into the MAF. Instead, the agency considered using this information for postcensus evaluation of and improvements to the current address list in preparation for the 2010 Census.

**Postal validation check (PVC).** In February 1998, the Census Bureau worked with the U.S. Postal Service (USPS) to have local letter carriers update the agency's list of addresses for the Sacramento, CA, and MO/MB portion of the Columbia, SC, dress rehearsal sites. For ZIP Codes identified as being entirely within the blue line, the carriers checked the address, based on the MAF, on each preprinted address card the Census Bureau provided against the cases used to sort incoming mail for delivery—the same type of casing check used for the previous three censuses. (The USPS refers to this operation as its Address Sequencing Services.) This operation added 4,833 addresses to the MAF. It also identified many addresses for deletion; the Census Bureau retained that information for validation during the redelivery of undeliverable questionnaires and nonresponse follow-up operations (see the pertinent sections in this chapter). The operation also identified many duplicate addresses, which had to be unduplicated.

For Census 2000, the Census Bureau recommended that the USPS perform this casing check in late December 1999 or mid-January 2000 for those ZIP Codes that were entirely or substantially within the blue line, and therefore predominantly made up of city-style addresses—i.e., TEAs 1, 6, and 7. However, the casing check was not implemented for Census 2000 because the USPS strongly warned that it would be a very labor-intensive—hence, very expensive—operation, the results of which could be more efficiently obtained simply by continuing to rely on updates from the DSF. Instead, the Census Bureau used a file of DSF adds for the period November 1, 1999, through January 14, 2000, to supplement the MAF derived from the November 1999 version. This transaction file, which GEO received in February 2000, included the results of the January 2000 National Edit Book Week, which, in lieu of performing an actual casing check in January 2000, the USPS had strongly encouraged its post offices to make as complete and current as possible (see the “Origin of the Census 2000 Address File” of this section). The Census Bureau obtained subsequent updates to the address list from various other operations discussed below, as well as from incorporating the changes included in the April 2000 version of the DSF.

For the 1970 and 1980 censuses, when the letter carriers delivered the census questionnaires, they completed cards that informed the Census Bureau about missing residential addresses. After discussions both internally and with the USPS, the notion of a time-of-delivery check was rejected because of the difficulty in defining the area to which letter carriers had to restrict their coverage (TEA 1, the area in which the USPS delivered questionnaires) and the lateness of trying to add and geocode addresses obtained by such an operation. The agencies agreed that the steps taken by the USPS to enhance the DSF canceled the need.<sup>45</sup>

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<sup>45</sup> *Federal Register*, Vol. 64, No. 125 (June 30, 1999), p. 35551; U.S. Census Bureau, “The Census Bureau's Master Address File (MAF): Census 2000 Address List Basics,” March 1999, p. 12.

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**CRADA to improve the address list.** In order to improve the viability of the MAF, the Census Bureau undertook a cooperative research and development agreement (CRADA) in mid-March 1998 with First Data Solutions, Inc., to serve as a possible source of additional addresses.<sup>46</sup> The goal of the agreement was to determine methods of improving the inventory of residential addresses (especially addresses not in the USPS files), investigating automated techniques to identify duplicate residential addresses, using information routinely from the USPS' files, linking addresses to Census 2000 geographic entities, and developing systematic approaches to the general maintenance of the MAF. However, the primary goal was to have as many current residential addresses in the MAF as possible prior to the New Construction program in order to minimize the number of last-minute additions (many of which would require manual geocoding) from that operation. In fall 1998, First Data Solutions provided, for the Census Bureau's evaluation, an address file that it anticipated would supplement the city-style mailing addresses in the DSF for three counties. Each county actually had three files, one for each of three sets of addresses based on First Data Solutions' classification of their reliability. GEO staff checked the addresses in the field, which led the company to improve its presentation of the addresses and confirmed the quality of the classification system. In mid-May 1999, First Data Solutions (subsequently renamed Donnelley Marketing) provided 105 address files, 3 for each of 35 counties. The Census Bureau planned to evaluate the addresses based on the results of block canvassing, address listing (for city-style mailing addresses), and information from various administrative records. It also considered a separate evaluation of non-city-style addresses in address listing areas. The constraints of time and programming resources obviated the Census Bureau's ability to perform these evaluations. Instead, the agency decided to defer following through with such a CRADA until it undertakes evaluation of and possible improvements for the 2010 Census address list.

**Master Address File Quality Improvement Program (MAF QIP).** The goal of this project was to assess the quality of the MAF by checking the completeness and accuracy of the coverage, as well as the block-level geocoding, of the addresses in the initial MAF at the national and census division levels. The operation took place before the Census Bureau conducted its Census 2000 address improvement operations. But first, the agency undertook a pilot study in summer 1997 to test the operational feasibility of using the same field methodology that was used for the operation that checked the accuracy of the addresses and population for the test censuses in 1995 (see the discussion of Integrated Coverage Measurement in Chapter 2, "Planning the Census"), as well as to test some steps developed specifically for MAF QIP. That is, field staff were given blank address registers and TIGER-generated maps of representative clusters of blocks. In addition to listing the addresses in the assigned areas, they were instructed to enter a map spot for every residential structure on their copy of a Census Bureau map, regardless of whether an address was city-style or non-city-style. The pilot covered a sample of about 2,500 HUs in TEA 1 areas in six representative counties scattered around the country—a total of 15,000 sample HUs. The addresses were listed from June 30 through August 15, 1997, using July 15 as the reference date for existing HUs. These were compared to a November 1997 version of the MAF—a MAF whose addresses reflected resolution of 90 percent of the addresses referred to MAFGOR. While the different dates and the incompleteness of the MAFGOR resolution limited the usefulness of the findings, the pilot enabled the Census Bureau to revise the procedures to more exactly fit the needs of MAF QIP.<sup>47</sup>

In three waves from April through June 1998, field staff listed approximately 170,000 addresses in 7,384 block clusters in TEA 1 areas in 114 counties. Some counties in the second and third waves were checked in coordination with the American Community Survey. The Census Bureau's Decennial Statistical Studies Division matched these addresses by computer against the MAF and reconciled all nonmatched cases in the field during May to September 1998. With the qualification that the MAF did not yet reflect a number of pending future coverage improvement operations,

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<sup>46</sup> U.S. Census Bureau, Marketing Services Office, Activity Report, March 1998; and U.S. Census Bureau, "Census Bureau, First Data Solutions Announce Partnership," CB98-207, Nov. 5, 1998. First Data Solutions took back its former name, Donnelley Marketing, in the spring of 1999. First Data Corporation, the parent company of Donnelley Marketing, sold Donnelley to InfoUSA in July 1999.

<sup>47</sup> Joseph Burcham and Mark Gorsak, "1997 Master Address File Quality Improvement Program Pilot Study," April 16, 1999.

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the results at the national level suggested that the MAF was missing 9 percent of all HUs and included 13 percent that did not exist or were duplicates, 6 percent that were geocoded erroneously, 6 percent that could not be geocoded (i.e., there was a problem with the TIGER database), and 0.1 percent that reflected nonresidential addresses that were actually residential. At the census division<sup>48</sup> level, undercoverage ranged from 5 to 16 percent, overcoverage from 8.5 to 16 percent, erroneous geocoding from 2.5 to 11 percent, ungeocodables from 2 to 12 percent, and nonresidential misidentification at less than 0.25 percent. The data highlighted the need for the Census Bureau to perform a detailed review of the address records in TEA 1 areas and thereby supported its plan to implement the block canvassing operation, coordinated with the input from GUs for LUCA 1998. The Census Bureau did not add the addresses and changes found by MAF QIP to the MAF because that information could “pollute” the file for future evaluations of operations in TEA 1. They were stored in a MAFUF and could have been matched/added to the MAF when no longer needed for Census 2000 evaluations—but that was not done as of late 2003.<sup>49</sup>

The Census Bureau proposed performing a two-phase MAF QIP in 1999 to check the address file developed in address-listed areas. The first was to be a pilot study covering some 15,000 HUs in six counties whose addresses were listed in 1998. The other would involve the first wave of counties visited for MAF QIP in 1998 and all other counties where MAF QIP was performed in 1998 in coordination with the American Community Survey. The agency also considered doing additional MAF QIP studies in 1999 in both TEA 1 and TEA 2 areas. However, the Census Bureau canceled the proposed operations for budgetary reasons.<sup>50</sup>

## ADDRESSES FROM CENSUS 2000 FIELD OPERATIONS

The Census Bureau undertook a number of field operations to enumerate the population for Census 2000. These operations improved the content of the MAF. Of course, they also improved the content of the TIGER® database.

### Update/Leave (U/L) and Update/Enumerate (U/E)

These operations conducted in early-March through early-April (U/L) and early-June (U/E) of 2000, recanvassed the blocks covered by address listing, but U/E also included some areas that had been inside the blue line. As enumerators traveled through the assigned areas, they verified and updated the list of addresses for each census collection block, corrected errors in the assignment of addresses to a block, annotated changes to the information shown on the census block maps, and left a census questionnaire at each housing unit (HU) for (U/L) or enumerated for (U/E). In all U/L areas and some U/E areas, all residential structures had to be map spotted and numbered. Addresses in U/E assignments that covered blocks with predominantly non-city-style mailing addresses needed to be map spotted; addresses in assignments whose blocks had predominantly city-style addresses did not. This meant the field operations required different procedures for recording additions and corrections to the enumerators’ preprinted lists of addresses. U/L added 1,644,174 addresses stateside, of which 1,401,169 (85 percent) were retained in the final census records; in Puerto Rico, the corresponding numbers were 111,787 and 93,607 (84 percent). For U/E, enumerators added 129,692 addresses, of which 122,375 (94 percent) were in the final records.<sup>51</sup>

From early March through mid-May 2000 for U/L, and mid-July through late July for U/E, the National Processing Center (NPC) keyed the addresses and related information, including map spot additions and corrections, into a master address file update file (MAFUF). From early May

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<sup>48</sup> The nine census divisions are groups of states that are subdivisions of the four census geographic regions.

<sup>49</sup> Joseph Burcham, “1998 Master Address File Quality Improvement Program,” June 1, 1999; Joseph Burcham and Dianne Barrett, “Assessing the Quality of the Initial Master Address File for Census 2000,” Proceedings of the Survey Research Methods Section, 1999 Annual Meeting of the American Statistical Association, pp. 617–22; *Federal Register*, “Master Address File (MAF) and Topologically Integrated Geographic Encoding and Referencing (TIGER) Update Activities,” Vol. 63, No. 12 (January 20, 1998), pp. 2950–51.

<sup>50</sup> *Federal Register*, “Master Address File (MAF) and Topologically Integrated Geographic Encoding and Referencing (TIGER) Update Activities,” Vol. 63, No. 12 (January 20, 1998), p. 2951.

<sup>51</sup> Frank A. Vitrano, Robin A. Pennington, and James B. Treat, *Address List Development in Census 2000*, Topic Report No. 8, TR-8 (Washington, DC: U.S. Census Bureau, 2004), pp. 13–14.

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through late September for U/L, and from late August through late September for U/E, the NPC digitized map revisions, including the locations of added, deleted, and corrected map spots and numbers, into the TIGER® database. However, any map spots that enumerators identified for HUs inside the blue line during U/E were not inserted into the database.<sup>52</sup>

### Urban Update/Leave (UU/L)

For this March 2000 operation, field staff recanvassed and delivered census questionnaires in selected blocks inside the blue line in 12 states and the District of Columbia. The primary goal was to ensure that census enumerators delivered each questionnaire to a specific HU that matched the Census Bureau's address list in selected census blocks. These were blocks where staff in the regional census centers (RCCs) thought that a letter carrier would have difficulty delivering questionnaires to the specific addresses in the master address file (MAF). Perhaps the housing units did not have individual mailboxes (for instance, the mailboxes in some buildings may have been ripped out) or the residents generally picked up their mail at post office boxes because the USPS did not deliver mail to their homes—or the letter carrier simply left the mail in the lobby of a multiunit structure and let the residents sort it out. Therefore, Local Census Office (LCO) staff attempted to deliver a questionnaire to each designated HU, thereby avoiding having a respondent complete a census questionnaire intended for another apartment or not receiving a questionnaire at all. The residents of the appropriate address could then mail their completed questionnaire to the Census Bureau. When the enumerators delivered the questionnaires, they also verified and updated the list of addresses and the map of the assigned areas.

Although census planners thought that many of the HUs in UU/L areas would be in multiunit structures, and well over half the addresses were in census tracts likely to house the most difficult-to-count members of the population, postcensus analysis showed that fewer than half—44.2 percent—of the UU/L addresses actually were in multiunit structures. Some Census Bureau staff understood that a primary target of UU/L would be apartment buildings that the U.S. Postal Service (USPS) designated as “drop points”—that is, letter carriers simply dropped all the mail for the structure in a convenient location—but the regional offices (ROs)/RCCs in fact generally did not know where or whether the USPS had designated any structures in an area as drop points. Subsequently, the postcensus evaluation determined that fewer than 1 percent of UU/L addresses were officially treated as drop-point addresses. The intent for UU/L to include urban communities where a substantial number of residents chose to receive their mail at post office boxes did not work out either, since only 43 addresses fell into this category.

The RCCs decided on the need for UU/L and identified the blocks in which it would take place. Eight of the 12 RCCs participated in UU/L, which was carried out by 51 LCOs. Each block constituted an assignment area (AA), and the 12,843 AAs and 267,005 addresses in the decennial master address file (DMAF) were grouped into field assignments (FAs), each of which contained approximately 250 addresses—considered to be a reasonable workload for a UU/L enumerator. (The 1990 census UU/L operation, which targeted primarily inner-city blocks with 500 or more units in multiunit public housing, covered only 346 census blocks and 55,365 housing units in six cities.) The enumerators added 13,131 addresses, a 5 percent increase, but only 10,455 (less than 80 percent) of these were retained in the census—still an almost 4 percent increase. From early March through late April 2000, the NPC keyed address additions and corrections for each AA (block) into a MAFUF for the GEO to insert into the MAF, and from mid-April through mid-May 2000, the NPC digitized map updates for insertion into the TIGER® database.<sup>53</sup>

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<sup>52</sup> U.S. Census Bureau, “Program Master Plan: Census 2000 Update/Leave,” Census 2000 Informational Memorandum No. 89, January 2, 2001; “Program Master Plan: Census 2000 Update/Enumerate,” Census 2000 Informational Memorandum No. 79, November 9, 2000; Robin A. Pennington, “Evaluation of the Update/Leave Operation,” Census 2000 Evaluation No. F.10, June 6, 2003; Miriam Rosenthal, “Update/Enumerate,” Census 2000 Evaluation No. F.12, December 10, 2002.

<sup>53</sup> U.S. Census Bureau, Census 2000 Informational Memorandum No. 88, “Program Master Plan: Census 2000 Urban Update/Leave,” January 2, 2001; Miriam Rosenthal, “Urban Update/Leave,” Census 2000 Evaluation F. 11, October 3, 2002.



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## List/Enumerate (L/E)

This enumeration of the population took place in the most sparsely settled areas of the nation, where the Census Bureau decided that it would be more effective to have enumerators take the census in the traditional manner than to use the mail and follow-up methods used elsewhere. L/E took place March to April of 2000, except in Alaska, where it began on January 20 to try to complete enumeration before the spring thaw made travel to some 27,000 housing units difficult. As the enumerators completed census questionnaires by conducting face-to-face interviews at the housing units in their assigned blocks, they also recorded addresses and related information for each living quarters, assigned map spots and numbers, and updated the information shown on census block maps. This operation took place in all or part of 204 U.S. counties, adding more than 419,000 addresses to the MAF (0.4 percent of the nation's HUs), including the 27,000 in "Remote Alaska." The more than 125,000 housing units in American Samoa, Guam, the Northern Mariana Islands, and the Virgin Islands also were enumerated by the list-and-enumerate method. The NPC keyed the addresses and map spot numbers for stateside areas into a MAFUF from late June through late July 2000 and digitized map revisions and the locations of map spots and numbers into the TIGER® database from early August through late September. Although it digitized the map information for the Island Areas from mid-October through early November 2000 and began keying the address register information on November 8, the NPC did not complete the latter operation until July 12, 2001.<sup>54</sup>

## Redelivery of Undeliverable Questionnaires (UAA Redistribution Operation)

The Census Bureau anticipated from previous experience that local post offices would return an estimated 12 million mailout/mailback (MO/MB) census questionnaires because, for various reasons, they did not deliver mail to the specified addresses. The two major reasons were that a local post office could not match an address to a carrier route or that the address was not recognized by a letter carrier. The USPS and the Census Bureau referred to these as being undeliverable as addressed, or UAAs.<sup>55</sup> The agency wanted to know where it would be most effective to have enumerators try to redeliver these questionnaire packages, because doing so would be likely to both improve the mailback rate and reduce the workload for the nonresponse follow-up operation. Therefore, in order to prepare staffing plans for this questionnaire delivery operation, the Field Division (FLD) needed to know where the DMAF was likely to contain concentrations of addresses that local post offices might find were not deliverable.

To identify the potential locations of concentrations of UAAs, GEO, in August 1999, extracted a subset of the DMAF-eligible addresses from the MAF. These were addresses coded to TEAs 1 and 6 that did not have a ZIP+4 code because the GEO was not able to match them to the ZIP+4 file of approximately September 1998. GEO sent a tape of these approximately 3.5 million addresses to the USPS, which used its Address Element Correction matching software to check them against its most current records. The Decennial Statistical Studies Division (DSSD) analyzed the flags that the USPS match had assigned to the addresses in the file, which identified fewer than 2 million unmatched addresses. DSSD supplemented this information with other data, including the 1990 census rates of vacant HUs in selected counties, the number of HUs in ZIP Codes that only had post office box delivery, and ZIP Codes in which substantial numbers of Local Update of Census Addresses (LUCA)—added addresses had not been found during LUCA Field Verification or block canvassing. DSSD then summarized the addresses by ZIP Code so that FLD staff at headquarters, the RCCs, and the affected LCOs could estimate in which ZIP Codes (and the related LCOs) large numbers of HU addresses might be UAAs. ZIP Codes that crossed an LCO boundary were assigned to a single LCO. That LCO attempted to deliver a questionnaire to every assigned address, regardless of whether the address was located within it.

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<sup>54</sup> U.S. Census Bureau, "Program Master Plan: Census 2000 List/Enumerate Program Master Plan," Census 2000 Informational Memorandum No. 46, March 2, 2000; U.S. Census Bureau, "Program Master Plan: Census 2000 Remote Alaska," March 8, 2000; Frank A. Vitrano, Robin A. Pennington, and James B. Treat, *Address List Development in Census 2000*, Topic Report No. 8, TR-8 (Washington, DC: U.S. Census Bureau, 2004), pp. 14–15.

<sup>55</sup> Prior to Census 2000, the Census Bureau referred to them as postmaster returns (PMRs).

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The USPS instructed its local post offices to send all UAAs for the selected ZIP Codes to a central facility (a USPS Processing and Distribution Center/Facility [PDC]) for their area, rather than to the NPC's Jeffersonville, IN, return address on the envelope. The RCCs designated one LCO in a MO/MB area to serve as the "lead" LCO, to perform the pickup from the PDC and coordinate the distribution of the questionnaires to the other LCOs. On March 18, 2000, staff of the lead LCOs picked up almost 4.2 million UAAs—fewer than the 6 million the Census Bureau had anticipated—from 70 USPS facilities for the targeted ZIP Codes from selected PDCs. (All other UAAs, including those received after March 18, were forwarded by the PDCs to the NPC, which recorded the fact that they were UAAs.) After the UAAs were checked in by the LCOs, the UAA redistribution operation took place from March 25 through April 7. The LCOs delivered approximately 1.7 million UAA questionnaires and sent more than 2.4 million unsuccessful and unattempted UAAs to the NPC, which recorded the fact that Census Bureau staff could/did not deliver them. During this operation, the enumerator was to complete a form for each address, indicating "successful" or "unsuccessful" and, if the latter, the reason. Most of the unattempted cases were in scattered ZIP Codes that did not have a significant percentage of UAAs in relation to the size of the total mailout; FLD decided that it was not cost-effective to try to find these addresses via this operation. FLD also did not attempt to deliver UAAs in a ZIP Code if at least 25 percent of the UAA unattempted-to-deliver addresses had been previously flagged in the DMAF as "not found" during *both* block canvassing and LUCA Field Verification, nor if there were at least 500 such "double killed" addresses in a ZIP Code. All addresses for which the Census Bureau did not attempt to deliver UAAs (other than the double kills) eventually would be covered by subsequent operations.<sup>56</sup>

### **P.O. Box-Only Addresses in TEA 1**

For several areas in TEA 1, the local post offices informed the Census Bureau that they could not deliver questionnaires to the specified city-style addresses for some pockets of housing because all the residents received their mail at post office boxes. Also, complaints were received from people in such areas who reported that they had not received questionnaires. These areas had been included inside the blue line even though their residents received mail only at post office boxes because they represented small pockets of such housing within the blue line, or areas that the RCCs had expected to be changed to city-style mail delivery by Census Day, or areas that the RCCs inadvertently had included inside the blue line even though the city-style addresses were not used for mail delivery. A related problem was that the Census Bureau had not updated the addresses in these areas since block canvassing because new non-city-style addresses would not have been provided by the DSF nor by participants in the New Construction program. Some of these areas had been identified by the RCCs in time to be included with the UAA redistribution operation (see previous section) or the nonresponse follow-up operation (see next section), but others required the agency to take a number of steps.

The RCCs informed GEO about blocks that they knew were affected by this problem and had not been included in the UAA redelivery. In mid-April 2000, GEO matched information for post office box-only ZIP Codes (outside of multi-ZIP Code places) against its records for blocks that contained such ZIP Codes in TEA 1. The result was more than 6,000 blocks in 935 ZIP Codes in more than 300 counties. To reduce the workload to a manageable size, ZIP Codes with fewer than three blocks were dropped from potential inclusion in a catch-up program. In the remaining counties, GEO printed out the blocks and their addresses for 50 geographic entities; they contained 1,608 blocks, with the smallest number of blocks in a geographic entity being 11. After the nonresponse follow-up operation, but before the coverage improvement follow-up (CIFU) operation (see the "Coverage Improvement Follow-up" section), the LCOs verified and updated the addresses in these blocks via a "windshield check" (LCO staff checked addresses by looking for new housing units while doing a drive-by canvass of each specified block). GEO matched these addresses against the MAF to be sure they had not been included via some other census operation. Addresses not accounted for were included in CIFU.

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<sup>56</sup> Susan M. Miskura to John H. Thompson, "Undeliverable As Addressed (UAA) Redistribution Operation," Census 2000 Decision Memorandum No. 99, February 17, 2000; U.S. Census Bureau, "Program Master Plan: Census 2000 UAA Redistribution," Census Informational Memorandum No. 61, rev. 1, October 6, 2000.

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## Nonresponse Follow-Up (NRFU)

This Census 2000 operation was designed to enumerate, by visits, any HU for which the Census Bureau did not have a completed questionnaire in MO/MB and U/L (including urban update leave (UU/L) areas by April 11, 2000. This operation attempted to ensure a response for each occupied HU and, in MO/MB areas, to create a response for each vacant HU. It also verified the status of addresses identified as vacant, duplicate, nonexistent, or nonresidential during NRFU. UAA addresses that were not found during or included in the UAA redelivery operation were searched for, and those UAA addresses that really represented HUs were enumerated. Although it was not the primary goal of NRFU, enumerators could add and enumerate HUs if they discovered missing ones that existed on Census Day. The Census Bureau also conducted ad hoc “windshield surveys” when whole areas seemed to be missing from the address list or the mailout; these took place from April 27 through June 26, 2000.

NRFU involved some 42,373,000 addresses, or 35.6 percent of the eligible workload (number of HUs to which questionnaires were delivered by USPS or census personnel). Before delivering the addresses to be used for NRFU, GEO provided a test state (Vermont) to the Decennial Systems and Contracts Management Office (DSCMO) to ensure that all NRFU processes and products were as expected. Addresses deleted or classified as vacant for the first time during NRFU were rechecked during CIFU before the Census Bureau accepted this information. NRFU added some 689,000 addresses to the MAF and DMAF: almost 467,000 inside the blue line and more than 222,000 outside. While GEO could have the computer check the city-style addresses for possible duplication, that could not safely be done for the non-city-style addresses. GEO originally had not planned to enter the non-city-style addresses to the MAF—rather, GEO would retain them temporarily in a separate MAFUF—in order to avoid possible duplication. However, the small number of non-city-style addresses indicated that the enumerators had checked their maps before adding the addresses and map spots, and therefore had followed proper procedures. The Census Bureau decided to accept the validity of the addresses and map spot information and added these addresses to its address files. This avoided the time-consuming special processing that would otherwise have been involved. However, NRFU also deleted more than 6 million addresses, including more than 4,850,000 in MO/MB areas—primarily due to duplicated addresses, but also to questionnaires with no addresses or incomplete ones. It should be noted that both the added and deleted numbers are exaggerated because to move an HU from one block to another on the address list required a delete-and-add action, and addresses added during the U/L operation may have been re-added by the NRFU enumerators because they could not be recorded in time to appear in the address registers—but no better numbers are available.

In MO/MB areas, the LCOs provided new maps for the NRFU operation. These maps incorporated changes made for roads and streets during previous operations. In U/L areas, the agency provided enumerators with photocopies of the maps used during the U/L operation. The enumerators were instructed to revise the maps if they found omissions or errors, including additions and deletions to the map spots and numbers. However, this information was not added to the TIGER® database until after the maps and tabulation block numbers had been finalized for Census 2000.<sup>57</sup>

## Residual NRFU (R-NRFU)

Subsequent to NRFU, the Census Bureau undertook a residual operation—known as R-NRFU—to enumerate NRFU cases that did not have a record of data capture in the data capture centers (DCCs) and that were not included in the CIFU operation. The bulk of these cases consisted of questionnaires that “disappeared” before being processed by the appropriate DCC, and therefore the residents at the specified addresses—typically no more than several hundred in any LCO—had to be reenumerated. However, the enumerator could find that an address did not qualify for inclusion in the census—the address was nonresidential, nonexistent, etc., on April 1—or was incorrect, which would be duly recorded and eventually result in correction of the MAF. Unlike with

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<sup>57</sup> U.S. Census Bureau, “Program Master Plan: Census 2000 Nonresponse Follow-up,” Census 2000 Informational Memorandum No. 26, rev. 1, May 7, 2001; Frank A. Vitrano, Robin A. Pennington, and James B. Treat, *Address List Development in Census 2000*, Topic Report No. 8, TR-8 (Washington, DC: U.S. Census Bureau, 2004), pp. 15–16; Darlene A. Moul, “Nonresponse Follow-up for Census 2000,” Census 2000 Evaluation No. H.5., July 25, 2002.

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NRFU, the enumerators were not allowed to add housing units. The NRFU AAs were re-used for R-NRFU, but typically an AA contained only a few addresses. An FA consisted of several AAs, so an enumerator's workload contained 20-30 HUs. R-NRFU used the same maps as NRFU. The operation visited 121,792 addresses in three waves from mid-July through mid-September 2000, approximating the timing of the CIFU waves (see below).<sup>58</sup>

### Field Follow-Up (FFU)

This operation was similar to—but not the same as—NRFU for areas where the Census Bureau directly enumerated the population; that is, list/enumerate (L/E) areas (except “Remote Alaska”) and update/enumerate (U/E) areas. The FFU operation took place from mid-May through early July 2000. Using the map spots and numbers on the original L/E and U/E maps as a guide, FFU enumerators visited addresses on a specially prepared list. The original enumerators in both areas had classified these as vacant and, in U/E areas, the list included deleted addresses as well. The goal was to verify that the original enumerators had recorded the information correctly or to enumerate the housing units. FFU enumerators also completed long-form questionnaires in areas for which the Census Bureau did not obtain the appropriate number of such questionnaires, resolved questionnaires with inconsistent and/or missing entries, and reenumerated HUs for which the agency did not have completed questionnaires. The same AAs as in the R-NRFU were used, with the LCOs combining AAs into FAs containing about 20 housing units. FFU enumerators were allowed to add missed housing units and to correct and update the block maps if necessary. Ultimately, in addition to improving the enumeration, this operation served to correct addresses in the DMAF and MAF, although the information was not added to the TIGER® database until after the maps and block numbers had been finalized for Census 2000. FFU did not add new addresses, though it confirmed addresses that should be deleted, and it restored addresses that should not have been deleted; indeed, no addresses had yet been removed from the DMAF or MAF.<sup>59</sup>

### Coverage Improvement Follow-Up (CIFU)

The goal of this procedure was to have enumerators visit housing units with newly obtained addresses and to resolve conflicting information about the existence of specific addresses, thereby improving the completeness of the census. Additional “windshield surveys,” like those in NRFU, were done to try to identify missed areas. CIFU was carried out by the LCOs in three waves, beginning 3 weeks after they finished the NRFU operation; that is, from late June through mid-September 2000. The end of CIFU was the last date that living quarters could be added to the census results. As part of the Census Bureau's efforts to follow up on every possible residential address, LCO enumerators visited and, if appropriate, enumerated or corrected the records for about 8,854,300 HUs including:

- Addresses obtained for MO/MB areas after it was too late to hand-address and send a questionnaire—but first GEO had to ensure that the addresses had not been accounted for in the MAF as the result of some other operation. Many of these addresses from the February 2000 DSF were provided by government officials for the New Construction program, but were geocoded late via the Master Address File Geocoding Office Resolution (MAFGOR) and targeted map update (TMU) operations, and included all nonmatched geocoded addresses from the April 2000 DSF. CIFU also included addresses added from the LUCA appeals process too late to be included in the U/L universe, and so not added by the U/L enumerators. These addresses therefore may not have had questionnaires delivered to them.
- Addresses deleted or identified as vacant *for the first time* during the NRFU operation in both MO/MB and U/L (including UU/L) areas, except those that had been classified by enumerators as “seasonal, recreational, or occasional use units or, in MO/MB areas, for which the USPS returned an undeliverable questionnaire. Vacant units comprised 44.4 percent of the CIFU workload, and deleted units, 29.4 percent.

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<sup>58</sup> Fred R. Borsa and Christine L. Hough, *Data Collection in Census 2000*, Census 2000 Topic Report No. 13 (Washington, DC: U.S. Census Bureau, 2004), pp. 17–24.

<sup>59</sup> U.S. Census Bureau, “Program Master Plan: Census 2000 List/Enumerate Program Master Plan,” Census 2000 Informational Memorandum No. 46, March 2, 2000, pp. 19–20; Fred R. Borsa and Christine L. Hough, *Data Collection in Census 2000*, Census 2000 Topic Report No. 13 (Washington, DC: U.S. Census Bureau, 2004), p. 17.

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The CIFU operation, which re-used the maps used for NRFU and R-NRFU, also involved a visit to every housing unit in MO/MB and U/L (including UU/L) areas for which the Census Bureau did not have a completed questionnaire—especially U/L addresses that were added by enumerators too late to be included in NRFU and MO/MB addresses that the USPS returned as undeliverable—as well as addresses with selected other problems associated with their questionnaires. Before delivering the addresses to be used for CIFU, the GEO provided a test state—again, it was Vermont—to the DSCMO to ensure that all processes and products were as expected. Enumerators were assigned NRFU AAs and census tracts, which, if necessary, were grouped into FAs of 40 to 50 housing units—a sufficient workload to complete an FA in a week. An enumerator was given at least three FAs for the 3-week duration of CIFU. Originally, the LCOs were instructed to send the completed CIFU maps to the NPC; a mid-July 2000 revision instead required that the LCOs retain the maps for use in the next operation.

CIFU added 10,465 housing units and deleted almost 2,628,000. Updates to street features and addresses found during CIFU were added to the TIGER® database and the MAF after maps and block numbers had been finalized for Census 2000.<sup>60</sup>

### **Be Counted and Telephone Questionnaire Assistance (TQA)**

In areas that tended to be undercounted, the Census Bureau placed “Be Counted” census questionnaires at thousands of sites (businesses, churches, community centers, etc.) where anyone who believed he or she was not counted could pick one up, complete it, and send it to the agency; these forms contained the 100 percent questions only. This operation took place in ALL areas covered by Census 2000—it was not limited to MO/MB areas.

When a person called a toll-free telephone center to report that the person or the household had not received a questionnaire or was not enumerated, the NPC labeled and mailed a questionnaire if the person provided a mailing address. If a non-city-style address was provided, the telephone operator asked the caller for a location description. However, some people offered to answer the census questions by telephone and include the address or location description. This was referred to as the Telephone Questionnaire Assistance (TQA) operation.

The addresses acquired through both of these operations were part of the “non-ID questionnaire” process. Those that did not match an address recorded in the MAF were sent to the appropriate LCO for field verification, while duplicate records were rejected. To ensure that unmatched and duplicate addresses (and their related questionnaires) were valid, these addresses were flagged uniquely in the MAF and on a special set of address listing pages that contained all known residential addresses in the blocks in which the agency expected to find the added addresses. In addition to verifying the BC/TQA addresses, this operation also checked on addresses for which the Census Bureau received a mail return even though the address had already been deleted and confirmed as a valid deletion by two previous operations (for instance, both block canvassing and LUCA 1998 Field Verification had failed to find the address). There were approximately 311,000 such addresses. With appropriate maps and lists in hand, listers working out of the LCOs tried to find each assigned address. A lister’s job was to ensure that each address really existed on the ground, represented a real residence, and did not duplicate an address already in the file by another name (e.g., an apartment complex name vs. the complex’s street address). The lister entered an appropriate action code on the listing page to report what was found for each address. The LCOs keyed the action codes into the Census 2000 control system, and the Technology Management Office (TMO) transmitted a file with this information to DSCMO, which flagged any addresses to be deleted into a MAFUF that was sent to the GEO to update the MAF.

In MO/MB areas, the listers used the set of maps previously used for U/L and NRFU, rather than a new set of maps. However, for blocks in U/E and L/E areas that had an address involved (or likely to be involved) in this operation, the LCOs had to reprint the enumeration maps. In U/L, U/E, and

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<sup>60</sup> U.S. Census Bureau, “Program Master Plan: Coverage Improvement Program,” Census 2000 Informational Memorandum No. 81, November 17, 2000; John R. Clark and Darlene A. Moul, *Coverage Improvement in Census 2000 Enumeration*, Census 2000 Topic Report No. TR-10 (Washington, DC: U.S. Census Bureau, 2004), pp. 11–13; Frank A. Vitano, Robin A. Pennington, and James B. Treat, *Address List Development in Census 2000*, Census 2000 Topic Report No. 8, TR-8 (Washington, DC: U.S. Census Bureau, 2004), pp. 16–17.

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L/E areas, a lister found an assigned address and it represented a housing unit that did not already appear in the MAF, the lister added a map spot and a preassigned map-spot number to the appropriate block map; these numbers had been printed with the addresses on each set of address listing pages. Listers also were instructed to update the streets/roads and associated names on the maps.

This operation was called Be Counted/TQA Field Verification (BC/TQA FV). The LCOs re-used the maps that had been used for NRFU and CIFU in mail census areas, and in L/E and U/E areas, printed another copy of the pre-enumeration AA locator, AA maps, and block maps that covered the probable location of the addresses to be verified. AAs consisted of individual blocks, combined so an FA contained about 33 addresses, or about 3 days' work for a lister. Including the non-ID questionnaire operation, an estimated 900,000 addresses were assigned to 410,000 AAs. This operation was carried out from July 31 through August 19, 2000, in the same three waves as CIFU. After elimination of unacceptable addresses and those already in the MAF, the Be Counted operation added 58,380 addresses and the TQA program added 53,712.<sup>61</sup>

### **Household and Address Field Verification (HA FV), or Invalid Return Detection (IRD)**

The goal of this operation was similar to BC/TQA FV: to verify, in the same time frame and using the same types of maps, the validity of selected addresses in MO/MB, UU/L, and U/L areas. But unlike BC/TQA FV, it required verification of the name(s) reported on the questionnaires for selected addresses, especially duplicate addresses. Thus, the goal was to check not only whether addresses represented valid housing units, but also whether the names reported were for real people. It was to take place at the same time as the BC/TQA FV operation. However, when the Census Bureau determined there was no significant clustering of Be Counted forms in any single LCO, it decided to drop this operation and let the BC/TQA FV operation find any problem situations. GEO calculated whether "clustering" occurred, based on a specified ratio of Be Counted forms received to the total number of addresses in a specified area.

### **Questionnaires Without a MAF Identification**

Addresses contained in the MAF were labeled with unique, preassigned MAF identification (MAFID) numbers. Some census operations resulted in questionnaires that did not have a MAFID; that is, questionnaires generated by respondents rather than the Census Bureau, and therefore unlabeled. The agency referred to these as "nonidentification Master Address File (non-MAFID) questionnaires." They were initiated by respondents via the Be Counted and Telephone Questionnaire Assistance operations and by travelers and people with multiple residences who reported that they had a "usual home elsewhere." The identification of a home address on a military or maritime questionnaire or on a questionnaire used by a person at a service-based facility (primarily soup kitchens, shelters for the homeless, and selected nonsheltered outdoor locations) or group quarters also created a non-MAFID questionnaire. Addresses for in-movers were also to be included, but were not available in time. The data capture operation assigned a "Customer ID"—a number that served as a temporary identifier—to these questionnaires.

GEO attempted to match address information on each non-MAFID questionnaire against the MAF to determine whether the address was already in the file. Questionnaires that did not have city-style addresses were matched to a subset of the MAF that contained only addresses in blocks coded to TEA 2, 5, or 9. If a match was successful, the questionnaire was assigned the same MAFID; GEO also recorded the Customer ID in the MAF. GEO also tried to use the TIGER® database

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<sup>61</sup> U.S. Census Bureau, "Program Master Plan: Census 2000 Questionnaire Assistance Centers/Be Counted Program," Census 2000 Informational Memorandum No. 103, May 1, 2001; U.S. Census Bureau, "Program Master Plan: Census 2000 Telephone Questionnaire Assistance Program," Census 2000 Informational Memorandum No. 111; U.S. Census Bureau, "Assessment Report: Census 2000 Telephone Questionnaire Assistance (TQA)," Census 2000 Informational Memorandum No. 144, September 13, 2004; Frank A. Vitrano, Robin A. Pennington, and James B. Treat, *Address List Development in Census 2000*, Census 2000 Topic Report No. 8, TR-8 (Washington, DC: U.S. Census Bureau, 2004), pp. 17–19; Jon R. Clark and Darlene A. Moul, *Coverage Improvement in Census 2000 Enumeration*, Census 2000 Topic Report No. 10, TR-10 (Washington, DC: U.S. Census Bureau, 2004), pp. 9–10; Fred R. Borsa and Christine L. Hough, *Data Collection in Census 2000*, Census 2000 Topic Report No. 13, TR-13 (Washington, DC: U.S. Census Bureau, 2004), pp. 12–14.

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to assign a county code and collection block number to the address information, regardless of whether the address match was successful; that is, the address might fit into an address range that was already recorded in TIGER. In the case of a Be Counted questionnaire on which the respondent provided no address for a “usual home,” GEO attempted to geocode the questionnaire by using the geographic information—place/county/state/ZIP Code—the respondent entered on the form. Because of the unusual city-style addresses encountered in Puerto Rico, GEO contracted with a company called Seek Data to match and attempt to geocode the 935 non-MAFID questionnaires for that area; Spanish-speaking clerks in the NPC contacted respondents whose questionnaires required telephone follow-up.

Next, clerks at the NPC reviewed unmatched addresses—about 26 percent of the non-MAFID questionnaires—of questionnaires that had been filled out improperly, or that had scanning or keying problems and other obvious errors. They also searched a commercial database to see if an address could be corrected or if the county had been misidentified. If a questionnaire included a telephone number, or a phone number could be found for the address in a commercial database, the NPC called the housing unit to try to obtain the needed information. Finally, the NPC used special software—the Interactive Matching and Geocoding System—that allowed a clerk first to retrieve each unmatched address and, after resolution and correction of that record, to check against the MAF and TIGER databases to see if the change had resolved the problem. If a respondent-initiated, non-MAFID questionnaire was received for a new address that could be geocoded FLD staff checked the address on the ground to ensure that a living quarters really existed. This was done as part of the BC/TQA field verification. After update of the MAF and TIGER databases, GEO rematched the corrected and added addresses to the TIGER database for assignment of geocodes. GEO then provided DSCMO with a MAF extract from which to update the DMAF. DSCMO determined whether people on questionnaires with matched addresses needed to be added to those housing units.

Separate non-MAFID problems involved questionnaires on which enumerators had failed to place a prenumbered label (a Processing ID number, which served as a temporary MAFID), the label had fallen off, the number wasn’t transcribed in the address register, or the number was miskeyed. This could occur for HUs enumerated during the L/E operation and for HUs added during the U/L, U/E, GQs, NRFU, and CIFU operations. For NRFU and CIFU non-ID cases, GEO simply added non-matched addresses and their Customer ID numbers to the MAF; if an address matched the MAF, the Processing ID number was added to the MAF record. For the other census operations, because the NPC had keyed these addresses into the MAF from the address registers, most of the addresses on the non-MAFID questionnaires could be matched and, if necessary, the Processing or Customer ID number was added to the MAF. If non-MAFID questionnaires could not be matched, GEO tried to use the map-spot number and related information to find the address. If that did not find the address, GEO added the unmatched address and Customer ID number to the MAF.

The operation started on April 3, 2000, and continued on a flow basis through September 6. GEO had to deliver a MAF extract of all processed records to DSCMO by the end of June so that the field verification could begin in late July; as noted earlier, the field check continued through mid-August. DSCMO delivered the last non-MAFID file to GEO on July 31. Eventually, GEO provided DSCMO with an outcome code for every non-MAFID address it had delivered. Any non-MAFID addresses that were found not to exist or whose existence could not be determined were dropped from the census and flagged in the MAF. However, any persons whose address matched one already in the MAF was added by DSCMO to the rosters of verified living quarters until the August cutoff. DSCMO subsequently delivered a file with the field verification results to GEO which flagged its records to reflect that information. The NPC digitized the map spots added by the field work to the TIGER database mid-2001.<sup>62</sup>

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<sup>62</sup> Megan C. Ruhnke, “An Assessment of Addresses on the Master Address File ‘Missing’ in the Census or Geocoded to the Wrong Collection Block,” Census 2000 Evaluation No. F.15. August 19, 2003; Karen Medina, “Assessment Report: Census 2000 Processing (Including BCF/TQA Field Verification),” Census 2000 Informational Memorandum No. 141, September 25, 2003.

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## Elimination of Duplicate Housing Units

Because several sources and methods were used to update the address list for Census 2000, the MAF was susceptible to having multiple records for the same living quarters—generally two (or more) addresses assigned to the same housing unit. (This did not involve duplicates found for non-MAFID questionnaires.) Although apparent exact duplicates were identified and subjected to a review and, if appropriate, deletion of one of the entries, and various field operations sought to pinpoint other duplications, these steps were not always effective in producing the desired results. The effectiveness of field work was subject to the abilities of individual members of the field staff to perform the required operation in a specific area within a fixed time frame; however, all operations were subject to a quality assurance check and a clerical review of the collected and annotated information. Because the goal of the Census Bureau was to have as complete an address list as possible, conservative rules for identifying probable duplication tended to retain addresses even when there were indications that they could be duplicates.

The Census Bureau compared independent estimates of housing unit counts to the counts in the DMAF in July 1999 and January 2000 and found that field operations had reduced an independent estimate of duplicate housing units from 6.8 percent to 3.2 percent. Agency staff identified specific counties where differences were relatively large. During the week of June 18, 2000, field staff visited targeted collection blocks in three large cities: New York, Baltimore, and Chicago. Thirteen percent of the addresses they found either were duplicates or did not exist, which confirmed the assumption that the address file contained overcoverage. While the NRFU and CIFU operations might uncover addresses that were duplicates if a reply was obtained from only one—or neither—of the duplicates, they would not catch residents that had returned more than one questionnaire. Therefore, the Census Bureau instituted an automated process that would identify probable duplicate housing units. GEO and DSCMO developed algorithms to identify addresses that were likely to be duplicates, based on address matching, followed by person matching, followed by personal characteristics matching. (For addresses with more than two duplicated entries, the several pairs were treated as separate duplicate combinations that required matching.) After applying various criteria to the 4,688,442 possibly duplicate records, 2,411,743 MAFIDs were flagged for potential deletion. This included 1,617 duplicates found by the block splits/misallocation field work while the automated process was proceeding. However, additional reviews identified many cases that probably were not duplicates, such as households that had moved and instances of questionnaire misdelivery in multiunit buildings. As a result, during November to early December 2000, the Census Bureau reinstated 1,019,057 records, so that the final combined file of duplicate MAFIDs deleted from the hundred percent census unedited file was 1,392,686; deletion from that file avoided double-counting data for 1,352,193 occupied and 40,493 vacant housing units. All deleted addresses were retained with a special flag in the MAF.<sup>63</sup>

## Addresses Changed During Enumeration

For some operations—U/L, U/E, NRFU, and CIFU—respondents or enumerators changed the pre-printed addresses on a relatively few questionnaires. At the behest of GEO the questionnaire contained a section where an address correction could be recorded. Perhaps an area's addresses had been changed to city-style in the 15 to 20 months since address listing had taken place, perhaps a lister had recorded an E-911 address as a mailing address, etc. The Census Bureau wanted to capture the corrected addresses, and so the address changes on such questionnaires were picked up during the processing operation and reported to DSCMO. GEO tried first to match a new address to see if it was already in the MAF and second to match the MAFID to identify a changed address if it could not perform the match. The former may have identified a potential duplicate address, in which case DSCMO performed an automated check of the household roster to see whether it was indeed a duplicate; if so, one of the questionnaires would be deleted from the census. When GEO was informed about an updated address, it recorded that address in the MAF; however, the old address was retained, with a flag to identify it as a superseded record.

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<sup>63</sup> Jon R. Clark and Darlene A. Moul, *Coverage Improvement in Census 2000 Enumeration*, Census 2000 Topic Report No. 10, TR-10, (Washington, DC: U.S. Census Bureau, 2004), pp. 14–15.



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## Accuracy and Coverage Evaluation (A.C.E.)

The purpose of this operation was to determine how well the Census Bureau counted people and housing units. The A.C.E. program is described in Chapter 10, “Testing, Experimentation, Evaluation, and Coverage Measurement Programs.”

## QUESTIONNAIRE PRINTING AND MAILING

Nearly 400 million questionnaires, envelopes, and related materials were printed for use in Census 2000.<sup>64</sup> Census Bureau research conducted between 1992 and 1996 demonstrated that a redesigned, simplified questionnaire, combined with multiple mail contacts with respondents, could significantly improve mail response (see Chapter 2, “Planning the Census”). The simplest and least expensive method of counting household members was by employing user-friendly mailout/mailback (MO/MB) questionnaires. These MO/MB questionnaires were at the heart of census data collection. Their development, production, addressing, assembly, and distribution absorbed the bulk of the personnel and financial resources devoted to public-use forms. More than three dozen private sector contractors produced and addressed these questionnaires (as well as advance letters, envelopes, reminder cards, and related materials) following a competitive bidding process administered by the Government Printing Office (GPO).

Following substantial testing and analysis, the Census Bureau decided to use optical scanning and optical mark recognition (OMR) and optical character recognition (OCR) software to capture most of the data collected in Census 2000. The decision to adopt this technology, together with a hiring freeze in the early 1990s that inhibited the recruitment of specialized engineering personnel and with general encouragement to outsource operations that were not inherently governmental, led the Census Bureau to open competitive bidding for the design and equipping of data capture centers and the staffing, training, and management of those centers. These contracts were awarded to Lockheed Martin Mission Systems and TRW, Inc. respectively.<sup>65</sup>

Advances in information technology and systems reduced the cost and logistical requirements associated with processing hundreds of millions of Census 2000 questionnaires, but also increased the technical complexity involved in the design and printing processes. Together with partners from GPO and the Rochester Institute of Technology Research Center (RITRC), Census Bureau staff developed specifications for the questionnaires and related public-use forms. The quality assurance program for this phase of the census included on-site inspections and required the selection and testing of samples by Census Bureau officials, GPO staff, and contractor personnel.

## Questionnaire Design and Development

The content development process is described in Chapter 2, “Planning the Census”, and the individual questions, as well as the coding and editing to which the responses were subjected, are reviewed in Chapter 3 “Population and Housing Questions.”

Beginning in 1995, the Census Bureau recognized that the design of the questionnaire might have to be modified to meet the requirements of the new data capture technology (referred to as DCS 2000). During 1995 and 1996, the Census Bureau’s Technical Services Division<sup>66</sup> began to develop initial specifications for the not-yet-awarded OCR and OMR hardware and software. These included such characteristics as the outside and inside dimensions of the write-in response boxes, a document integrity bar code (used to identify all pages of a form), and a series of icons that helped the respondent navigate through the questionnaire. Research on a respondent-friendly

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<sup>64</sup> U.S. Census Bureau, Census 2000 Informational Memorandum No. 60, “Census 2000 Questionnaire Printing, Addressing, Assembly, and Distribution Program Master Plan,” June 7, 2000, Attachment J, “Stateside Questionnaire Printing.”

<sup>65</sup> For a description of the data capture system used for Census 2000 and of data capture center operations, see Chapter 6, “Data Capture and Processing.”

<sup>66</sup> Disbanded in the fall of 1996.

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questionnaire also suggested that the form incorporate color as well as black print. Any text or graphics that could obscure meaningful data in the image, including lines and color used to distinguish write-in fields, had to drop out, or disappear, during scanning.<sup>67</sup>

The Census Bureau developed and finalized the necessary specifications by August 1998, when they were delivered to GPO. Specifications could not be completed before then because, in addition to uncertainties about the questionnaire, the Census Bureau did not contract with Lockheed Martin Mission Systems for the optical scanning and OCR hardware and software until March 1997. At least some of the specifications of census questionnaires could not be finalized until the hardware and software that were to process them had been selected and tested.

That neither the layout, specifications, nor the content of the Census 2000 questionnaire had been fully determined when the agency began to search for suitable printing contractors was a challenge, but not an insurmountable one. The Census Bureau and GPO invited printing contractors to a vendors conference on October 21, 1996, for a briefing on the Census Bureau's printing, binding, and distribution needs for Census 2000. Representatives of at least 29 companies attended the conference. Census Bureau staff presented an overview of Census 2000 printing and mailing requirements, including the types and estimated quantities of forms to be printed, and procurement and delivery dates for mailing packages and other printed material. Presenters also reviewed the quality assurance program that contractors would be expected to implement and went over the planned systems for document integrity and data processing. Representatives of both agencies described the technical requirements of the census mailing packages and other forms and distributed four forms packages for evaluation. Attendees were asked for their views on ways of correcting any design features that might increase cost or reduce bidding competition. Attendees were also asked to respond to a questionnaire describing their firms approach to a number of technical issues such as printing, addressing, assembling, and distributing more than 100 million census forms.<sup>68</sup>

During 1997 and 1998, Census Bureau staff learned that the new data capture system could not be modified to capture information from virtually any type of form. While the agency would have benefitted from having a comprehensive set of technical requirements for data capture and processing before the census dress rehearsal (conducted in the spring of 1998), such a listing was not available until the late summer of 1998. Analysis of the data capture and processing systems used in the dress rehearsal led to major changes on all forms planned for electronic data capture. These modifications included the need for document integrity on the short form, Be Counted form, and similar forms; consistent OCR answer fields for similar questions across all form types; and wider margins to allow for staple removal. In addition, the Census Bureau's decision, following the dress rehearsal, to adopt a six-person questionnaire meant that the additional text had to fit into the same boundaries as the five-person form without sacrificing user friendliness or technical requirements. Finally, the complexity of the printing contracts, including the need to print prior-to-production samples for testing, meant that print contracts had to be awarded up to 15 months prior to the start of major census operations.<sup>69</sup>

To compile a comprehensive list of technical requirements and assure that they were communicated to, and understood by, contractors and staff from the Census Bureau and other government organizations, the agency formed the Technical Specification Contract Integration Team (TSCIT) in July 1997, which consisted of representatives from the following:

- Government Printing Office (GPO), which provided expertise about paper and ink specifications and the management of printing contracts.

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<sup>67</sup> U.S. Census Bureau, "Forms Management Procedure, Optical Character Recognition: Technical Specifications for Design," July 29, 1996; Broderick E. Oliver, "Profile of the Census 2000 Printing Quality Program," DSSD Census 2000 Procedures and Operations Memorandum Series No. KK-F-06, September 2001, p. 6.

<sup>68</sup> Government Printing Office and Census Bureau Conference on Printing and Delivery of Census 2000 Census Forms, "Agenda," "Estimated Quantities of Printed Materials and Schedule," "Census 2000 Quality System," "Document Integrity," and memorandum to attendees at the Census 2000 printing vendors' conference, October 10, 1996; U.S. Census Bureau, "Forms Design and Printing Lessons Learned for Census 2000," Census 2000 DSCMO General Memorandum Series No. 01-03, May 15, 2002, p. 6.; RIT Research Corporation, "GPO/Census 2000 Vendors Conference: Questionnaire Responses," January 1997.

<sup>69</sup> U.S. Census Bureau, "Forms Design and Printing Lessons Learned for Census 2000," Census 2000 DSCMO General Memorandum Series No. 01-03, May 15, 2002, pp. 3-4.

- Rochester Institute of Technology Research Center (RITRC), which supplied technical guidance on paper and printing and conducted related research.
- Decennial Systems and Contracts Management Office (DSCMO), a Census Bureau office that represented the forms design, printing contracts, data capture, and data processing areas.
- Administrative and Customer Services Division (ACSD), a Census Bureau division that represented the postal and printing areas.
- Decennial Statistical Studies Division (DSSD), a Census Bureau division that guided the implementation of the quality information system.

The team met weekly and researched and evaluated such issues as dropout colors (colors that had to disappear in the digitized image of the questionnaire), color control patches (to assure that the printed colors remained within specifications), inkjet bleed-through (concern that the ink from the address and the census identification bar code could bleed through to the other side of the page, creating the possibility of false reads), document integrity (a bar code used to associate the individual sheets of a disassembled questionnaire booklet and both sides of a short form), placement of bar codes on the short and long forms, specifications for controlling spots and extraneous marks on census forms, and specifications for the color and density of the ink. The data capture staff, Lockheed Martin, and RITRC all made important substantive contributions to the development of the printing specifications required by the optical scanning equipment and the OMR and OCR systems. TSCIT delivered the necessary specifications to GPO in the summer of 1998, and GPO posted the first invitation for bid in *Commerce Business Daily Online* (CBDNet) in the fall of 1998.<sup>70</sup>

In November 1990, the Census Bureau and the U.S. Postal Service (USPS) established a joint committee on census planning to identify and develop opportunities for cooperation in Census 2000. The committee met quarterly through 1997 and contributed to the passage of Public Law (P.L.) 103-430, which authorized the release of USPS address information to the Census Bureau for use in creating and maintaining the master address file (MAF). The committee's work also led to the agreement to provide copies of all new TIGER/Line® database files and demographic data products to the USPS to serve as the basis for that agency's geographic database.<sup>71</sup>

Beginning in 1998, liaisons from both agencies met monthly to coordinate Census/USPS operations and communicate management decisions. The national postal liaison worked for the Census Bureau's Decennial Management Division (DMD) and was the Census Bureau's primary point of contact with the USPS. USPS staff also interacted regularly with several other Census Bureau divisions, including:

- DSCMO and print contractors on matters pertaining to envelope size, bar code and sort operations, palletizing census materials, and transporting those materials for mail delivery.
- ACSD to ensure that business reply permits were active for the Census 2000 mailout and to supply the USPS with return counts of questionnaire mailing pieces so that census postage costs could be properly assessed.
- GEO to supply updated versions of the delivery sequence file (DSF) that were major inputs in the creation of the MAF and the decennial MAF (DMAF).
- FLD to coordinate the undeliverable-as-addressed program in which questionnaires that could not be delivered by the USPS were returned to post offices and held for pick up by local census office staff.

<sup>70</sup> Oliver, "Profile of the Census 2000 Printing Quality Program," pp. 5–8; Carol Briggs, "Census 2000 Questionnaire Printing, Addressing, Assembly, and Distribution Program Master Plan," "Census 2000 Informational Memorandum No. 60," June 7, 2000, pp. 5–8; Association for Information and Image Management, "Designing Documents for Image-Based Recognition," n.d., n.p.; Association for Information and Image Management, "Paper Forms Design Optimization for Electronic Image Management (EIM)," Technical Report ANSI/AIIM TR32, 1994.

<sup>71</sup> U.S. Census Bureau and U.S. Postal Service, "USPS—Census Cooperation in Planning for the 2000 Decennial Census of Population and Housing," November 1993, p. 1; U.S. Census Bureau, "Program Master Plan: United States Postal Service Participation in Census 2000 Draft," see footnotes 89-91, n.d., p. 1.

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- Data capture centers (DCCs) to assist with mail acceptance, answer postal questions, and return mail erroneously delivered to the DCCs.<sup>72</sup>

### Printing Contracts

Census 2000 included 86 printing contracts, awarded to 40 different companies, to print the nearly 475 million public-use forms and related materials. A contracts writing team was headed by DSCMO staff and included printing and forms design specialists from ACSD and contract management specialists from GPO. This team developed specific contract content, and DSCMO established a formal contract review process that included census stakeholders both inside the Census Bureau and among outside entities, such as contractors and the USPS. The team sent comments to the contract administration staff at GPO, which incorporated them, added standard federal contracting stipulations, issued invitations for bid, and awarded the contracts.<sup>73</sup>

GPO began issuing invitations for bid in September 1998 and awarding printing contracts on December 18, 1998.

A key element of the Census Bureau's plan for improving response rates in Census 2000 was a multiple-mailing strategy. The agency's initial contact with a respondent was an advance letter alerting the recipient that a census questionnaire would be delivered shortly. In July 1999, GPO awarded the contract to print, address, bar code, and assemble 125 million advance letter mailing packages to Freedom Graphic Systems, Inc., of Janesville, WI. These packages came in two forms. One hundred million packages contained a letter advising recipients to expect the questionnaires to be delivered by the USPS. The letter in the remaining 25 million packages alerted recipients that their forms would be delivered by Census Bureau personnel. Otherwise, the letters were identical. They explained why answering the census was important and that it was "required by law." The value of the printing contract was \$5.5 million. A message printed on the front of the letter in Spanish, Chinese, Korean, Tagalog, and Vietnamese referred readers to a note on the back of the letter stating that questionnaires in these languages were available by contacting the Census Bureau's National Processing Center in Jeffersonville, IN. Drafting these messages in language was contracted to Translation Solutions Corporation in Portland, OR. The translations were checked by a second contractor.

The first census contract GPO awarded was for \$9.6 million and covered the production of nearly 89 million short-form MO/MB mailing packages. It went to the Communicolor division of R.R. Donnelley & Sons. Located in Hebron, OH, Communicolor did the printing, addressing, and bar coding, and subcontracted the insertion process to Monroe/Macke, also in Hebron, OH. Communicolor subcontracted envelope production to Commercial Envelope in Altoona, PA, and cover letter production to the Nielsen Company of Florence, KY.<sup>74</sup> Modifications over the life of the contract meant the final award totaled a little less than \$10.1 million.<sup>75</sup>

GPO awarded the contract for 17.8 million MO/MB long-form questionnaires to Webcraft Technologies, Inc., in North Brunswick, NJ. The Census Bureau paid nearly \$8.9 million to Webcraft and its subcontractors over the life of the contract. Webcraft printed, addressed, and bar coded the questionnaires at its New Jersey plant. Inserting the completed questionnaires into envelopes was subcontracted to Direct Marketing Association in Baltimore, MD, and Addressing Services Co. in East Hartford, CT. Webcraft also subcontracted envelope production to Oles Envelope Corp. in Baltimore, MD, and cover letter printing to Suncraft Technologies in Naperville, IL.

The USPS delivered the bulk of short- and long-form questionnaire packages during Census 2000, but the Census Bureau itself planned to deliver, in an operation called update/leave (U/L), over 20 million short form packages in small cities, towns, and rural areas across the country where

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<sup>72</sup> U.S. Census Bureau, "Program Master Plan: United States Postal Service Participation in Census 2000 Draft," see footnotes 89-91, n.d., pp. 2-3.

<sup>73</sup> U.S. Census Bureau, "Forms Design and Printing Lessons Learned for Census 2000," Census 2000 DSCMO General Memorandum Series No. 01-03, May 15, 2002, pp. 16-20.

<sup>74</sup> Oliver, "Profile of the Census 2000 Printing Quality Assurance Program," pp. 28; U.S. Census Bureau, "Components of Printing Contracts in Census 2000" (Draft), Chapter 2.

<sup>75</sup> U.S. Census Bureau, untitled table of printing contracts, contractors, and billings from Census 2000, Aug. 2, 2004.

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the agency anticipated difficulties creating an accurate and comprehensive list of deliverable mailing addresses. The production contract called for 22.3 million short-form, U/L packages, cost \$2.7 million, and was awarded to Freedom Graphic Systems, Inc., in Milton, WI. Freedom Graphic printed the questionnaires and subcontracted with Freedom Imaging Systems in Bolingbrook, IL, for the addressing, barcoding, and insertion operations. Envelope production was subcontracted to Continental Envelope in Geneva, IL.

Webcraft Technologies won the long-form, U/L mailing package contract for 8.1 million packages at a cost of \$4.6 million. Webcraft printed, addressed, and bar coded the mailing packages and, as it had done with the MO/MB long forms, subcontracted inserting the materials into envelopes to Direct Marketing Association, Addressing Services Co., and Star Bindery, Inc., in Westville, NJ; printing the cover letter to Suncraft Technologies; and producing the envelopes to Oles Envelope Corp.

The third contact between the Census Bureau and potential respondents was the reminder card, which thanked participants who had returned their census forms and reminded those who had not to send completed questionnaires to the appropriate DCC. Forms designers at the Census Bureau designed the postcard, and GPO awarded the contract to print and address them to Moore Response Marketing Service in Green Bay, WI. The contract called for over 122 million postcards, at a cost of \$717,000. As with the advance letters, the reminder postcard came in two versions. The 100 million postcards sent to HUs in MO/MB areas were mailed first class and referenced the questionnaires that had been delivered by USPS postal carriers. The 22 million postcards sent to those in the U/L universe were mailed third class.

In addition to questionnaires designed to be completed by respondents, the Census Bureau needed questionnaires that could be administered by enumerators. The inquiries on the enumerator questionnaires asked for the same information as those delivered to HUs but were worded for a face-to-face interview in which an enumerator could insert either appropriate pronouns or the respondent's name when reading the questions. Enumerator questionnaires came in two versions: a short form and a long form. The contract for 164.3 million enumerator short forms was awarded to Quebecor Petty Printing in Effingham, IL, and cost about \$4.2 million. R.R. Donnelley Direct, Inc. in Seymour, IN, won the contract for almost 38.5 million enumerator long forms at an overall cost of \$12.1 million. R.R. Donnelley & Sons, in Gallatin, TN, stapled the printed questionnaire pages together into complete packages.

In March 1999, GPO awarded Webcraft Technologies, Inc., a \$2.2 million dollar contract to produce 12 million Be Counted forms in English and 3 million in Spanish. These forms provided a way to be included in Census 2000 for people who thought they had not received a form at their address and had not been included on anyone else's form. Be Counted forms contained the short-form questions in a respondent-friendly format and several other questions to facilitate matching the address on the completed form to the MAF. Local Census Bureau partners made these forms available at approximately 85,000 sites around the country and at Questionnaire Assistance Centers.<sup>76</sup>

GPO contracted with more than two dozen printing companies to produce a number of other questionnaires, flash cards, flyers, guides, job aids, letters, and promotional materials used in Census 2000. Most of these contracts were valued at less than \$1 million.

The printing process used to produce most of the questionnaires was offset lithography. While gravure printing was particularly well-suited to printing large quantities of standardized forms, no gravure paper comparable to the JCP-A80 paper (approved for data-collection use by GPO, the National Archives and Records Administration, and the Census Bureau) was available.<sup>77</sup>

### **Quality Assurance for Printing Operations**

The quality assurance (QA) process for printing questionnaires and other public-use forms was extensive and incorporated manual and automated components. The QA program included three phases: pre-award, prior-to-production, and production.

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<sup>76</sup> U.S. Census Bureau, untitled table of printing contracts, contractors, and billings from Census 2000, Aug. 2, 2004; *Ibid.*, "Components of Printing Contracts in Census 2000" (Draft), Chapters 2-5.

<sup>77</sup> Oliver, "Profile of the Census 2000 Printing Quality Assurance Program," p. 7.

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**Pre-award QA.** GPO led the pre-award phase by assessing the capacity of prospective contractor's production facilities and expertise to accomplish the terms of the various printing contracts within the time allowed. GPO required prospective bidders to submit ink and paper samples and, following this process, the printing companies then provided samples of print runs to GPO for approval.

GPO gave contractors that satisfied these requirements 1 week from the time of contract award to submit their own QA plans that included such elements as a flow chart illustrating each step in the production process (including subcontractors' steps), proposed start dates and duration of all phases of production, coordination of the production process, storage and shipping of the completed products, and the replacement of spoiled or destroyed mailing packages. In addition, GPO required successful bidders to provide plans assuring that all addresses and census identification numbers and the related bar codes were accurately and completely printed on census forms, that document integrity bar codes were correct, that the production process included measures to control dust and loose paper fibers, and that the production process incorporated procedures allowing for the removal of defective questionnaires and for resuming production at the proper place.

Within 2 weeks of awarding the printing contracts, the Census Bureau and GPO held post-award meetings with the printing companies to review all aspects of the contractors internal and external operations.<sup>78</sup>

**Prior-to-production QA.** The Census Bureau organized the QA process for prior-to-production samples. The agency's Bowie computer center, in conjunction with RITRC, tested both short (D-1) and long (D-2) forms for physical dimensions, color and black densities, color values, and bar code verification. Measuring tools used included gauges, densitometers, spectrophotometers, and bar code verifiers. The USPS provided the gauges, which read and verified postal bar codes. Densitometers measured optical density; the resulting measurement depended on the darkness of printed material. Spectrophotometers measured the consistency of color across a printed area. Bar code verifiers were scanning instruments that optically read specific print quality components of bar codes and verified their machine readability. While the Census Bureau was generally satisfied with the quality of the forms tested, a number of deficiencies were identified, including image position, ink density, dust buildup in the scanners, and color attributes. None of the forms failed the bar code verification test or the dropout color test. The Census Bureau also put a random sample of D-1 mailing packages through a series of tests to assess check-digits, bar codes, and envelopes at the agency's Baltimore DCC. Test runs of the D-1 packages through the Baltimore DCC's sorters were successful, as were similar tests of D-2 packages through sorters at the Lockheed Martin laboratory.

The NPC in Jeffersonville, IN, performed both visual and automated assessments. Among the problems identified by visual inspection were spots and extraneous marks, poor positioning of the document integrity bar code, poor image position, questionnaire damage, and density variation in the dark gold ink. Inspection by instrument revealed additional defects, such as color density failures and bar code errors.

While these deficiencies required monitoring, none were insurmountable, and the Census Bureau conditionally approved all the contractors tested.<sup>79</sup>

**Production QA.** The Census Bureau developed and implemented an automated, integrated QA plan that included data provided by the printing contractors, agency experts assigned to the printer's facilities, and testing and evaluation by the NPC, DSSD, and RITRC. The Census Bureau coordinated its QA monitoring with GPO, which also maintained active, on-site inspection of facilities and print runs and provided technical support.

The inspection process usually involved contractor personnel pulling and examining samples from each step of the printing process performed on any given day at plants processing the major data-collection questionnaires. Census Bureau and GPO staff reviewed a subset of the contractor-drawn

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<sup>78</sup> Ibid., pp. 11–12; U.S. Census Bureau, "Forms Design and Printing Lessons Learned for Census 2000," Census 2000 DSCMO General Memorandum Series No. 01-03, May 15, 2002, p. 6.

<sup>79</sup> Oliver, "Profile of the Census 2000 Printing Quality Assurance Program," pp. 11–16, 18.

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samples and initiated their own independent inspections. The number of monitoring personnel varied according to the number of hours per day a given plant was operating, the complexity of the production process, and the importance of the product. For example, GPO and the Census Bureau each employed two monitors per day, each of whom worked a 12-hour shift, 7 days per week, at Webcraft's New Jersey plant that was printing the 40-page MO/MB long-form questionnaire. A similar work force monitored the same company's printing of the U/L long form. A larger contingent of three Census Bureau monitors and four GPO monitors, working 12-hour shifts, 5 days per week, checked the binding of the two 16-page signatures and one 8-page signature into the 40-page questionnaire and the insertion of the questionnaire, return envelope, and cover letter into the mailout envelope at the Direct Marketing Association's facility in Baltimore, MD. Less complex jobs required fewer monitors. Only one Census Bureau monitor and one GPO monitor were required for each 12-hour shift, 6 days per week, to check the printing of the short-form MO/MB questionnaires at the Communicolor plant in Hebron, OH. When on-site inspectors discovered defects, they generally reported them to the GPO monitor, who served as middleman between the Census Bureau and the contractors.<sup>80</sup>

Each production day, the contractors sent production samples to the NPC for thorough inspection. DSSD staff analyzed the NPC data and provided reports to DSCMO. The inspection process during the production phase was similar to that employed in the previous phase but was more thoroughly automated through a system called Print Sample.

This automated data-collection and analysis system contained two components: a point-and-click interface that recorded the results of the visual inspections and a subsystem that recorded and analyzed readings taken by densitometer, spectrophotometer, and bar code verifier. The mouse-driven visual inspection component allowed a monitor to enter a pass or fail for each attribute inspected and to characterize the importance of the defect. The Print Sample software also captured the density, spectral, and bar code readings that QA staff took of the sample questionnaires and compared the readings to the specifications contained in the relevant contract. An NPC contractor developed the Print Sample visual inspection software, while RITRC devised the reading inspection component.<sup>81</sup>

During the production of public-use forms, QA data from contractors, Census Bureau and GPO monitors, and the NPC team contributed an average of about 50,000 visual inspections per day. Instrument-aided color inspections added another 50,000 inspections each day. Despite the large data storage and retrieval requirements, Census Bureau staff determined that it was necessary to save information pertaining to both passing and failing color measurements to be able to track trends in product quality. In late 1998, the Census Bureau hired Advanced Engineering and Research Associates to build and manage the Quality Information System for Printing (QuISP), an Internet-based database system to receive, store, analyze, and disseminate statistics on the printing of public-use forms for Census 2000 and on the associated QA system. QA technicians stationed at the various printing plants inspected printed forms, recorded measurements in Print Simple, and transferred the results to the QuISP via the World Wide Web. The QuISP system produced summary statistics, such as average defects per hundred printed items, daily average defects by printing location and from NPC inspection, and cumulative and moving average defects by data source.<sup>82</sup>

**Printing error in the advance letter.** While the QA system worked quite well overall in monitoring and maintaining the quality level of the public-use forms used during Census 2000, one significant defect did pass through the system without being detected. The advance letter sent to about 115 million addresses contained an extra digit printed in front of the street address. This extra digit was not incorporated in the postal bar code, so the sorting machines that read addresses from the bar codes were not affected, and the mail was sorted properly. The USPS

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<sup>80</sup> Ibid., pp. 17–19; U.S. Census Bureau, “Forms Design and Printing Lessons Learned for Census 2000,” Census 2000 DSCMO General Memorandum Series No. 01-03, May 15, 2002, pp. 17–22, 26–27; and Joseph D. Conklin, “Trip Report to Communicolor in Hebron, OH,” DSSD Census 2000 Procedures and Operations Memorandum Series No. G-17 pp. 1–4.

<sup>81</sup> Oliver, “Profile of the Census 2000 Printing Quality Assurance Program,” pp. 19–20.

<sup>82</sup> Ibid., pp. 20–23.

alerted all local post offices to inform postal carriers of the problem; the USPS also assured the Census Bureau that this data processing and printing error would not affect delivery of the advance letter to all the appropriate addresses in the country. A Census Bureau evaluation of the delivery of the advance letter indicated that the USPS delivered the mislabeled letters to the correct addresses between 92 and 95 percent of the time.<sup>83</sup>

### Mailing Piece Addressing and Delivery

The Census Bureau worked closely with GPO, the USPS, and its printing contractors to implement the printing, shipping, and delivery schedules for census questionnaires and other printed materials. The Census Bureau planned for the USPS to deliver three waves of communications to mailing addresses across the United States according to the following schedule:

Type of mailing piece (for mailout/mailback)	Begin delivery	End delivery
Advance letter .....	March 6, 2000	March 8, 2000
Questionnaire .....	March 13, 2000	March 15, 2000
Reminder card .....	March 20, 2000	March 22, 2000

In addition, the agency planned for the USPS to deliver advance letters and reminder cards to mailing addresses in the U/L mailing universe, while Census Bureau personnel would deliver the questionnaires themselves. The schedule for these operations is shown below:

Type of mailing piece (for update/leave)	Begin delivery	End delivery
Advance letter .....	March 1, 2000	March 3, 2000
Questionnaire .....	March 3, 2000	March 30, 2000
Reminder card .....	March 27, 2000	March 30, 2000

As a result of close coordination among the contributing organizations, the Census Bureau adhered to this schedule for delivering mailing packages for Census 2000.<sup>84</sup>

The printing process for most of the questionnaires in the MO/MB universe was driven by the availability of the decennial master address file (DMAF). The Census Bureau sent the bulk of the address file to the printing companies in the fall of 1999. However the contracts required that these companies perform a series of intermediate steps between the contract award in late 1998 or early 1999 and the mailout in March 2000. Only after the printing of several runs of test forms and their review and acceptance by Census Bureau and RITRC staff were the printers allowed to begin printing the actual questionnaires to be used in Census 2000.<sup>85</sup> For example, Communicolor was awarded the contract for printing the short form MO/MB questionnaire in December 1998. Post-award test printing runs and their review extended from January through mid-May 1999. Questionnaire printing began in June 1999. The Census Bureau sent address files to Communicolor in September and October 1999, followed by the late additions to the address file in early February 2000. Printing of the long-form MO/MB questionnaire followed a similar schedule. The contractor, Webcraft Technologies, won the contract in December 1998, produced test printing runs between January and April 1999, then began printing long-form questionnaires in May 1999. The Census Bureau sent address files in September and October 1999 and an additional file of late adds in February 2000.<sup>86</sup>

<sup>83</sup> U.S. Census Bureau, "GPO Statement on Census Advance Letters," February 26, 2000; U.S. Census Bureau and U.S. Postal Service, "Census Letters: Right Address, Wrong Numbers," February 26, 2000; before the U.S. House of Representatives, Subcommittee on the Census, Committee on Government Reform, "Prepared statement of Kenneth Prewitt, Director, U.S. Census Bureau," March 8, 2000; U.S. Census Bureau, Planning, Research, and Evaluation Division, "Census 2000 Advance Letter Evaluation," March 31, 2000.

<sup>84</sup> U.S. Census Bureau, "Census 2000 Mailing and Questionnaire Delivery Strategy and Dates," Census 2000 Decision Memorandum No. 76, March 2, 1999; Sharon K. Boyer, "Questionnaire Printing, Addressing, Assembly, and Distribution Operations Assessment Report (Draft)," October 19, 2001, p. 11.

<sup>85</sup> See, for example, the printing and delivery schedule for the English-language long-form mailing packages in *Commerce Business Daily Online*, Sept. 21, 1998, pp. 19–20.

<sup>86</sup> U.S. Census Bureau, "Contracts Deliverables Schedules," April 27, 1999.



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Questionnaire printing was generally a three-stage process. The initial printing step involved unwinding the paper from a large roll onto torsion rollers, applying ink to both sides of the paper, heating the paper to dry the ink, moistening the paper to prevent brittleness, and winding the printed questionnaires onto a take-up roll. At this stage, the printer reproduced the questionnaires without knowing the addresses to which the questionnaires were to be delivered. As a result, this step was largely completed before the Census Bureau finished creating the DMAF in the fall of 1999. Once the DMAF was created, the Census Bureau sent copies to the printers and the next step could begin. The printed questionnaires were unwound from the take-up roll, a mailing address was printed on each questionnaire, as well as a census identification code number, its associated bar code, and the appropriate postal delivery bar code. Both numerical and bar codes had to be visible through the address window on the outgoing envelope. Then the forms were folded, edges trimmed, and placed in boxes and shipped to the bindery.

The third step in the process—inserting the questionnaire, a cover letter, and a return envelope into the mailout envelope—was often subcontracted by the printing company. After the questionnaires, cover letters, and return envelopes were placed in separate stacking towers, an outgoing envelope was moved into position, opened by a mechanical arm or forced air, and a questionnaire, cover letter, and return envelope were inserted. The adhesive on the outgoing envelope was then moistened, and the envelope sealed and ready for preparation for mailing.<sup>87</sup>

The USPS worked closely with the Census Bureau and individual printing contractors to develop load plans detailing when and where the USPS was to pick up the mailing pieces, the number of trucks to be used, the frequency of their arrival, and the loading order. Mailing packages that were bound for the farthest destination were picked up first, while those with addresses that were closer to the print contractors warehouse were among the last to be loaded. Print contractors were responsible for loading the envelopes into trays organized by state, three- or five-digit ZIP Code, and by carrier route where possible. The trays were stacked on pallets, which were shrink-wrapped and prepared for pickup by USPS tractor-trailers.<sup>88</sup>

**Advance letter.** Moving the mailing packages from the printers warehouse through the mail stream to the recipients' addresses involved a logistically complex series of steps. The USPS provided the print contractor of the advance letter (Freedom Graphics) with the ZIP Code sortation, palletization, and warehousing arrangements that had the most efficient load plan for the mailing. USPS tractor-trailers picked up the advance letters and transported them to postal installations—also called sectional center facilities—that distribute mail in geographic areas covered by the first three digits of one or more ZIP Codes. These sectional facilities held the pallets until all the shipments in the United States were distributed. Then, the advance letters were sent to local post offices so that postal carriers could deliver them between March 1 and 3, 2000, in U/L areas and between March 6 and 8, 2000, in MO/MB areas.<sup>89</sup>

**Questionnaires.** Mailing arrangements for the short and long questionnaires were similar to those for the advance letter. The USPS gave the printing contractors sorting and palletizing instructions designed for efficient distribution through the postal system. Mailing packages of each form were transported to bulk-mail facilities and/or processing and distribution centers, where they were held for release to local post offices in time to be delivered to residential addresses between March 13 and 15, 2000.

The USPS considered the short form as a “letter” mailing piece; postal regulations allowed bulk mailers to palletize the short-form mailing packages in preparation for staging and mail delivery. However, the USPS classified the long form as “flat mail” and postal regulations did not allow for

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<sup>87</sup> Oliver, “Profile of the Census 2000 Printing Quality Assurance Program,” pp. 2–3.

<sup>88</sup> U.S. Census Bureau, “Census 2000 Operational Plan,” December 2000, pp. V-15–16; U.S. Census Bureau, “Program Master Plan: United States Postal Service Participation in Census 2000 (Draft),” n.d., pp. 3–4.

<sup>89</sup> U.S. Census Bureau, “Program Master Plan: United States Postal Service Participation in Census 2000 (Draft),” n.d., p. 4.

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palletizing flat mail. After discussions with the Census Bureau, the USPS modified its regulations to permit the palletization of census long forms. This modification made the transportation, distribution, and delivery of the long forms easier for the postal service and helped ensure their timely delivery to nearly 15 million addresses.<sup>90</sup>

**Reminder card.** The reminder card thanked respondents who had returned their questionnaires for their cooperation and reminded other respondents that it was not too late to complete and return the forms. The cards were printed and addressed in Green Bay, WI, and were prepared for mailing in accordance with sorting and palletizing plans the USPS provided to the printer. Like the advance letters and the questionnaires in MO/MB areas, most reminder cards were sent via first-class mail; however those delivered to housing units in U/L areas were sent via Standard A (third-class mail). Between March 20 and March 22, 2000, the USPS delivered over 94 million reminder cards in MO/MB areas. In U/L areas, the USPS delivered over 23 million reminder cards in the March 27 to 30, 2000, period.<sup>91</sup>

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<sup>90</sup> U.S. Census Bureau, "Forms Design and Printing Lessons Learned for Census 2000," Census 2000 DSCMO General Memorandum Series No. 01-03, May 15, 2002, p. 19; U.S. Census Bureau, "Program Master Plan: United States Postal Service Participation in Census 2000 (Draft)," n.d., pp. 4–5.

<sup>91</sup> U.S. Census Bureau, "Program Master Plan: United States Postal Service Participation in Census 2000 (Draft)," n.d., p. 5; U.S. Census Bureau, "Census 2000 Mailing and Questionnaire Delivery Strategy and Dates," Census 2000 Decision Memorandum No. 76, March 2, 1999.

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## Chapter 9: Data Products and Dissemination

### PREPUBLICATION DATA FILES<sup>1</sup>

The official data products<sup>2</sup> discussed in this chapter were produced from two Census 2000 pre-publication data files: the 100 percent detail file (HDF) and the sample edited detail file (SEDF). The HDF was the source file—directly or indirectly—for the redistricting data (also known as the Public Law [P.L.] 94-171 data), Summary Files 1 and 2, and all the other 100 percent data products (so called because these data were derived from the questionnaire items asked of all respondents and at all housing units). Similarly, the SEDF was the source file for Summary Files 3 and 4, the public use microdata sample (PUMS) files, and all the other sample data products (the data for these products were obtained from responses to the long-form questionnaire, which was distributed to a sample of the population and housing units).<sup>3</sup> The creation of these detail files is described in Chapter 6, “Data Capture and Processing.”

In addition to these two detail files, the Census Bureau also created a 100 percent detail file that incorporated a “statistical adjustment.”<sup>4</sup> This file was produced because the Census Bureau had planned that all 100 percent data products it produced, including the redistricting data, would incorporate a statistical adjustment of the census counts.<sup>5</sup> Similarly, the Census Bureau planned to produce a sample detail file in which the sample data would have been weighted to the population totals in the 100 percent detail file that incorporated a statistical adjustment. Thus, preliminary plans indicated that all official Census 2000 data products would be produced from prepublication files that incorporated statistically adjusted data derived from the results of the Accuracy and Coverage Evaluation (A.C.E.) program.<sup>6</sup>

Significantly, the Census Bureau was obligated by the requirements of P.L. 105-119 (the U.S. Department of Commerce Fiscal Year 1998 Appropriations Act<sup>7</sup>) to produce an HDF that did not incorporate statistical adjustment. P.L. 105-119 required the Census Bureau to make publicly available “the number of persons enumerated without using statistical methods” for

<sup>1</sup> Prepublication files are those data files that were produced once all the respondent data were converted to electronic format and upon which a series of processing steps was undertaken. The prepublication files from which the data products were produced are the “detail” files, and these files are discussed in this section. The series of processing steps carried out on the initial response file and the intermediate prepublication files created are discussed in Chapter 6, “Data Capture and Processing.”

<sup>2</sup> The apportionment counts are not considered a data product. Delivery of the Census 2000 apportionment counts and the resulting apportionment of House representatives among the states are discussed in the “Legal Authority” section of Chapter 1, “The Context of Census 2000.”

<sup>3</sup> For more information regarding the content of the Census 2000 short- and long-form questionnaires, see Chapter 3, “Population and Housing Questions.”

<sup>4</sup> This process involved dual system estimation, in which a sample of households was surveyed contemporaneously with the census and then matched to the census to estimate those missed or erroneously counted in the enumeration. For a detailed discussion of the methodology, see the “Accuracy and Coverage Evaluation” section of Chapter 10, “Testing, Experimentation, Evaluation, and Coverage Measurement Programs.”

<sup>5</sup> Department of Commerce, “Updated Summary: Census 2000 Operational Plan,” February 23, 1999. Under the Census Bureau’s original plan for Census 2000—which is discussed in detail in Chapter 2, “Planning the Census”—the production of the apportionment data also would have incorporated a statistical adjustment. However, the Supreme Court ruled in *Department of Commerce v. U.S. House of Representatives* (119 S.Ct. 765 (1999)) that the use of statistical sampling (and thus statistical adjustment based on sampling) to produce the state population numbers for apportionment of the U.S. House of Representatives was precluded by Section 195 of the Census Act (Title 13, U.S. Code). See “The Debate Over the Use of Sampling” section of Chapter 11, “Legal Issues,” for more information regarding the challenges to the planned uses of sampling in Census 2000.

<sup>6</sup> The A.C.E. program is discussed in Chapter 10, “Testing, Experimentation, Evaluation, and Coverage Measurement Programs.”

<sup>7</sup> For background information regarding the relevant provisions of P.L. 105-119, see the “Legislation” section of Chapter 11, “Legal Issues.”

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. . . (2) the data contained in the 2000 decennial census Public Law 94-171 data file released for use in redistricting, (3) the Summary Tabulation File One (STF-1) for the 2000 decennial census, and (4) the official populations of the States transmitted from the Secretary of Commerce through the President to the Clerk of the House used to reapportion the districts of the House among the States as a result of the 2000 decennial census.<sup>8</sup>

Subsequent to the release of the February 1999 Operational Plan, the Department of Commerce defined a decision-making process for determining whether official redistricting data should incorporate a statistical adjustment.<sup>9</sup> In keeping with that process, on March 1, 2001, based on the report of the Executive Steering Committee for A.C.E. Policy (ESCAP),<sup>10</sup> the Director of the Census Bureau concurred with and adopted the committee's recommendation that the unadjusted data be designated as the official redistricting data.<sup>11</sup>

Using the 100 percent detail file that incorporated a statistical adjustment, Census 2000 adjusted block-level data had been prepared in the event the Secretary of Commerce decided in favor of adjustment. These data were available for release to states and localities within the deadline stipulated in P.L. 94-171 (within 1 year following the decennial census date). On March 6, 2001, Secretary of Commerce Donald L. Evans announced his determination, based on the ESCAP report and the Census Bureau Director's recommendation, that the unadjusted data would be the official redistricting data.<sup>12</sup> Thus, the unadjusted data were the only data released to the public. The Secretary stated that the release of the adjusted data would be considered at a later time following the ESCAP's further investigation.<sup>13</sup> As a result of this decision, the Census 2000 adjusted block-level data were the subject of Freedom of Information Act (FOIA) requests and litigation.<sup>14</sup>

In addition to the report and recommendation about potential adjustment of the redistricting data, ESCAP also was required to make a separate recommendation to the Director regarding the use of the adjusted data for nonredistricting purposes, including the data's incorporation in the Census 2000 sample data products, postcensal (intercensal) estimates (and thus their use in annual intercensal federal funding allocations), and survey controls. ESCAP issued its report recommending against the use of the adjusted data for these purposes on October 17, 2001.<sup>15</sup> This second round of research and analyses was dubbed "ESCAP II."

Following adoption of ESCAP's recommendation against adjustment, the Census Bureau's Acting Director informed the Commerce Department's Under Secretary for economic affairs that the Census Bureau would release Census 2000 sample data products, intercensal estimates, and survey controls using unadjusted data.<sup>16</sup> Thus, the data in the SEDF were weighted to the population totals in the HDF (without statistical adjustment). Following this second adjustment decision, the Department of Commerce/Census Bureau continued to withhold the adjusted block-level data because of documented concerns regarding the data's accuracy.

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<sup>8</sup> P.L. 105-119, Title II, Section 209(j).

<sup>9</sup> The original rule defining the decision-making framework and the subsequent rule (superceding the earlier rule), promulgated by the new administration in February 2001, are discussed in "The Debate Over the Use of Sampling" section of Chapter 11, "Legal Issues."

<sup>10</sup> ESCAP was a committee of senior Census Bureau officials charged with making a recommendation to the Director regarding whether the official redistricting data should incorporate a statistical adjustment.

<sup>11</sup> *Federal Register*, Vol. 66, No. 46 (March 8, 2001), p. 14004.

<sup>12</sup> The Secretary announced his decision at a March 6, 2001, news conference and documented it in a March 7 memorandum. See *Federal Register*, Vol. 66, No. 49 (March 13, 2001), pp. 14520-21. The ESCAP report and recommendation, and the Secretary of Commerce's decision are discussed elsewhere in more detail, see especially "The Debate Over the Use of Sampling" section of Chapter 11, "Legal Issues."

<sup>13</sup> Transcript of press conference on Census 2000 redistricting data, held at the U.S. Department of Commerce, March 6, 2001, Federal News Service, Washington, DC, p. 2.

<sup>14</sup> These events are discussed in detail in the relevant sections of Chapter 11, "Legal Issues."

<sup>15</sup> *Federal Register*, Vol. 66, No. 214 (November 5, 2001), pp. 56006-21. The ESCAP research and analyses relating to possible nonredistricting uses of the adjusted data are discussed in the "Accuracy and Coverage Evaluation" section of Chapter 10, "Testing, Experimentation, Evaluation, and Coverage Measurement Programs."

<sup>16</sup> *Ibid.*, p. 56006.

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As a result of the above-referenced litigation, the Census Bureau was ordered to release the adjusted block-level data under the FOIA.<sup>17</sup> Following the court order, the Census Bureau anticipated additional requests for the adjusted data. Consequently, the agency developed a process for providing these data to requesters. Requesters were required to acknowledge receipt of a caveat that stated, in part:

. . . the adjusted estimates were determined to be so severely flawed that all potential uses of these data would be inappropriate. Accordingly, the Department of Commerce deems that these estimates should not be used for any purpose that legally requires use of data from the decennial census and assumes no responsibility for the accuracy of the data for any purpose whatsoever. The Department, including the Census Bureau, will provide no assistance in the interpretation or use of these numbers.<sup>18</sup>

### **AMERICAN FACTFINDER (AFF)**

AFF is the Census Bureau's Internet-based system that enables the agency to provide data quickly to a wide spectrum of data users.<sup>19</sup> AFF's objective is to provide a single electronic system for data access, dissemination, and inquiry that both internal and external customers can use. AFF currently disseminates data produced by the Census Bureau's decennial, demographic, and economic program areas.<sup>20</sup> In addition, AFF is the Census Bureau's online mapping tool and complies with directives, mandates, and standards established by the Federal Geographic Data Committee for the dissemination of geographic data.

In addition to the obvious benefits of better interaction, service, and response time for users, the Census Bureau believes that AFF also: (1) encourages cooperation from census and survey respondents as a result of data users/customers becoming more familiar with Census Bureau data and the data's value and (2) serves as indirect "advertising" for the agency's products and services and thus increases public awareness of them.

This section discusses the development of AFF and its Census 2000-related functionalities that provide users with access to a voluminous amount of data and the ability to utilize those data in a variety of ways and formats. The principal data products and geographic products from Census 2000 are discussed in the next sections of this chapter.<sup>21</sup>

### **Building on the Data Dissemination Innovations of the 1990 Census**

With the rapid advance of digital technology, the Census Bureau was able to develop AFF in response to frequent complaints that the agency's past decennial census data products were not easy to use or released in a timely manner. One of the most significant obstacles many users faced in accessing and working with decennial census data in the past was that even with access to a computer, users often lacked the random access memory (RAM), computing power, and specialized software required to load and manipulate an entire summary tape file (STF)<sup>22</sup> on magnetic tape. In addition, they most often wanted only a portion of an electronic file. These users often obtained extracts from secondary data disseminators who purchased decennial census products from the Census Bureau and provided extracts as a for-profit enterprise.

<sup>17</sup> *U.S. Department of Commerce v. Carter*, 307 F.3d 1084 (9th Cir. 2002). See the "Litigation" section of Chapter 11, "Legal Issues," for detailed information about this lawsuit.

<sup>18</sup> U.S. Census Bureau, "Requests for Adjusted Data from Census 2000," memorandum for executive staff and all divisions, from Preston Jay Waite, Associate Director for Decennial Census, December 6, 2002 (attachment).

<sup>19</sup> American FactFinder is accessible on the Census Bureau's Web site at <<http://www.factfinder.census.gov>>.

<sup>20</sup> The dissemination of decennial census data from the AFF includes data from the ongoing American Community Survey, which is part of the decennial program for 2010.

<sup>21</sup> Data products pertaining to Puerto Rico and the Island Areas are discussed in Chapter 12, "Puerto Rico and the Island Areas."

<sup>22</sup> In connection with the 1990 census, the Census Bureau released four STFs containing 100 percent data or sample population and housing data. These files were made available on computer tape and other media.

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While the 1990 data products included the summary and other tape files, which contained more than 270 gigabytes of data, and some 800 printed reports, which comprised more than 1.85 million pages,<sup>23</sup> the Census Bureau also released 1990 census data on CD-ROMs, and specialized software facilitated the extraction of STF and public use microdata sample (PUMS) data from the discs.<sup>24</sup> These innovations increased the accessibility and ease of use of decennial census data.

### Early Work on the Development of an Internet-Based Data Delivery System<sup>25</sup>

In the early 1990s, the Census Bureau began exploring ways to use the emerging “information superhighway,” now generally referred to as the Internet, to interact with the public and serve its customers. In September 1993, Vice President Al Gore released the National Performance Review report which, among other things, contained a series of recommendations relating to the electronic availability of Census Bureau data. Among the recommendations was a call for uninterrupted access to computerized data stores, including large databases of statistics from censuses, surveys, estimates, and international data sources, among many others, via the Internet.<sup>26</sup>

To undertake the early developmental work for the Internet-based data dissemination system, the Census Bureau formed a working group composed of three teams. Each was responsible for a distinct aspect of the program development plan.

- **The Technical Development Team** was responsible for conducting research and procuring technical support, hardware, and software for the development of the system. This team later designed and developed (with contractor assistance) the initial system prototypes in 1996 and 1997.
- **The User Requirements Team** facilitated the identification of user and technical requirements and led outreach and promotion activities, such as presentations, seminars, etc. It was also responsible for planning and evaluating the testing of the prototypes as they became available.
- **The Internet Support Team** was tasked with establishing an Internet or World Wide Web site for the agency and then later “integrating” the Web site with the various iterations of the data dissemination system.

In 1994, the Internet Support Team established the Census Bureau’s Web site, which received a Hammer Award, the U.S. Vice President’s special recognition for improving government operations. The Web site quickly proved to be a cost-effective means of disseminating large sets of aggregate data and microdata, organizational information, publications and analyses, software products, and custom software applications. However, this was still a far cry from a data dissemination system with numerous functionalities, including allowing the user to produce custom extracts with a few keystrokes or to direct the system to present data in graphic (charts, graphs) or mapping formats.

### Vision and Guiding Principles for Developing the System<sup>27</sup>

In May and June of 1995, the Census Bureau held a series of roundtable discussions to support the work of the three teams. Event participants were staff from various directorates across the

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<sup>23</sup> About 90 percent of the 1990 census data products were available in hard-copy (printed report) format. See Titan Systems Corporation/Systems Resources Division, “American FactFinder System Requirements Study,” Census 2000 Evaluation No. R.3.b., June 6, 2002, p. 1.

<sup>24</sup> “Go” software provided the capability to extract individual tables from the STFs. “QuickTab” software enabled users to extract data from the PUMS files based on record and item selection criteria and to generate frequency counts and cross-tabulations.

<sup>25</sup> The information in this section is summarized from U.S. Census Bureau, “Program Master Plan: Census 2000 Decennial Dissemination and Inquiry System,” Census 2000 Informational Memorandum No. 35, December 13, 1999, pp. 4–5.

<sup>26</sup> Other recommendations included the simultaneous publishing to the Internet of electronic copies of printed reports; providing online access to microdata samples (such as PUMS or similar files) from censuses and surveys; connecting the Census Bureau’s regional offices to such systems; and leveraging the state data centers (SDCs) and their local data affiliates to expand the public’s access to these systems. See U.S. Department of Commerce, “National Performance Review Information,” memorandum for Economics and Statistics Administration senior staff, Everett M. Ehrlich, special adviser to the Secretary, September 8, 1993, pp. 1–2.

<sup>27</sup> The information in this section is summarized from “Program Master Plan: Census 2000 Decennial Dissemination and Inquiry System,” pp. 3–5 and Attachment 1.



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agency, and the purpose was to (1) lay the foundation for a communication process that would encourage Census Bureau-wide participation in the design and development of the system and (2) develop an initial vision and set of principles that would guide the system's design and development.

The discussions produced a preliminary vision statement and a list of principles. The vision statement indicated that Census 2000 and the continuous measurement program (now known as the American Community Survey [ACS]) would be the initial focus of the system, and the system would have to be implemented in time to be the vehicle for disseminating data from these programs. In other words, the system would have to be fully tested during the 1998 Dress Rehearsal operations and be fully operational by early 2001 (for dissemination of the Census 2000 data, beginning with the redistricting [P.L. 94-171] data in March 2001). The statement noted that other data sets with similar geographic detail (economic census files, population estimates files, etc.) also would be included in the system.

Among the guiding principles were the following:

- Make the system accessible to the widest possible array of users through the Internet and available intermediaries such as the state data centers (SDCs) and local data affiliates.
- Build disclosure protection into the design of the system.
- Make geography the integrating principle for the data.
- Build the system to be a more cost-effective data dissemination program than the traditional publication program, and use the savings that result to educate users and potential users about how to obtain the data they need.
- Make use of related in-house work already completed or planned to ensure a coordinated, corporate approach to development of the system.
- Seek participation from both internal and external experts in the design and development of the system.

The discussions also produced suggestions for identifying user and technical requirements and related policy issues. The discussants agreed on the importance of identifying and resolving, early in the process, any technical concerns and policy issues that could be possible barriers to development of the system as envisioned. Finally, the participants stressed the importance of soliciting customer input in designing the system.

### **Early Internal and External Customer Input<sup>28</sup>**

The Census Bureau facilitated 12 focus group meetings in the fall of 1995 in part to implement the roundtable recommendation to include customer comments as an integral part of the development process. These meetings solicited and collected information that might be useful in developing user requirements. Meeting participants included internal and external customers who represented a cross-section of the Census Bureau's data user community. A standard set of 25 questions, covering topics such as user access, product types, output media, geography, and confidentiality, was asked of each group. The Census Bureau identified three categories each of internal and external customers. The categories and their definitions are not discussed here, but it is significant that this research involved the Census Bureau in an effort to categorize users according to the tasks they performed with the data. The importance of this work to the development of the system was later reinforced by consultative work performed by Dr. Ben Schneiderman of the University of Maryland's Human-Computer Interaction Laboratory. Dr. Schneiderman's work is discussed later in this section.

Using lists of responses to the 25 questions, the Census Bureau developed frequency matrices for the internal and external customer categories to identify common and unique needs and themes. With regard to overall system functionality, the common needs identified included that the system

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<sup>28</sup> Ibid., pp. 6–7.

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should (1) be simple to use and support print-on-demand, (2) provide online help and training, and (3) inform users prior to transmission about file size and download time for receiving requested electronic products. The focus groups also revealed that users, collectively, desired a range of product types: (1) predefined products and services, (2) simple user-defined products, and (3) complex user-defined products.

### **Development of the First Prototype—DADS96<sup>29</sup>**

Work on the first prototype of the Data Access and Dissemination System (DADS)—as it was then called—began in March 1996 and was completed in September of that year. In concert with Oracle Corporation, the Technical Development Team developed the prototype. The prototype successfully provided a “proof of concept” for the basic design, technology, and functionality envisioned for American FactFinder. Beginning with this prototype, the Census Bureau and its contractors used, in designing and implementing the system, a widely recognized structured approach to engineering systems in a data processing and warehousing environment called CASE\*Method. “CASE” stands for computer-aided systems engineering and consists of seven basic stages: strategy, analysis, design, build, user documentation, transition, and production. The agency used a modified version of this approach beginning with development of DADS98 (see below).

The DADS96 prototype used a data warehouse structure and contained the following census data: 1990 census 1 percent and 5 percent PUMS files and STF 3 (sample data).

### **Additional Solicitation of User Input and Ongoing Consultative Work<sup>30</sup>**

The 1997 National Conference on Census Partnerships, organized by the Census Bureau, was held in May of that year. The conference was intended to inform local governments, nonprofit organizations, and community groups about the Partnership Program for Census 2000 and to involve these entities in promoting the census. In addition to providing information, the agency used the forum to obtain information from these groups regarding their data needs so that it could better educate them about how an electronic data dissemination system would enhance their use of census data. Through this conference, the Census Bureau opened an ongoing channel of communication to inform these entities about its progress in developing DADS and to continue to solicit their input regarding its functionalities.

As noted above, the Census Bureau enlisted the services of Dr. Ben Schneiderman to obtain expert advice regarding the development of DADS. In June 1997, Dr. Schneiderman recommended that the Census Bureau develop profiles of its users that focused on how they used census data and said that the agency needed to understand the differences between tasks performed only by certain user communities and those common to all users. He noted that this information would inform the design process and help define user requirements. Dr. Schneiderman further recommended that the Census Bureau use the profiles to design a system interface that met varying user group needs by providing task-related gateways to the data products. Additionally, the user profile and task information could provide possible benchmarks for usability testing, which was a key component of the DADS development process.

### **Beta Testing of the Second Prototype—DADS97<sup>31</sup>**

Work on the second prototype began in October 1996,<sup>32</sup> and the Census Bureau began beta testing the prototype in February 1997. Participants in the testing included representatives from the SDCs, Census Information Centers, 2000 Census Advisory Committee, government, academia, and the corporate world, including some representatives who had participated in DADS96 beta testing and the 1995 focus groups. Surveys of participants revealed four major problems:

1. The user interface was too difficult for novice users; that is, it assumed knowledge of census products/data.

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<sup>29</sup> *Ibid.*, pp. 2 and 7–8.

<sup>30</sup> *Ibid.*, pp. 5–6.

<sup>31</sup> *Ibid.*, pp. 9–10.

<sup>32</sup> *Ibid.*, p. 2.

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2. The client-side personal computer requirements exceeded what most computer owners likely had at that time.
  3. System performance was unacceptably slow.
  4. Not enough system feedback was provided to the user.

Based on the beta testing results, the Census Bureau sought to improve the design process for the future DADS98 system. The Census Bureau focused on user interface design and client-side technology decisions, for instance targeting further development of the system for commonly used Web browsers.

### **Decision to Contract Out Further Development and Implementation of DADS**

By this time, the Census Bureau had decided to contract out the further development and implementation of DADS, including the production system to be used for the dissemination of Census 2000 data. This decision was based on the realization that Internet technology was evolving rapidly and that those with the expertise to harness such technology would be needed to implement a continuously evolving, state-of-the-art system.<sup>33</sup> Thus, in April of 1997, the Census Bureau awarded the contract to IBM Global Services Corporation.<sup>34</sup> IBM completed the work on the DADS97 prototype and as the principal DADS contractor, was responsible for the systems architecture, design, data warehouse, and integration. A subcontractor, Environmental Systems Research Institute, Inc., was hired later to develop the mapping applications for the system.<sup>35</sup>

### **State Data Center Review of DADS97 Prototype<sup>36</sup>**

Following the September 1997 release of DADS97,<sup>37</sup> the Census Bureau invited SDC representatives to agency headquarters for 6 weeks to review the prototype and to provide feedback regarding further development. In the DADS97 release, system functionality included, among other things, use of advanced Java software, thematic mapping, and the implementation of a metadata model. The data available to be accessed from the system included the content of DADS96, the 1990 census STF 1 (100 percent data), and the 105th Congressional District Data File.<sup>38</sup>

As a result of the extensive feedback received from the SDC representatives, the Census Bureau endeavored to implement various changes/improvements to the system in subsequent releases, including:

- Aggregating and manipulating capabilities for summary file data.
- Disclosure protection in the advanced query tool (see below).
- An appropriate feedback mechanism for users to comment on the system.

### **DADS98/AFF98 Development Process<sup>39</sup>**

As opposed to the development process for DADS97, IBM's role was critical to the development of DADS98 from the outset of the process. From this point forward, the system was referred to as American FactFinder (AFF) and constituted a production system, in that it was used to disseminate the 1998 Dress Rehearsal data products and related geographic products.<sup>40</sup>

In large part because of the quickly approaching deadline for putting the system into production, the Census Bureau and IBM utilized a revised version of their earlier development approach. Included in the new approach were multiple "short-build" iterations that involved designing, building, and testing various components until the entire system was assembled and integrated. This

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<sup>33</sup> "American FactFinder System Requirements Study," p. 9.

<sup>34</sup> *Ibid.*

<sup>35</sup> U.S. Census Bureau News, "Census Bureau Touts New Data Delivery System," Press Release CB01-CN.57, February 26, 2001.

<sup>36</sup> "Program Master Plan: Census 2000 Decennial Dissemination and Inquiry System," pp. 10–12.

<sup>37</sup> *Ibid.*, p. 2.

<sup>38</sup> *Ibid.*

<sup>39</sup> *Ibid.*, pp. 12–13.

<sup>40</sup> *Ibid.*, p. 2.

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cyclical build process permitted continuous feedback and evaluation. At the same time, the Census Bureau worked on the design of the user interface by continuing to gather and refine user requirements. Designated points of contact facilitated these dual processes and participated in meetings with representatives from both areas to coordinate the work.

User requirements were solicited through numerous interviews with external users and with joint application design (JAD) sessions held in December 1997. (JAD sessions are a method of obtaining input for application development in which developers interact directly with future system users.) In the JAD sessions, the Census Bureau gathered and refined requirements from subject-matter experts working throughout the agency. In addition to the external user interviews and JAD sessions, DADS staff and IBM conducted user-requirements interviews with senior agency officials from November 1997 through January 1998.

Sixty external customer interviews were conducted with representatives from the SDCs, local governments, educational institutions, the media, and community organizations. The interviewees represented a cross-section of the Census Bureau's customers/data users, based on a user typology developed by the agency's Marketing Services Office.<sup>41</sup> The interviews focused on task analysis, among other things, and enabled the IBM staff to understand how the interviewees "interacted" with and used census data. The results were used to validate and refine user requirements and help ensure that the system was user-centered as opposed to data-centered, and thus significantly influenced the development of the user interface design. In addition, specific features, such as the ability to sum data and calculate percentages, were added to the system design as a result of these interviews.

### **AFF98 Production<sup>42</sup>**

AFF98 was delivered in March 1999, in time to provide an Internet-based mechanism for the release of the redistricting data equivalent (that is, voting age, block-level data by race and Hispanic origin) from the dress rehearsal sites by the deadline stipulated in P.L. 94-171.<sup>43</sup> AFF98 also disseminated other dress rehearsal data products and related geographic products. This version of the system included an improved interface, improved mapping and integration of geographic components, and scalable systems architecture.

In addition to the content of DADS97, AFF98 also included 1997 economic census data products and data from the 1997 and the 1998 American Community Survey (ACS). The Census Bureau sought user feedback regarding this release and continued to make improvements to the system through the rest of 1999 and in 2000.

### **AFF2000**

The version of the system used for Census 2000 data dissemination, AFF2000, was implemented in December 2000. It provided improved performance and system response times, incorporated revisions to the interface based on user feedback, was effectively integrated with the Census Bureau's Web site, and was scaled to accommodate the anticipated workloads associated with the release of Census 2000 data.<sup>44</sup>

In addition to providing users with the full array of data products and tabulations from Census 2000—including data pertaining to Puerto Rico<sup>45</sup> and the Island Areas—AFF2000 continued to provide data from the ACS on an ongoing basis. Additionally, it incorporated the content of AFF98.<sup>46</sup>

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<sup>41</sup> Ibid., p. 6.

<sup>42</sup> Ibid., p. 2.

<sup>43</sup> To simulate census requirements, these dress rehearsal data were delivered within 1 year of Census Day. For the 1998 Dress Rehearsal, Census Day was April 18, 1998.

<sup>44</sup> "American FactFinder System Requirements Study," p. 3.

<sup>45</sup> A Spanish-language AFF interface was available for accessing data on Puerto Rico. "Program Master Plan: Census 2000 Decennial Dissemination and Inquiry System," p. 14.

<sup>46</sup> Data products and related geographic products from the Census 2000 Dress Rehearsal are no longer available on AFF.

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AFF 2000 provided key functions for working with Census 2000 data products. With AFF 2000, users could:

- Extract and manipulate data from a variety of summary data files (for example, Summary Files 1 to 4).
- Create custom tables using tabulated data from other tables.
- Produce quick tables—table shells for obtaining population and housing characteristics in which the user designates the geographic area and population group.
- Produce geographic comparison tables<sup>47</sup>—tables to compare population and housing characteristics across geographic levels of choice.
- Produce reference maps.
- Produce thematic maps of selected characteristics.
- Choose multiple options for downloading files, including a file transfer protocol (FTP) site for downloading large data files (such as the PUMS files).

Perhaps the most sophisticated feature of AFF2000 was the advanced query (AQ) function. This function enabled specified categories of users (see below) to create custom tabulations, subject to confidentiality filtering algorithms, from the underlying 100 percent detail file (HDF) and sample edited detail file (SEDF), as opposed to producing extracts from the summary files.<sup>48</sup> The AQ application was governed by a set of disclosure filters specified by the Disclosure Review Board (DRB).<sup>49</sup> Confidentiality algorithms were applied in the selection process to ensure that suitable detail in variable categorizations was selected in relationship to the population of the geographic universe specified. Posttabulation filters were applied to restrict the presentation of tabulations where sparse or low cell counts occurred. Access was provided with a user interface that was password-protected and available to internal Census Bureau staff as well as data users and analysts who obtained their passwords from the Customer Liaison Office. This latter group included Census Information Centers, SDCs, and some Federal Reserve banks. The external site of the AQ system was discontinued in December 2008.

### Costs to Develop and Implement AFF

During the system's development, the Census Bureau hired a contractor to estimate the costs of completing development and implementing the system. While it was difficult to estimate early developmental costs with much accuracy, the agency produced reliable cost data for the development and implementation of AFF beginning with fiscal year 1998, when work began on the first production AFF system. The total cost data for FY 1998 through FY 2003 (the last year in which the Census Bureau received funding for release of Census 2000 data products) are contained in Table 9-1 and include all contractor and Census Bureau staff costs directly attributable to AFF. Given that AFF is a "corporate" system, that is, it disseminates data from a number of the agency's demographic and economic statistical programs, it is not practical to attempt to determine what proportion of these costs pertained exclusively to the dissemination of Census 2000 data.

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<sup>47</sup> This function and the previous one are discussed in more detail in the "Principal Data Products" section of this chapter.

<sup>48</sup> These detail files are discussed at greater length in the section entitled "Prepublication Data Files."

<sup>49</sup> The DRB's principal responsibilities are to review proposed Title 13 survey and census data products (and special tabulations) for external distribution to identify and resolve disclosure risks; develop confidentiality protection policies and methodologies, and to communicate those techniques to the subject matter areas for application in producing data suitable for public dissemination. See U.S. Census Bureau, *Disclosure Review Board—Charter*, Office of Analysis and Executive Support, revised May 22, 2001.

Table 9-1.  
**Total Development and Implementation  
 Costs for American FactFinder: Fiscal  
 Years 1998 to 2003**

Fiscal year	Total cost
1998.....	\$15.8 million
1999.....	\$10.8 million
2000.....	\$38.6 million
2001.....	\$22.2 million
2002.....	\$24.9 million
2003.....	\$9.0 million

Note: Cost figures are in nominal dollars.

Source: U.S. Census Bureau, Financial Management Reports, FY 1998 to 2003.

### Evaluation of AFF

The Titan Systems Corporation conducted the only formal evaluation of AFF (as part of the Census 2000 Evaluation Program). The Titan Systems evaluation is the system requirements study cited in this section.<sup>50</sup> The evaluation focused on the development process for the system requirements, but also included general observations and findings about the development, implementation, and usability of AFF. Overall, the evaluation deemed AFF to be a “major success” by achieving a breakthrough in making a voluminous amount of data available to users through an electronic data access and dissemination system, and it called AFF a “. . . visionary undertaking which is revolutionizing data dissemination.”<sup>51</sup>

The evaluation noted that the Census Bureau adapted an iterative approach to development of AFF, in large part because the data from different program areas would become available for dissemination over a multiyear period, but also to allow for future expansion of the system. Thus, it was understood that there would be “requirements growth,” and the contracting approach incorporated this awareness. But adapting to constant revision and refinement of requirements was a time-consuming endeavor with significant cost implications.<sup>52</sup> However, one of the advantages of the iterative development process was that partial system functionality was available to users while new functionalities were being developed for subsequent system iterations. Additionally, AFF could be continually improved and refined, because the iterative approach allowed for new functionality or technologies to be incorporated into the system.

In terms of usability, the report noted that while the system interface was generally acknowledged as good, site navigation and overall organization of the data were identified as needing improvement.<sup>53</sup> However, the evaluation was quick to point out that AFF served a variety of user types with differing degrees of computer and Census Bureau data knowledge and thus had to be “all things to all people.”<sup>54</sup> Because the system offered some advanced or sophisticated functions to expert users in a single interface environment, the interface had to be sophisticated enough to enable those users to carry out those functions efficiently. While earlier research (see the above discussion regarding “Ongoing Consultative Work”) and a contractor analysis suggested that the Census Bureau offer several different initial interfaces depending upon users’ knowledge of Census Bureau data and the tasks they would undertake with the data, the agency faced significant cost and timing constraints that precluded pursuing this approach.<sup>55</sup> The evaluation recommended that in making future refinements to the system, the Census Bureau consider providing different interfaces or “gateways” for different categories of users.<sup>56</sup>

<sup>50</sup> “American FactFinder System Requirements Study.”

<sup>51</sup> *Ibid.*, p. iv.

<sup>52</sup> *Ibid.*, pp. iv–v.

<sup>53</sup> *Ibid.*, p. 8.

<sup>54</sup> *Ibid.*, p. v.

<sup>55</sup> *Ibid.*, p. 8. The referenced contractor report is “AFF/DADS Customer Segmentation and Critical Success Factor Analysis,” IBM e-business Solutions for Government Team, October 13, 1999.

<sup>56</sup> *Ibid.*, p. vi.

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## Innovations and Improvements for the Future

Employees of the Census Bureau's Decennial Automation Contracts Management Office, working with contractors, are responsible for continuing to make new data (including ACS data produced throughout the decade) available through AFF and for building new data access tools for users to interact more easily with AFF and obtain data more efficiently from it. Since the release of Census 2000 data on AFF, the Census Bureau has added new data sets and, based on extensive feedback from customers/users, new features. It plans to build on the success of AFF for the dissemination of Census 2000 data products by continuing to upgrade and improve the system for the 2010 Census.

### PRINCIPAL DATA PRODUCTS<sup>57</sup>

#### Census 2000 Data Product Review

Prior to finalizing decisions about the number, content, and format of Census 2000 data products, the Census Bureau sought advice from a wide variety of data users. These data users also provided advice on the most effective ways to disseminate the data. As part of this process, the agency contracted with the Association of Public Data Users (APDU) to form a working group of data users who would review and provide advice on the details of individual data products as well as on the total integrated product proposal. Due to the intensity of the project, the size of the working group was limited to about 20 expert data users who had worked with census data for at least two census periods, who had helped less experienced users gain access to census data, and for whom using census data was a significant part of their professional work. The working group included representatives of key segments of the data user community, such as state data centers (SDCs), universities, nonprofit organizations, for-profit companies, national data users, and librarians.<sup>58</sup>

Beginning in 1999, the first contract involved a review process, with tasks jointly agreed upon by Census Bureau representatives and the cochairs and coordinator of the APDU working group. These "assignments" and relevant Census Bureau documents were distributed to the reviewers, together with deadlines for their responses. The reviewers sent their responses to the coordinator, who assembled them and prepared a summary of the responses to each assignment. The contractor also submitted an overall final report for the Census Bureau.

From February through September 1999, the Census Bureau asked the working group to assess the agency's plans for race and ethnicity tabulations, printed products, and the 100 percent summary file. Members of the working group expressed concern about the use of cell-suppression as a disclosure avoidance technique to protect confidentiality. For many, the preference was for data switching and/or collapsing problematic tabulation categories into a broader combined category. A number of working group members also opposed the use of population cutoffs for characteristics in small geographic areas, such as tracts and small minor civil divisions (MCDs), because this would impair their ability to aggregate tracts to customized geographic areas. For race and ethnic tabulations, group members were faced with trade-offs between data products containing race detail versus geographic detail.<sup>59</sup>

In response to the second assignment, working group members urged the Census Bureau to expand the proposed list of printed products beyond the initial plan that called for local data provided by the Demographic Profile (one with 100 percent data and the other containing sample

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<sup>57</sup> For a quick reference guide to the Census 2000 data products for the United States, see "Census 2000 Data Products at a Glance (United States)," available on the Census Bureau Web site at <<http://www.census.gov/population/www/censusdata/c2kproducts.html>>. Also available from that page are similar listings for Puerto Rico, Guam, American Samoa, the Commonwealth of the Northern Mariana Islands, and the U.S. Virgin Islands. While data for Puerto Rico are presented alongside data for the United States in most data products, this section ("Principal Data Products") is not intended to provide a complete discussion of the data products pertaining to Puerto Rico and the Island Areas; that information can be found in Chapter 12, "Puerto Rico and the Island Areas."

<sup>58</sup> Patricia C. Becker, "Final Report, Fiscal Year 1999," Association of Public Data Users, Census 2000 Product Review, November 1999, p. 1.

<sup>59</sup> *Ibid.*, pp. 3–5.

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data), a congressional district Demographic Profile (with the same tables as the Demographic Profile), and one printed report series containing 100 percent and sample data together with limited historical population and housing unit counts. Specifically, they recommended that the Census Bureau publish three separate reports comparable to the 1990 CPH-1<sup>60</sup> (100 percent data), CPH-5 (sample data), and CPH-2 (historical data) reports, especially given that data users who focused on local data emphasized the need for printed products to facilitate comparisons of census data over time.<sup>61</sup>

The APDU working group also evaluated the Census Bureau's plans for a single 100 percent summary file, which members suggested could be called Summary File 1 (SF 1). Working from the table outlines that the Census Bureau prepared from the 1998 Dress Rehearsal, reviewers indicated that the presentation of race and ethnicity in the file was complex and not user-friendly. The working group asked the agency to consider adopting a data file structure similar to that used in 1980 and 1990, with four summary files—two files (SF 1 and SF 2) containing 100 percent data and two files (SF 3 and SF 4) containing sample data. Within this structure, SF 1 would contain racial and ethnic counts and a limited number of characteristics by race down to the block level. SF 2 would contain single years of age by sex, tables presented at the census tract level, and race and ethnic iterations of 100 percent data. SF 3 would contain sample data, at either the block group or tract level, while SF 4 would be similar to summary tape file 4 for 1990, but simpler.<sup>62</sup>

The Census Bureau extended its contract with the APDU working group for FYs 2000 and 2001. During FY 2000, the Census Bureau agreed that the working group again concentrate on the general summary file structure and on finalizing SF 1, as well as review the printed report *Summary Population and Housing Characteristics* (PHC-1); the housing tables in SF 3 and SF 4; and the software to be bundled with CD-ROM data products. For the last contract (FY 2001), working group members evaluated and made recommendations on two printed reports—*Summary Social, Economic, and Housing Characteristics* (PHC-2) and *Population and Housing Unit Counts* (PHC-3).<sup>63</sup>

Recommendations during the second review period showed that most working group respondents preferred numbering the summary files as SF 1 through SF 4. They noted that it was unnecessary to include redistricting (P.L. 94-171) data on SF 1; supported the inclusion of tables at the census tract level on SF 1; and wanted the agency to provide a shorter record for blocks on SF 1.<sup>64</sup> Turning to the PHC-1 printed report, reviewers recommended breaking up the 25- to 44-year-old age bracket into two 10-year brackets; substituting “related children” for “own children” within households; adding an “other relatives under 18” column; and including “owner,” “renter,” and “total” vacancy rates (and eliminating the “population per occupied unit” column).<sup>65</sup>

In assessing user needs for housing unit data on SF 3 and SF 4, the APDU coordinator first noted that the number of sample housing tabulations in 2000 was larger than it had been in 1990 because of the number of questions that moved from the short form to the long form in 2000 and that there was an increase in the number of race iterated tables. Some working group members tended to favor using 10-year age groups where possible, while others wanted more detailed age groupings. The group also felt that the size of SF3 was overwhelming and wondered whether some of the larger tables could be collapsed. On some issues, such as the file sequence of geographic areas and race categories, the members were unable to arrive at a consensus.<sup>66</sup>

The purpose of the bundled software, then referred to as “Allocate,” was to provide data users with a convenient way to tabulate the summary file records. Group members concluded that the software did provide an important service to users by helping them access summary files in ways

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<sup>60</sup> As indicated below, the “CPH” report series was renamed the “PHC” series for the Census 2000 data products. This revision was made at the suggestion of the APDU reviewers.

<sup>61</sup> “Final Report, Fiscal Year 1999,” November 1999, pp. 10–11.

<sup>62</sup> *Ibid.*, pp. 18–19.

<sup>63</sup> During FY 2001, the working group also assessed the 1998 American Community Survey CD-ROM and the tools, metadata, and means of access on the Census Bureau's Web site for working with the Census 2000 Supplementary Survey results.

<sup>64</sup> Patricia C. Becker, “Final Report, Fiscal Year 2000,” Association of Public Data Users, Census 2000 Product Review, October 2000, p. 7.

<sup>65</sup> *Ibid.*, pp. 19–22.

<sup>66</sup> *Ibid.*, pp. 26, 30–32.



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that would not otherwise have been possible. However, they noted that the software contained “bugs” and that substantial time and resources would be required to fix these problems. Largely agreeing that no software should be expected to meet all the needs of all users, working group members suggested that the Census Bureau had correctly targeted the large middle group of customers between novice users and those who would need specially-written software for their applications.<sup>67</sup>

During the last contract with APDU, most reviewers said they did not need the number and detail of the block group tables the Census Bureau proposed for SF 3 and that most of the remaining block group tables could be presented by total population rather than for each of the individual race groups. A related suggestion was that all the block group tables should be moved to a separate file, leaving the SF 3 file with all the remaining tables from the tract level to the higher geographic levels.

Finally, reviewers were generally pleased with the Census Bureau’s basic design for the *Summary Social, Economic, and Housing Characteristics* (PHC-2) printed report. There were many comments and suggestions on the components of individual tables, but the reviewers did not identify any glaring problems with the Census Bureau’s plans for the PHC-2 series of reports. The reviewers expressed similar support for the proposed layout and table outlines for the *Population and Housing Unit Totals* (PHC-3) report series.<sup>68</sup>

The Census Bureau considered carefully the comments and suggestions from the APDU working group and other groups of stakeholders (such as the agency’s advisory committees and officials from other government agencies). Census Bureau officials adopted a number of the recommendations, such as changing the naming conventions for and adding to the number of summary files (SF 1, SF 2, SF 3, and SF 4); including two additional printed report series (PHC-2 and PHC-3); and revising table layouts, thresholds, and summary levels.

### Census 2000 Gateway Web Page

An earlier section discussed the development and implementation of American FactFinder (AFF). However, not all Census 2000 data products were available through AFF. The “Census 2000 Gateway” page<sup>69</sup> on the agency Web site provides access not only to AFF, but also provides a framework for understanding the range of data products and other tabulations available through the Internet. Electronic files of Census 2000 data and geographic products and selected special tabulations are accessible from that page, as are portable document format (PDF)<sup>70</sup> versions of many printed reports, including the PHC series, the Census 2000 Briefs and Special Reports, and data product technical documentation. Internet users can print these PDF documents and thereby produce near publication-quality copies of the printed reports and other materials.

The Census 2000 Gateway Web page also provides access to information about online product ordering; local sources of Census 2000 data (for example, Census Bureau regional offices, state data centers, Census Information Centers, and federal depository libraries); subject-matter contacts; Census 2000 programs and operations, including the evaluation program and Executive Steering Committee for A.C.E. Policy (ESCAP) analyses (these subjects are covered in Chapter 10, “Testing, Experimentation, Evaluation, and Coverage Measurement Programs”); and many more Census 2000-related topics. There are also informational links targeted to particular groups or entities: for example, access to news releases, tip sheets, and Web casts, for members of the news media; Census in Schools lesson plans, teaching kits, and resource materials, for school teachers and administrators; and information about partnerships for elected officials and others. The “Gateway” Web page also provides access to data relating to other decennial censuses, including 1990 census publications and selected historical census data from 1790 to 1990.

<sup>67</sup> Ibid., pp. 41–43.

<sup>68</sup> Patricia C. Becker, “Final Report, Fiscal Year 2001,” Association of Public Data Users, Census 2000 Product Review, November 2001, pp. 55–58, 65–66.

<sup>69</sup> The URL for the Census 2000 Gateway Web page is <<http://www.census.gov/main/www/cen2000.html>>.

<sup>70</sup> PDF files require Adobe Acrobat Reader software, which is available free of charge from the Adobe Corporation.

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## Redistricting Data Program

**Background.** A finding by the National Legislative Conference (NLC) indicated that data products from the 1970 census hindered individual states' efforts to comply with the "one-person, one-vote" provisions of the 1965 Voting Rights Act.<sup>71</sup> The Census Bureau and the NLC responded by creating a partnership in 1972 to improve the quality of census data products in this regard. In 1974, the partnership suggested that state governments "define small census tabulation areas to coincide with the boundaries of local election precincts" in the 1980 census.<sup>72</sup> In congressional hearings, state legislatures emphasized the need for a 100 percent count of the population for census blocks and voting districts (VTDs).

In 1975, President Gerald Ford signed Public Law (P.L.) 94-171 directing the Census Bureau to provide states with 100 percent population counts by state-specified geographic areas within 1 year of Census Day. This requirement amended Title 13, U.S. Code, and added to Census Bureau requirements mandated in Sections 2 and 5 of the Voting Rights Act that the Census Bureau provide race and voting-age counts to support the legal requirement to achieve a racial and ethnic balance.<sup>73</sup>

The need to delineate census blocks across the nation became apparent when only 23 states participated in the Census Bureau's Redistricting Data Program in the 1980 census. As a result, the Census Bureau substantially improved its geographic program and mapping technology. By 1990, the Topologically Integrated Geographic Encoding and Referencing (TIGER)<sup>®</sup> system provided the agency the ability to produce paper maps and digital products consistent with data tabulations at all geographic levels, including census blocks.<sup>74</sup>

The Census Bureau conducted a three-phase Redistricting Data Program as part of the 1990 census:

- The Block Boundary Suggestion Project. Through this project that took place in 1985, 38 states suggested visible features to be used as 1990 census block boundaries and ultimately as VTD boundaries.
- The Voting District Project. The Census Bureau, in 1989, worked with 46 states to delineate VTD boundaries on census maps generated by the TIGER system.
- P.L. 94-171 data delivery to state officials. This phase took place in 1991.

With its evaluation of the 1990 Redistricting Data Program, the Reapportionment Task Force of the National Conference of State Legislatures (NCSL), as the NLC was renamed in 1975, endorsed the Census Bureau's efforts and encouraged the agency to maintain close working relationships with state legislatures and minority organizations to meet the needs of the states.

**Legal issues relating to the redistricting data.** Under the revised Census 2000 Operational Plan released on February 23, 1999, the Census Bureau stated its intention to produce statistically adjusted data—based on the results of the Accuracy and Coverage Evaluation (A.C.E.) program—for nonapportionment uses of the Census 2000 data, including redistricting.<sup>75</sup>

The Census Bureau later formally presented its preliminary determination that (1) it was feasible to produce, within the statutory deadline for releasing redistricting data to the states, statistically adjusted block-level data that could be used for redistricting and (2) the agency expected that the

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<sup>71</sup> The principle of "one-person, one-vote" was initially established by the 1964 Supreme Court case of *Wesberry v. Sanders* (376 U.S. 1 (1964)) and subsequent Supreme Court decisions.

<sup>72</sup> See National Legislative Conference Reapportionment Committee, *Improving the 1980 Census* (Report to the U.S. Congress), Lexington, KY: Council of State Governments, 1974.

<sup>73</sup> Amendment of Title 13, U.S. Code by P.L. 94-171 is reflected in Section 141(c) of Title 13.

<sup>74</sup> The TIGER system was developed by the Census Bureau's Geography Division in cooperation with the U.S. Geological Survey. See U.S. Census Bureau, *1990 Census of Population and Housing, History, Part C*, 1990 CPH-R-2C (Washington, DC: U.S. Government Printing Office, 1995), pp. 3-18-3-24.

<sup>75</sup> Department of Commerce, "Updated Summary: Census 2000 Operational Plan," February 23, 1999, pp. 1 and 13. For information about the Census Bureau's original plan for Census 2000, see footnote 5 earlier in this chapter.

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adjusted data would be the most accurate data available.<sup>76</sup> However, the Census Bureau noted that it would not “. . . release corrected [statistically adjusted] redistricting data until it had brought its technical judgment to bear in assessing the available data to verify that its expectations . . . [had] been met.” The agency went on to state: “If the Census Bureau determines that incorporating the results of the survey would not improve the accuracy of the initial census counts, then the uncorrected [unadjusted] data would be denominated as the P.L. 94-171 [redistricting data] file.”<sup>77</sup>

On March 1, 2001, based on the report of the Executive Steering Committee for A.C.E. Policy (ESCAP),<sup>78</sup> the Director of the Census Bureau concurred with and adopted the committee’s recommendation that the unadjusted data be designated as the official redistricting data.<sup>79</sup> Census 2000 adjusted block-level data had been prepared in the event the Secretary of Commerce decided in favor of adjustment. These data were available for release to states and localities within the deadline stipulated in P.L. 94-171 (within 1 year following the decennial census date). On March 6, 2001, Secretary of Commerce Donald L. Evans announced his determination, based on the ESCAP report and the Census Bureau Director’s recommendation, that the unadjusted data would be the official redistricting data.<sup>80</sup> Thus, the unadjusted data were the only data released to the public. The Secretary stated that the release of the adjusted data would be considered at a later time following the ESCAP’s further investigation.<sup>81</sup> As a result of this decision, the Census 2000 adjusted block-level data were the subject of Freedom of Information Act requests and litigation.<sup>82</sup>

**Development and implementation of the Redistricting Data Program.** In 1995, the Director of the Census Bureau officially launched the Redistricting Data Program for Census 2000 by inviting state officials to participate.<sup>83</sup> Initially, the program addressed three policy issues: adjustment, military enumeration, and the collection and presentation of data on race and Hispanic origin.

Following the Census Bureau’s May 1995 release of its plan for Census 2000, the NCSL Redistricting Task Force passed a resolution in July requiring a “one-number census” that incorporated statistical adjustment in the counts transmitted to the states.<sup>84</sup> A second resolution called for military commanders to work with the Census Bureau to provide enumerators access to bases in order to provide states with enumeration totals on a block-by-block basis inside military bases. The NCSL adopted both resolutions as policy positions.<sup>85</sup>

For the 1980 and 1990 censuses, the Census Bureau supplied the states with race and Hispanic-origin data in addition to population counts to help states comply with the one-person, one-vote decisions and Voting Rights Act requirements. After consulting with the NCSL Redistricting Task Force in 1995, the U.S. Office of Management and Budget (OMB) created an interagency committee to explore possible modification of OMB Statistical Policy Directive No. 15 on federal race and ethnic statistics that would allow respondents to indicate multiple racial backgrounds. On October 30, 1997, the OMB announced its adoption of the committee’s recommendations concerning reporting more than one race:

- When self-identification is used, a method for reporting more than one race should be adopted.
- The method for respondents to report more than one race should take the form of multiple responses to a single question and *not* a “multiracial” category.

<sup>76</sup> *Federal Register*, Vol. 65, No. 119, June 20, 2000, p. 38374.

<sup>77</sup> *Ibid.*, p. 38393.

<sup>78</sup> ESCAP was a committee of senior Census Bureau officials charged with making a recommendation to the Director regarding whether the official redistricting data should incorporate a statistical adjustment.

<sup>79</sup> *Federal Register*, Vol. 66, No. 46, March 8, 2001, p. 14004.

<sup>80</sup> The Secretary announced his decision at a March 6, 2001, news conference and documented it in a March 7 memorandum. See *Federal Register*, Vol. 66, No. 49, March 13, 2001, pp. 14520–21.

<sup>81</sup> Transcript of press conference on Census 2000 redistricting data, held at the U.S. Department of Commerce, March 6, 2001, Federal News Service, Washington, DC, p. 2.

<sup>82</sup> These events are discussed in detail in the relevant sections of Chapter 11, “Legal Issues.”

<sup>83</sup> U.S. Census Bureau, *Designing P.L. 94-171 Redistricting Data for the Year 2010 Census: The View from the States*, September 2004, p. 8.

<sup>84</sup> For more information on the Census Bureau’s original plan for Census 2000, see “The Debate Over the Use of Sampling” section of Chapter 11, “Legal Issues.”

<sup>85</sup> *Designing P.L. 94-171 Redistricting Data for the Year 2010 Census: The View from the States*, p. 9.

- When a list of races is provided to respondents, the list should not contain a “multiracial” category.
- Two acceptable forms for the instruction accompanying the multiple response question are “mark one or more” and “select one or more.”
- If the criteria for data quality and confidentiality are met, provision should be made to report, at a minimum, the number of individuals identifying with more than one race. Data producers are encouraged to provide greater detail about the distribution of multiple responses.
- The new standards will be used in the decennial census and other data producers should conform as soon as possible, but not later than January 1, 2003.<sup>86</sup>

In November 1997 and again in April 1998, the Census Bureau and the NCSL Redistricting Task Force reviewed the proposed P.L. 94-171 file for the Census 2000 Dress Rehearsal. This file (P.L. 63 Matrix) would include 63 race categories (representing all of the possible single and multiple responses to the race question)—cross-classified by voting age and Hispanic or Latino or not—for each census block, state-specified voting district, census tract, place, county, etc., yielding approximately 260 data items for each geographic area.

State officials initially expressed concerns over the prospect of processing alternative redistricting plans based on the P.L. 63 Matrix, and Census Bureau experts as well as affiliated advisors voiced concerns about confidentiality with such detailed information for small geographic areas. To quell these concerns, the Census Bureau consulted the Voting Rights Section of the Civil Rights Division, U.S. Department of Justice (DOJ), in June 1998 to determine the level of detail required for compliance with the Voting Rights Act. Based on these investigations, the Census Bureau developed an alternative matrix limited to 20 racial categories, called the P.L. 20 Matrix. Although the Census Bureau and the NCSL Redistricting Task Force determined that the P.L. 20 Matrix would meet the needs of the redistricting community in theory, in practice, data users discovered that the product did not provide enough flexibility for the range of programs that used the data.

To resolve this problem, the Census Bureau, at the request of the DOJ, retabulated the dress rehearsal data using the P.L. 63 Matrix and revised the disclosure avoidance procedures to protect individual data responses. These data were distributed to the states and NCSL to familiarize users with the larger files. Ultimately, the Census Bureau tabulated Census 2000 P.L. 94-171 data using this approach. On January 17, 2001, the DOJ provided users with detailed guidance on how to use the new race data in compliance with the provisions of the Voting Rights Act.<sup>87</sup>

For Census 2000, the Census Bureau’s Redistricting Data Program followed the three-phase model introduced with the 1990 census. Phase 1, the Block Boundary Suggestion Project (BBSP), began in 1995 but encountered delays as a result of the late 1995/early 1996 government shutdowns. Completed in January 1998, the BBSP offered state redistricting officials the opportunity to identify map features to be held as Census 2000 block boundaries and to specify those that they desired not be so designated.<sup>88</sup> Once agreed upon, the Census Bureau identified these boundaries in the TIGER database to be held as tabulation block boundaries. Evaluations of the Census 2000 BBSP indicated the following for planning the 2010 Census:

- The states favored combining the BBSP with the Voting District Project, which occurred later in the decade.
- Features designated by the state, including those flagged as guaranteed block boundaries or must-hold block boundaries, should not be deleted by the Census Bureau without first conferring with the state liaison. The Census Bureau and the states should work together to determine an efficient way to group islands into more usable tabulation blocks.

<sup>86</sup> *Federal Register*, Vol. 62, No. 210, October 30, 1997, pp. 58782–90.

<sup>87</sup> *Designing P.L. 94-171 Redistricting Data for the Year 2010 Census: The View from the States*, pp. 9–11.

<sup>88</sup> Visible map features used to delimit a census block boundary include streets, roads, streams, shorelines, and the like. Invisible map features used for this purpose include county lines, city limits, property lines, and the like. For more information, see Chapter 7, “Census Geography and the Geographic Support System.”

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- The Census Bureau should retain previously submitted block boundary suggestions in its database from census to census.<sup>89</sup>

Phase 2, the Voting District Project, followed the BBSP. Completed in October 2000, this project encouraged state redistricting officials to submit the boundaries and geographic codes of voting districts and state legislative districts using visible features or legal area boundaries. These areas were then inserted into the TIGER database.<sup>90</sup> Forty-six states, the District of Columbia, and Puerto Rico participated in Phase 1 and Phase 2 of the Redistricting Data Program. Of those participants, thirty-six states provided both voting district and state legislative district boundaries and codes, while eight provided this information only for voting districts, and four provided it only for state legislative districts.

Phase 3 of the Census 2000 Redistricting Data Program, the delivery of P.L. 94-171 data and accompanying geographic products, took place between January and March 2001. By early January 2001, officially designated recipients in each state received the TIGER/Line<sup>®</sup> files (see the “Geographic Products” section for a description of these files), which included voting districts and state legislative districts. Beginning on March 7, 2001, and concluding on March 30, 2001, the Census Bureau delivered CD-ROMs containing the official P.L. 94-171 data to the Governor and majority and minority legislative leaders in each state. Once delivery was confirmed by the states, the District of Columbia, and Puerto Rico, the Census 2000 Redistricting Data (P.L. 94-171) Summary Files were released on American FactFinder.

### Demographic Profiles

The demographic profiles provided demographic, social, economic, and housing characteristics in four separate tables. These profiles presented data for individual states, state-equivalents, the nation, and numerous other geographic entities, including congressional districts (106th Congress). Between May 15 and June 7, 2001, the Census Bureau released the 100 percent data demographic profiles, and between May 7 and June 4, 2002, it released the demographic profiles based on sample data. All demographic profiles were available on the Internet, CD/DVD-ROM, and in print.

### Housing Unit Counts

Following the release of the redistricting data, many state and local government officials sought housing unit counts below the county level. Officials wanted these data prior to the first state releases of Summary File 1 (SF 1) in June 2001. Consequently, to meet this demand, the Census Bureau produced a special product that contained housing unit counts for states, the District of Columbia, and Puerto Rico down to the place level. This product was released via the Internet on May 31, 2001.

### Race and Hispanic or Latino Summary File

To meet the demand for a national summary of the data released in the state-level Redistricting Data (P.L. 94-171) Summary Files, the Census Bureau released the Race and Hispanic or Latino Summary File on June 27, 2001, through the Internet FTP site and on CD-ROM. This product provided the same tables found in the Redistricting Data Summary Files for the United States, regions, divisions, and American Indian areas that cross state boundaries, as well as for states and counties.

### Summary Files 1 and 2<sup>91</sup>

In addition to the redistricting data, the Census Bureau provided two summary files based on the 100 percent data items from Census 2000. Summary File 1 (SF 1) contained 286 detailed tables focusing on age, sex, households, families, and housing units. Selected tables were repeated for

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<sup>89</sup> *Designing P.L. 94-171 Redistricting Data for the Year 2010 Census: The View from the States*, p. 14.

<sup>90</sup> U.S. Census Bureau, “Census 2000 Operational Plan,” DMD/01-1419, December 2000, p. XIII-4.

<sup>91</sup> As explained in the “Redistricting Data Program” section of this chapter, the redistricting data were subject to a possible statistical adjustment. If the official redistricting data had incorporated a statistical adjustment, all the other official 100 percent data products would likely have been produced from a statistically adjusted detail file as well. See the “Prepublication Data Files” section of this chapter for additional information on this issue.

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nine major race and Hispanic or Latino groups: White alone; Black or African American alone; American Indian and Alaska Native alone; Asian alone; Native Hawaiian and Other Pacific Islander alone; Some Other Race alone; Two or More Races; Hispanic or Latino; and White alone, not Hispanic or Latino. These tabulations also provided population counts for 63 race categories and Hispanic or Latino populations. Additionally, SF 1 provided counts for 40 specified American Indian and Alaska Native tribal groupings<sup>92</sup> and 4 generic tribe categories; race categories including 18 Asian groups and 12 Native Hawaiian and Other Pacific Islander groups; and 28 categories of Hispanic origin.

For the states, the District of Columbia, and Puerto Rico, SF 1 presented data in a hierarchical sequence down to the block level for most tabulations, but only to the census tract level for others. Data for other geographic areas, such as ZIP Code tabulation areas (ZCTAs) and congressional districts, were also included. The Census Bureau released SF 1 through American FactFinder (AFF) and on CD/DVD-ROM between June 13 and August 22, 2001, for the states. On November 16, 2001, an advance national file became available and on October 23, 2002, the agency released the final national file containing population and housing unit counts categorized by “urban” or “rural” data. Lastly, on June 11, 2003, the Census Bureau released the SF 1 “supplement” file, which contains these same data down to the block level.

Summary File 2 (SF 2) contained 47 detailed tables focusing on age, sex, households, families, and occupied housing units for the total population and for 249 American Indian and Alaska Native tribal groupings, race groups, and Hispanic or Latino groups having a population of 100 or more within the specified geographic area. SF 2 data are presented for census tracts and higher levels of geography.

The Census Bureau released SF 2 through AFF and on CD/DVD-ROM for the states between December 27, 2001, and April 24, 2002. On May 29, 2002, the agency released an advance national file for SF 2, and the final national file for SF 2 became available on January 25, 2003. As with SF 1, the only difference between the advance and final national SF 2 files was the inclusion of urban and rural data on the final file. On March 27, 2003, in response to comments from data users, the Census Bureau published, on the Internet only, a supplement for SF 2 that included a table showing sex by age for the population in households and tabulated by the race, Hispanic origin, or tribe of each individual. The original SF 2 provided a table showing sex by age for the population in households by the race, Hispanic origin, or tribe of the householder.<sup>93</sup>

### Summary Files 3 and 4<sup>94</sup>

Summary Files 3 and 4 provided data users with information on social, housing, and economic characteristics from a sample of approximately 19 million housing units (about 1 in 6 households) that received the Census 2000 long-form questionnaire. Summary File 3 (SF 3) included data on ancestry groups, income, poverty status, citizenship, educational attainment and school enrollment, and other long-form information.

SF 3 consisted of 813 detailed tables compiled from the sample data.<sup>95</sup> Fifty-one tables were repeated for the nine major race and Hispanic or Latino groups (see above).

SF 3 presented data for the United States, each state, the District of Columbia, and Puerto Rico in a hierarchical sequence down to the block group for many tabulations. Others only were available down to the census tract level. Data were included for other geographic areas such as ZCTAs and congressional districts. Between August 6 and September 25, 2002, the Census Bureau released SF 3 through AFF and on CD/DVD-ROM.

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<sup>92</sup> Tribal grouping refers to the combining of individual American Indian tribes into a general tribal grouping; for instance combining Fort Sill Apache, Jicarilla Apache, and Mescalero Apache, into the general Apache tribe, or combining individual Alaska Native tribes, such as American Eskimo and Greenland Eskimo, into the general Eskimo tribe.

<sup>93</sup> The householder is defined as the member of a household who lives at a housing unit and owns, is buying, or rents the housing unit.

<sup>94</sup> As discussed in the “Prepublication Data Files” section of this chapter, the Census Bureau considered (but ultimately rejected) producing the sample (or long-form) data products by weighting the sample data to population totals in the 100 percent detail file that incorporated a statistical adjustment. For additional information about this decision, see “The Debate Over the Use of Sampling” section of Chapter 11, “Legal Issues.”

<sup>95</sup> SF 3 included 484 population tables and 329 housing tables that were identified according to geographic coverage.

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SF 4 presented sample data in 213 population tables and 110 housing tables. Each table was iterated for 336 population groups: the total population, 132 race groups, 78 American Indian and Alaska Native tribe categories (reflecting 39 individual tribal groupings), 39 Hispanic or Latino groups, and 86 ancestry groups.<sup>96</sup>

The Census Bureau released SF 4 as individual files for each of the 50 states, the District of Columbia, and Puerto Rico between April 29 and July 30, 2003. The national file also was available by July 30, 2003. The lowest level of geographic coverage for data presented in SF 4 was the census tract.

## Tables

For Census 2000, the Census Bureau published quick tables and geographic comparison tables sourced from the summary files. Quick tables, available through AFF and on CD/DVD-ROM, provided data users with a predefined table containing population and housing characteristics for which users could specify a geographic area and a population group. Generally, these tables presented data at the census tract level, although some quick tables were available down to the block group or block level. For 100 percent data, quick tables were published between March 7, 2001, and April 24, 2002; for sample data, quick tables were published between August 6, 2002, and July 30, 2003. The demographic profiles discussed above are a type of quick table.

Geographic comparison tables enabled users to compare population and housing characteristics for selected geographic areas (for example, all places within a state). Available through AFF, these tables also presented data at the census tract level. The Census Bureau released geographic comparison tables for 100 percent data for the states between March 7, 2001, and April 24, 2002, and for the nation between November 16, 2001, and January 25, 2003. Geographic comparison tables based on sample data were released between August 6, 2002, and July 30, 2003.

## American Indian and Alaska Native Summary File

The American Indian and Alaska Native Summary File (AIANSF) contained sample data presented in 213 population tables and 110 housing tables. The tables were iterated for the total population, the total American Indian and Alaska Native population, the total American Indian population, the total Alaska Native population, and for 1,081 additional specified American Indian and Alaska Native tribes. For any of these iterations, tables were shown only if the specific population threshold was met.<sup>97</sup>

The AIANSF was released as one file and provided data for the United States, regions, divisions, states (Puerto Rico and the Island Areas were not included as state equivalents),<sup>98</sup> metropolitan areas, and American Indian and Alaska Native areas.

## Congressional District and State Legislative District Summary Files

**Congressional District Data Summary Files.** Beginning with the 108th Congress, which was the first Congress redistricted based on Census 2000 P.L. 94-171 data,<sup>99</sup> the Census Bureau released Congressional District Data Summary Files (CDDSF) for each newly convened Congress for which one or more states redrew their congressional district boundaries. The files contained Census 2000 100 percent and sample data for congressional districts. The 100 percent data files contained the same basic characteristics as provided in SF 1, while the sample data files included

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<sup>96</sup> Tables for any population group excluded from SF 2 because the group's total population in a specific geographic area did not meet the SF 2 threshold of 100 people were also excluded from SF 4. In addition, SF 4 tables were also excluded if there were less than 50 unweighted sample cases of a population group in a specific geographic area. For the ancestry iterations, only the 50 unweighted sample cases test was performed.

<sup>97</sup> The population threshold and number of unweighted sample cases as required for SF 4 also pertained to the AIANSF. The threshold was based on respondents who reported only one tribe.

<sup>98</sup> For data presentation purposes, the Census Bureau treats the District of Columbia, Puerto Rico, and each of the Island Areas (American Samoa, Guam, the Commonwealth of the Northern Mariana Islands, and the U.S. Virgin Islands) as "state equivalents" in many Census 2000 data products.

<sup>99</sup> The Census 2000 Redistricting Data Program is discussed earlier in this section.

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the detailed characteristics found in SF 3. The data were presented for all states, the District of Columbia, and Puerto Rico. On March 17, 2003, the Congressional District (CD) Data Summary Files for the 108th Congress were released on AFF, through the Internet as downloadable FTP files, and on CD/DVD-ROM.

For the 109th Congress, three states—Maine, Pennsylvania, and Texas—redrew their congressional district boundaries, and thus the 109th CD Summary Files presented data for these districts that differed from what was presented in the 108th CD products; all other states remained the same as displayed in the earlier products. Similarly, Georgia and Texas districts were redrawn for the 110th Congress, and the 110th CD products reflected these new districts, while all other states remained the same as presented in the 109th CD Summary Files.

**State Legislative District Summary Files.** These files, new for Census 2000, provided data summaries for upper and lower chamber state legislative districts (SLDs). The 100 percent and sample population and housing characteristics were presented for all states, the District of Columbia, and Puerto Rico. For Nebraska, which has a unicameral legislature, and the District of Columbia, which has a city council, the data were presented for the sole legislative chamber.

The boundaries for these legislative districts were provided by the states as part of Phase 1 of the 2010 Census Redistricting Data Program and reflect redistricting that occurred following Census 2000. Thus, they are different from those shown in the Census 2000 Redistricting Data (P.L. 94-171) Summary File.

The 100 percent State Legislative District Summary Files contained the same basic subject characteristics as SF 1, and the sample files included the same detailed subject characteristics as SF 3. These files were released on January 4, 2007, on AFF, through the Internet as downloadable FTP files, and on CD/DVD-ROM.

### Printed Reports (PHC Series)

Census 2000 data for the United States, individual states, the District of Columbia, and Puerto Rico were published in three printed report series: PHC-1, *Summary Population and Housing Characteristics*; PHC-2, *Summary Social, Economic, and Housing Characteristics*; and PHC-3, *Population and Housing Unit Counts*. In each series, there is one report for each state, the District of Columbia, and Puerto Rico (in English and Spanish), as well as a summary report for the U.S. Many tables in the U.S. summary reports contain data for Puerto Rico.

**Summary Population and Housing Characteristics** (PHC-1). This series contained information collected on a 100 percent basis and extracted from SF 1. Data are presented for states, counties, places, and other areas. The agency published this report series on the Internet (available as PDF files) and in print between May 30 and December 2, 2002. This series is similar to the 1990 census CPH-1 series.

**Summary Social, Economic, and Housing Characteristics** (PHC-2). This publication included information on the sample population and housing subjects for states, counties, places, and other areas. The data were extracted from SF 3. The agency published this report series on the Internet and in print between March 13 and July 24, 2003. This series is similar to the 1990 census CPH-5 series.

**Population and Housing Unit Counts** (PHC-3). This report series included population and housing unit counts for Census 2000 as well as for the 1990 and 1980 censuses. Information on land- and water-area measurements and population density also was included. The agency published this report series on the Internet and in print between June 11, 2003, and April 8, 2004. This series is similar to the 1990 census CPH-2 series.

**Social, Economic, and Housing Characteristics—Island Areas** (PHC-4). Census 2000 data for the Island Areas were published in this series. The questionnaires used in the Island Areas enumeration were similar to the stateside long-form questionnaire in terms of the number and types of questions asked. For example, the forms used in American Samoa, the Commonwealth of the Northern Mariana Islands, and Guam contained 27 questions relating to housing characteristics



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and 37 relating to population characteristics. In the U.S. Virgin Islands, questionnaires included 24 housing questions and 36 population questions. The data are presented in one report for each of the Island Areas: Guam (released May 27, 2003), American Samoa (released June 13, 2003), the Commonwealth of the Northern Mariana Islands (released June 19, 2003), and the U.S. Virgin Islands (released June 4, 2003).

**Characteristics of American Indians and Alaska Natives by Tribe and Language: 2000** (PHC-5). The source file for this two-volume report was the AIANSF described above. The report included 80 tables of population and/or housing characteristics shown for the United States, regions, divisions, states, and metropolitan areas. It included sample data for those American Indian or Alaska Native tribes that met the population threshold and number of unweighted sample case requirements for the AIANSF. The report also contained data on language not found in any other census product. This printed report was released in December 2003.

### Other Reports

**Census 2000 Briefs.** The Census 2000 Briefs provided the first analysis of Census 2000 data and thus served as a basic analytic tool useful for introducing the public to Census 2000 population and housing topics. The briefs focused on discussing the most important aspects of the topics, as well as exploring the geographic distribution of the subject matter. They covered the full gamut of Census 2000 topics from the short- and long-form questionnaires and were made available in print and on the Census Bureau's Web site as PDF documents.<sup>100</sup> There are a total of 36 Census 2000 Briefs, and they were released on a flow basis with the first one, *Overview of Race and Hispanic Origin*, issued in March 2001. The briefs based on sample data were issued beginning in 2003; the last one in the entire series, *Household Income: 1999*, was issued in June 2005.

**Census 2000 Special Reports.** The Census 2000 Special Report series provided in-depth analyses of Census 2000 population and housing topics.<sup>101</sup> The reports utilized different modes of analysis, such as discussion text, maps, text tables, and graphics, to examine a wide range of topics, including race, household composition, migration and geographic mobility, population in emergency and transitional shelters, poverty, earnings, residential finance, and disability. Some of the reports in the series rely on data from multiple censuses—for comparison purposes and to provide historical perspective. The 29 Census 2000 Special Reports were released on a flow basis—with the first report issued in 2001 and the last one in 2007—and were made available on the Census Bureau's Web site as PDF documents and in print. *Mapping Census 2000: The Geography of U.S. Diversity* and *Census Atlas of the United States*, although part of the Census 2000 Special Report series, are described in the "Geographic Products" section of this chapter because of their principal reliance on maps to convey the data presented in those publications.

### Other Tables

**Census 2000 PHC-Ts.** The Census Bureau also produced population and housing data tables that were not part of the summary files in AFF or in the printed reports series. Frequently, these tables were associated with Census 2000 Briefs or Special Reports, but others were independent products. As of December 2008, there were 43 products identified as PHC-Ts, covering subjects such as multigenerational households, detailed American Indian and Alaska Native tribes, migration, language use and ability, working at home, the daytime population, percent urban for PUMAs (Public Use Microdata Areas) and super-PUMAs, and detailed ancestry groups. These tables are listed on the Census 2000 Gateway Web page (discussed earlier).

### Microdata

Microdata allow users to prepare their own customized tabulations and cross-tabulations of most population and housing subjects. These specially prepared microdata files contain the actual responses to census questionnaires (subject to disclosure avoidance techniques), with the names

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<sup>100</sup> A list of all the Census 2000 Briefs and Special Reports as well as the documents themselves can be found at <http://www.census.gov/population/www/cen2000/briefs/index.html>.

<sup>101</sup> U.S. Census Bureau, *Residence Finance Survey: 2001*, Census 2000 Special Reports, CENSR-27, contains statistical summaries of data from the survey, which was conducted in 2001 as part of Census 2000.

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and addresses removed and the geography sufficiently broad to protect confidentiality. The Census Bureau released two sets of public use microdata sample (PUMS) files—1 percent and 5 percent sample files—through the Internet as downloadable FTP files and on CD/DVD-ROM with software to assist data users in creating tabulations. The 1 percent sample files provided information for geographic areas called super PUMAs, having a minimum population of 400,000 inhabitants. These files became available between April 23 and June 4, 2003. The 5 percent sample PUMS files provided information for PUMAs, which had a minimum population of 100,000; these files were released between August 6 and September 24, 2003. The Census Bureau also released geographic equivalency files to show the relationship between PUMAs and other types of geography, such as counties and places.

## **GEOGRAPHIC PRODUCTS**

### **Background: Product Planning and Technological Developments**

The formal planning process relating to Census 2000 geographic products began in 1996 as part of the preparations for the 1998 Dress Rehearsal. The planning process included, among other activities, reviewing the 1990 census product line, weighing the expectations of census customers, and engaging in a major outreach program aimed at evaluating customers' needs based on responses to Census Bureau product proposals. Key activities included:

- Outreach and information programs coordinated by the Census Bureau's Redistricting Data Office to ascertain the redistricting community's needs for geographic products. These activities included attending meetings of state government officials and giving presentations at conferences about the plans for geographic products for redistricting.
- Giving presentations at meetings of numerous professional organizations, such as the Urban and Regional Information Systems Association and the Association of American Geographers, as well as at state and regional geographic information system (GIS) conferences.
- Making available via the Census Bureau Web site information describing planned geographic products.

As discussed in more detail in the American FactFinder (AFF) section of this chapter, by the mid-1990s, the Census Bureau was among a few federal agencies to use the Internet for information and product dissemination. The public's positive reaction to this development spurred planning for a much broader distribution of the Census 2000 products through this medium. In fact, Census Bureau staff concluded that almost all its census-related products, including geographic products, could be made available on the Internet.

Maps—the most widely used geographic product—could have presented a significant challenge to Internet distribution were it not for another advance in computer-related technology. The Adobe Corporation developed and made available the portable document format (PDF) with free document reader software for all of the major computer platforms (Windows, Unix, Macintosh, etc.). Thus, PDF documents that were created on a platform with Adobe PDF authoring software could be viewed by users of all the other participating platforms. Additionally, graphics, such as maps, could be converted into PDF. Furthermore, the Adobe Reader software provided for panning and zooming within the image on the computer screen, which overcame a potential limitation for the distribution of maps in this format—the relatively small size of most computer screens vis-a-vis a paper map. With the proper equipment, users also could print full-size copies of these maps from the PDF files.

Another computer-related development important to the dissemination of Census 2000 geographic products was the widespread use of the high-capacity digital versatile disc (DVD). A single DVD can store the images in PDF of thousands of large-format maps, such as census block and census tract maps. This allowed easy access to the tens of thousands of maps produced from Census 2000 that could be stored on discs requiring only a few inches of shelf space, which made it practical for individuals or libraries to own complete sets of all decennial census map products. All Census 2000 geographic products were made available on the Census Bureau Web site as well

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as on CD/DVD-ROMs created on demand. As noted below, some products also were produced commercially in print and/or on DVD. Maps that were not printed commercially could be purchased as plot-on-demand products from the Census Bureau.

### Geographic Products Pertaining to the Redistricting Data Program

As directed by Public Law (P.L.) 94-171, the Census Bureau was required to provide each governor and the majority and minority leaders of each state legislature with Census 2000 population totals for counties, American Indian and Alaska Native areas, cities, towns, county subdivisions, census tracts, block groups, and blocks. The data were provided by race and ethnicity (Hispanic/Latino or not Hispanic/Latino) for the total population and for the population 18 years old and over.<sup>102</sup> In addition to the population counts, the Census Bureau provided several geographic products to aid the states in carrying out their redistricting activities. Pursuant to P.L. 94-171, the tabulations (and associated products) had to be delivered to the states within 1 year of Census Day or by April 1, 2001, for Census 2000.<sup>103</sup> After delivery of these products to official state redistricting representatives was confirmed, the data were made available to the public on the Census Bureau's Web site.

**Redistricting TIGER/Line® files.** This data set is an extract from the Census Bureau's Topologically Integrated Geographic Encoding and Referencing (TIGER®) database.<sup>104</sup> It contains data (that is, coordinates) representing the positions of map features (for example, roads, streets, railroads, bodies of water, etc.) and boundaries of legal and statistical entities, along with selected attributes of the features and geographic entities (names, city-style address ranges, geographic codes, census feature class codes, and the like). It is typically used with GIS software to create maps or be used as the basis for geospatial analysis. In a redistricting activity, information in the database is used in conjunction with the census block population data and other information to divide a state into congressional districts (or other population-based entities) that meet legal representation requirements.

The Redistricting TIGER/Line files release was the first of a series of TIGER/Line files resulting from Census 2000. This version of the TIGER/Line files contained all the Census 2000 geographic and statistical entities except for the ZIP Code tabulation areas (ZCTAs), urbanized areas (UAs), and public use microdata areas (PUMAs). These files also lacked the updated address ranges based on final Census 2000 information. The address ranges were comparable to those in the 1999 TIGER/Line files. These omissions were not critical for redistricting purposes, and holding up the delivery of these files to await the availability of this information would have caused unacceptable delays for redistricting officials. Later versions of the TIGER/Line files contained this information.

**Redistricting map products.** Despite the availability of GIS and specialized redistricting software, many redistricting officials use paper maps in addition to the TIGER/Line files. The Census Bureau fulfilled these requests by delivering paper copies of the maps and/or electronic map image files that the user could print as needed.

Prior to release of the redistricting products, the Census Bureau's Redistricting Data Office (RDO) canvassed official redistricting contacts in each state to determine the map format they desired. The options included paper copies, PDF map image files, and HPGL/2 plot files. The HPGL/2 is a proprietary format used by large-format plotters that allows for relatively fast map printing. Using maps plotted from HPGL/2 files supplied by the Geography Division (GEO), the Census 2000 regional census centers produced and shipped paper copies of the maps to redistricting contacts who requested them. The RDO provided CD-ROMs or DVD-ROMs with PDF and/or HPGL/2 versions of the map files to those redistricting contacts who requested digital versions of the maps.

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<sup>102</sup>As mentioned in the "Principal Data Products" section, redistricting data are also provided to the District of Columbia and Puerto Rico.

<sup>103</sup>13 U.S.C. § 141(c).

<sup>104</sup>For more information about TIGER, see Chapter 7, "Census Geography and the Geographic Support System."

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- P.L. 94-171 county block maps—For each county or statistically equivalent geographic entity, Census Bureau block maps show the greatest detail and most complete set of geographic information. These large-scale, large-format maps (36 by 33 inches) depict the smallest geographic entities for which the Census Bureau presents data—census blocks—by displaying the features that form block boundaries and the numbers that identify them. The intent of this map series is to produce a map for each county on the smallest possible number of map sheets, at the maximum practical scale. The maps show boundaries, names, and codes for American Indian/Alaska Native areas and Hawaiian Home Lands, county subdivisions, census places, voting districts, census tracts, block groups, and census blocks. Base-feature details, such as roads, railroads, and water features, also are shown. Approximately 95,500 unique map sheets were produced for this series.
  - P.L. 94-171 voting district/state legislative district outline maps—These county-based maps (36 by 33 inches) show the boundaries and codes for voting and/or state legislative districts as delineated by the participating states in Phase 2—the Voting District Project—of the Census 2000 Redistricting Data Program. They include the features underlying these boundaries and the names of these features. They also show the boundaries and names of American Indian/Alaska Native areas, Hawaiian Home Lands, counties, county subdivisions, and places. The maps were available only to those states and counties that participated in the Voting District Project. Approximately 16,000 unique map sheets were produced for this series.

### Other TIGER® Extracts and Map Products

**Census 2000 TIGER/Line® files.** In the 2 years after the Redistricting TIGER/Line files became available, the Census Bureau released to the public three additional versions of Census 2000 TIGER/Line files so that important new geographic areas could be available to the public as soon as they were delineated. The “flow” basis of these releases resulted from the varying lengths of time required to complete the analytical processes involved in delineating these areas. Each release built on information in the earlier release. These multiple releases were practical and cost-effective only because of the availability of the Census Bureau Web site to allow free downloading of the files and the Census Bureau’s ability to easily copy and distribute files on CD/DVD-ROMs on an as-needed basis as customers ordered them. In the past, each release required that discs be sent to commercial establishments for reproduction, with the expectation that a minimum of several hundred sets would be produced.

The first (October 2001) of these releases, titled “Census 2000 TIGER/Line Files,” added improved address-range data based upon the addresses used for tabulating Census 2000. It also added ZCTA geography. The second (June 2002) release was the “UA Census 2000 TIGER/Line Files.” It contained the Census 2000 UAs, urban clusters (UCs), and PUMAs. The final (March 2003) release in the series was the “108th Congressional District Census 2000 TIGER/Line Files.” These files contained the congressional districts for the newly drawn 108th Congress. They also included the corrected Census 2000 UAs and the redefined 1990 UAs based on the Census 2000 urban and rural criteria.

**Census 2000 boundary files.** The Census Bureau produced a series of digital files (provided in three different formats) containing the lines that made up the boundaries of almost every level of geographic area for which Census 2000 data were produced. The Census Bureau developed the files for various internal mapping projects and made them available to the general public on its Web site. The boundary lines were generalized (that is, exhibiting simplified shape detail) extracts of data from the Census Bureau’s TIGER geographic database and were designed for use with GIS or business mapping software. The Census Bureau produced these files for each level of geography from the census block group and above.

**Census 2000 block and tract relationship files.** The Census Bureau released a series of (fixed length, ASCII format) files to assist data users in comparing 1990 and 2000 data at the census block and census tract levels. The data contained in the relationship files were extracted from the Census Bureau’s TIGER database. The files were created for the 50 states, the District of Columbia, Puerto Rico, and the Island Areas.

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The Census 2000 Block Relationship Files provided a tool to help data users determine how 1990 blocks related to Census 2000 blocks and vice versa. These files portrayed the following relationships between the 1990 and 2000 census blocks: 1990 tabulation blocks to 2000 collection blocks;<sup>105</sup> 1990 tabulation blocks to 2000 tabulation blocks; and 2000 collection blocks to 2000 tabulation blocks.

The tract relationship files (in previous censuses, this product was called a comparability file) showed how 1990 census tracts related to Census 2000 census tracts. The Census 2000 tract relationship files consisted of four sets of files. Two of these were state-level entity-based files. One provided a measurement of change based on population; a second measured change using street-side mileage. The other two files specifically listed census tracts that had experienced significant change: one file from the perspective of 1990 census tracts, the other from the perspective of Census 2000 tracts.

The relationship files did not provide users with specific information on which pieces of land were involved in any changes between 1990 and 2000. For that information, one would have to use GIS software to overlay both vintages of the boundaries together on a map.

**Census 2000 block maps.** These large-scale, large-format block maps (36 by 33 inches) had the same design and content as the block maps for the Redistricting Data Program except that they did not include voting district boundaries and were both based on counties and governmental units (whereas the Redistricting Data Program block maps were county-based only). The Census 2000 block maps were produced specifically for American Indian/Alaska Native areas, Hawaiian Home Lands, counties, county subdivisions, places, census designated places (CDPs), and consolidated cities. CDPs were included because of their place-like characteristics even though they are not governmental units.

To create the maps for these additional areas, the production process was repeated for each governmental unit across the nation. The map production system created a new sheeting arrangement for each place, using the fewest number of sheets of appropriately scaled maps that showed the area in question. Because of the way county areas were divided among map sheets, had the block maps been created at the county level only, users interested in maps for a particular place likely would have had to view (and possibly print) many map sheets that displayed only small pieces of the place. Remapping at the governmental-unit level usually greatly reduced the number of map sheets required for an individual place.

As a result of this effort, many areas of the country were mapped several times at the block level. Although the effort greatly increased the resource requirements for computer map production, it resulted in significant efficiencies for the map users. Approximately 185,000 individual map sheets were produced for this series. In addition to digital versions, paper copies of these maps, plotted only if requested, could be ordered from the Census Bureau.

**Census 2000 tract maps.** These large-format maps (36 by 33 inches) showed the boundaries and numbers of census tracts as well as the named features underlying the boundaries. They also showed the boundaries, names, and codes for American Indian/Alaska Native areas, Hawaiian Home Lands, counties, county subdivisions, and places. The scale of the maps was optimized to keep the number of map sheets for each area to a minimum, but the scale and number of sheets varied by the size of the area of the county and the complexity of the census tracts.

**American Indian tribal census tract outline maps.** American Indian tribal census tracts are small, relatively permanent statistical subdivisions of federally recognized American Indian reservations/off-reservation trust lands. The difference between a tribal census tract and a standard census tract is in the hierarchical presentation of the data. The Census Bureau includes an American Indian geographic hierarchy in data summaries that are presented for the entire United

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<sup>105</sup> A collection block is a physical block enumerated as a single geographic area, regardless of any legal or statistical boundaries passing through it. A tabulation block, on the other hand, is so designated for publication purposes and cannot be split by the boundary of a legal or statistical entity for which the agency publishes data.

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States, such as the final national summary files. In this hierarchy, data are presented for tribal census tracts, respecting the boundaries of the American Indian reservations/off-reservation trust lands, but data are presented without regard to county and state boundaries. As a result, a census tract that crosses the boundary of an American Indian reservation in the standard geographic hierarchy may have a different population and housing unit count than that presented for what may appear to be the same census tract in the American Indian hierarchy. The tribal census tract outline maps showed the boundaries for the tribal census tracts, which use the American Indian geographic hierarchy in the presentation of the associated data.

These large-format maps (36 by 33 inches), created only in PDF format, showed the boundaries and numbers of the American Indian tribal census tracts as well as the named features underlying those boundaries for American Indian reservations and off-reservation trust lands. The scale of the maps was optimized to keep the number of map sheets for each area to a minimum, but the scale and number of sheets varied by the size of the area of the American Indian reservation/off-reservation trust land and by the complexity of the associated tribal census tracts.

**Census 2000 county and county subdivision outline maps.** These state-based maps (produced in black and white for a page-size format) showed the names and boundaries of counties and statistically equivalent areas; and counties, county subdivisions, places, consolidated cities, American Indian/Alaska Native areas, and Hawaiian Home Lands, respectively. The Census 2000 boundaries shown were those legally in effect as of January 1, 2000. The county outline maps consisted of a single map of each state, the District of Columbia, Puerto Rico, and the Island Areas. The Island Areas also were included in the county subdivision outline map series.

**Census 2000 urbanized area (UA) and urban cluster (UC) outline maps.** These large-format maps showed the boundaries, names, and codes of UAs and UCs, respectively, as well as the named features underlying the boundaries. They also showed the boundaries, names, and codes for American Indian/Alaska Native areas, Hawaiian Home Lands, counties, county subdivisions, and places. The maps represent UAs and UCs as reported in the May 1, 2002, *Federal Register* notice and do not reflect corrections provided in the *Federal Register* notice of August 23, 2002.<sup>106</sup>

**Congressional district products.** The Census Bureau produced tables and maps that reflected the boundaries and geographic relationships of congressional districts for the 108th Congress. These districts were established by the states based on the Census 2000 P.L. 94-171 data. Except for the seven states with only one representative and Maine, which redistricted in the spring of 2003, all states established new congressional district boundaries by 2002. There were three map types available: individual congressional district wall maps, state-based congressional district wall maps, and a national congressional district wall map. Only the latter was published in paper format for sale. The other maps, as well as the national map, were made available for downloading in PDF and GIF formats from the Census Bureau Web site. Additionally, all three map types were contained in a single digital product—available on DVD—called *The 108th Congressional District Atlas*. This product also included the above-mentioned tables, which were state-based and reflected the relationships of the congressional districts to geographic entity types specific to each state.

**Public use microdata area (PUMA) maps.** As described in the “Principal Data Products” section of this chapter, the Census Bureau produced public use microdata sample (PUMS) files containing the actual responses (subject to disclosure avoidance techniques) to census long-form questionnaires. Working with these microdata files, data users could prepare their own customized tabulations and cross tabulations of responses to most population and housing subjects. The records did not contain identifying information such as names and addresses, and they were geocoded to large geographic areas to protect respondent confidentiality. These areas are known as public use microdata areas or PUMAs. Two types of PUMAs were created: PUMAs and super

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<sup>106</sup> *Federal Register*, Vol. 67, No. 84 (May 1, 2002), pp. 21962–67; Vol. 67, No. 164 (August 23, 2002), pp. 54630–31.

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PUMAs. PUMAs had to have a minimum census population of 100,000 and could not cross state lines. The PUMAs were aggregated into super-PUMAs, which required a minimum population of 400,000. PUMA maps were created to show the boundaries of these areas.

Two page-size map series were produced, one each for super-PUMAs and PUMAs. The super-PUMA maps were state-based and depicted super-PUMA boundaries and codes, state boundaries, and county boundaries and names. The PUMA maps were based on the corresponding super-PUMAs and displayed the boundaries and codes of the component PUMAs within the super-PUMA. Additionally, the maps showed county boundaries and names along with census tract boundaries within the boundary of the super-PUMA.

**1990 census small area maps (re-created).** As noted above, technological changes greatly hampered the Census Bureau's ability to provide customers with maps from the 1990 census in the later years of that decade. For customers interested in comparing 1990 and 2000 census results for small areas, this presented major difficulties. With this in mind, the Census Bureau decided to use the 2000 map production system and the 1990 geography from the TIGER database to create maps that closely approximated the 1990 census tract/block numbering area (BNA) and block maps.

- 1990 census block maps (re-created)—These maps, created in PDF format, were produced for counties only. The maps displayed the 1990 geography; however, the features displayed on these maps were those shown on Census 2000 maps. These large-format maps (36 by 33 inches) showed the boundaries and numbers of the 1990 census blocks as well as the named features underlying the boundaries. They also showed the boundaries, names, and codes for the 1990 American Indian/Alaska Native areas, counties, county subdivisions, and places.
- 1990 census tract/BNA maps (re-created)—These maps were re-creations of the 1990 census tract/BNA outline maps and differ from the original 1990 census tract outline maps. Similar to the Census 2000 tract outline maps, these maps were county-based and were created for all 1990 counties/county equivalents in the United States. As with the re-created 1990 census block maps, these maps displayed the 1990 geography, but the features are those shown on Census 2000 maps. They show the boundaries and numbers of the 1990 census tracts/BNAs as well as the named features underlying those boundaries. These maps also showed the boundaries, names, and codes for 1990 American Indian/Alaska Native areas, counties, county subdivisions, and places.

### Map Products Pertaining to Characteristic Data

**Census 2000 population profile maps.** These profile maps presented, in color, a graphic overview of several demographic statistics collected as part of Census 2000. Each page included a population density map by census tract; a pie chart showing racial characteristics; a population pyramid; and a bar chart illustrating housing occupancy rates.

The map series consisted of one page-sized map for each state, the District of Columbia, and Puerto Rico, as well as a national map. These maps were designed to supplement the Census 2000 profiles. (See the "Principal Data Products" section of this chapter.) Each map appeared as part of a Census 2000 Profile brochure, which also included tables summarizing selected demographic, social, economic, and housing characteristics.

**Mapping Census 2000: The Geography of U.S. Diversity.** This Census 2000 Special Report (CENSR/01-1) presented, in atlas format, a synthesis of the basic patterns and changes in U.S. population distribution in the last decade. It was available as a printed report and in PDF format on the Census Bureau Web site. Each page featured county-level detail for the 50 states, the District of Columbia, and Puerto Rico. Each page also included a small, state-level map for a simplified view of the population theme. The Census 2000 data in this report were based on the Census 2000 Redistricting Data Summary File.

**American Indians and Alaska Natives in the United States map.** This wall map showed the American Indian and Alaska Native areas reported and/or delineated for Census 2000. The map contained graphics reflecting Census 2000 data for the populations living in these areas. This color map (48 by 36 inches) was available in print, as well as digitally in both PDF and GIF formats.

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**Population center and population distribution maps.** The population center map series consisted of three page-sized color maps depicting the center of population based on Census 2000 and previous censuses. The three maps were “Position of the Geographic Center of Area, Mean and Median Centers of Population 2000,” “Mean Center of Population for the United States: 1790 to 2000,” and “Median Center of Population for the United States: 1880 to 2000.”

The “Census 2000 Population Distribution in the United States” map depicted the distribution of the U.S. population using white “dots” against a dark blue background. It was commercially published in wall-size and page-size versions, and the page-size version was also available in PDF format on the Census Bureau Web site. On the wall-size version of the map, each white “dot” represented 1,000 people; whereas on the page-size version, each one represented 7,500 people. The agency published population distribution maps in this same presentation format following the 1980 and 1990 censuses, and it remains one of the Census Bureau’s most popular thematic maps.

**Census Atlas of the United States.** In January 2008, the Census Bureau released this publication—the first comprehensive atlas of population and housing produced by the agency since the 1920s—as part of the Census 2000 Special Report series. It was a large-format, 300-page, 7-pound publication containing almost 800 maps. Most of the maps and accompanying information pertained to Census 2000, but the *Census Atlas* included data from 1790 (the first census) to 2000, and data from decennial censuses prior to 2000 supported nearly 150 maps and figures, providing context and historical perspective for many of the topics presented.

A variety of topics were covered in the *Census Atlas*, ranging from language and ancestry characteristics to housing patterns and the geographic distribution of the population. A majority of the maps in the publication presented data at the county level for the United States and Puerto Rico, but data were also mapped by state, census tract (for the largest cities and metropolitan areas), and for selected American Indian reservations.

The large-format, bound version of the *Census Atlas of the United States* is available for purchase from the Government Printing Office’s online bookstore, or a PDF version of the publication can be downloaded from the Census Bureau’s Web site.

## DATA PRODUCTS PERTAINING TO SPECIAL POPULATIONS

As part of its preparations for Census 2000, the Census Bureau designed special procedures for enumerating those segments of the population for which the lack of conventional housing might preclude their being counted in the major enumeration operations.

In an operation called “service-based enumeration” (SBE), the Census Bureau counted people at facilities where they received services. Included were such places as shelters, soup kitchens, and regularly scheduled mobile food van stops. Additionally, the SBE counted people at targeted non-sheltered outdoor locations (TNSOLs), such as encampments beneath bridges.<sup>107</sup>

### Operation and Methodology

The Census Bureau conducted the SBE from March 27 through March 29, 2000, with specific components including emergency and transitional shelters (code 701); shelters for children who are runaways, neglected, or without conventional housing (code 702); shelters for abused women (or shelters against domestic violence) (code 703); soup kitchens (code 704); regularly scheduled mobile food van stops (code 705); and TNSOLs (code 706).<sup>108</sup> Additionally, respondents who completed Be Counted forms (BCFs) and checked the “no address on April 1, 2000” box or indicated in the address section that they were homeless were tabulated as part of the SBE population and were allocated to a service location in the city and/or county indicated on the BCF.<sup>109</sup>

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<sup>107</sup> The SBE is described in more detail in the Group Quarters Enumeration section of Chapter 5, “Data Collection.”

<sup>108</sup> The referenced codes were used in the tabulation of the data and also provide a shorthand way of referring to the various components of the SBE.

<sup>109</sup> The Be Counted campaign is described in Chapter 5 under the section entitled “Supplemental Campaigns.”



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Because Census Bureau enumerators visited the service locations only once during the enumeration period, a method was needed to account for those people who used the service facilities, but did not do so on the day that the Census Bureau visited. The agency developed a “multiplicity estimator” to account for those other people. However, because apparent response bias in the answers to the frequency-of-use question on the service facility questionnaires affected the reliability of data based on the multiplicity estimator, the Census Bureau decided not to use that methodology to refine the data obtained through the enumeration of the service facilities.<sup>110</sup> Thus, the data obtained through the enumeration of components 701 through 705, without multiplicity estimation, were combined with the TNSOL data and the BCFs indicating no address or “homeless” in the noninstitutional group quarters counts for Census 2000, so that data from the SBE or any of its components were not shown separately in the initial release of these data (see additional discussion below).<sup>111</sup>

The decision not to use the multiplicity estimator affected the Census Bureau’s plans regarding the dissemination of data from the Census 2000 SBE. The following sections describe the original dissemination plans and the changes to those plans including a discussion of how the data from the SBE were aggregated for publication purposes and specific data products produced for components of this population.

### Original Plans for the Dissemination of SBE Data

The plans and procedures for counting and producing tabulations of people without conventional housing were presented at numerous meetings and public forums leading up to Census 2000. They were developed based on advice received throughout the decade from census stakeholders, such as the census advisory committees and the National Coalition for the Homeless, among others. In particular, in its January 1999 final report, the Census 2000 Advisory Committee recommended that special attention be paid to tabulation plans for the results from service facilities and targeted outdoor locations so that they could not be aggregated for use as a “homeless count.” Similarly, the National Coalition for the Homeless and other advocacy organizations urged the Census Bureau to avoid the confusion and misinterpretations of the data that occurred with the 1990 census Shelter and Street Night (S-Night) enumeration.<sup>112</sup>

From the 1990 S-Night operation, the Census Bureau published data showing the number of people enumerated at selected locations where homeless people could be found. Before, during, and after the 1990 census, the Census Bureau clearly conveyed to users that the S-Night operation was not intended to produce a count of the homeless population. Despite the Census Bureau’s description of the limitations of these data and its cautions about their use, stakeholders voiced

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<sup>110</sup> See the discussion of the SBE in the “Group Quarters Enumeration” section of Chapter 5. The Census Bureau had planned to incorporate the SBE data with multiplicity estimation in the Census 2000 data for all purposes except apportionment. (See U.S. Census Bureau, “Service-Based Enumeration in Census 2000: Multiplicity Estimation,” Census 2000 Decision Memorandum No. 100, February 22, 2000.) With regard to the SBE questionnaires used at the service facility locations, the Census Bureau evaluated responses to the question on frequency of use—information specifically used for the multiplicity estimator calculations—and found that a large proportion of the responses for the shelter questionnaires was inconsistent with reported usage patterns obtained from a review of the relevant literature. The Census Bureau determined that this level of apparent response bias—as well as a relatively high level of nonresponse to both the shelter and soup kitchen usage questions—rendered the data incorporating the multiplicity estimator unreliable and not useable. For additional information on the decision, see U.S. Census Bureau, Richard A. Griffin, DSSD, “Census 2000—Service Based Enumeration Multiplicity Estimation,” Census 2000 Procedures and Operations Memorandum Series B-15\*, February 28, 2001, pp. 3–6. For more detailed information on the methodology of the multiplicity estimator, see Felipe Kohn, DSSD, “Census 2000 Service Based Enumeration: Overview of Multiplicity Estimation,” Census 2000 Procedures and Operations Memorandum Series Q-36, December 5, 2000.

<sup>111</sup> The frequency-of-use question only pertained to the service locations; it was not asked on the BCFs or at TNSOLs.

<sup>112</sup> S-Night was a census operation that took place during the evening hours of March 20 and the early morning hours of March 21, 1990. It was designed to count persons living in pre-identified public shelters (including those for abused women) and places of commerce such as bus or train stations, and persons visible on the streets. For a more detailed description of the operation, see U.S. Census Bureau, *1990 Census of Population and Housing, History, Part A*, 1990 CPH-R-2A (Washington, DC: U.S. Government Printing Office, 1993), pp. 6-52–6-53.

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concerns about the meaning and appropriate use of these data throughout the decade.<sup>113</sup> The misinterpretations of the data that occurred relative to the 1990 experience were key to the decision not to publish separate tabulations for all components of the Census 2000 SBE. Specifically, the Census Bureau planned to release separate data on emergency and transitional shelters (including shelters for runaway children, that is, codes 701 and 702 combined) in Summary File 1 (SF 1), but no separate release of data for the other SBE locations. This dissemination plan was documented in an April 1999 interdivisional memorandum and made available to census stakeholders.

### Change to the Original Plans for the Dissemination of SBE Data

In January 2001, the Census Bureau changed its earlier decision to release in SF 1 the data from emergency and transitional shelters because the agency believed the multiplicity estimator-based data were clearly unreliable. This change was based on the Census Bureau's increasing concerns that the census results—given that the multiplicity estimator could not be used to refine the data—of people enumerated at emergency and transitional shelters, without the appropriate qualifiers and other discussions of the limitations of the data, would be misinterpreted. During this time, the Census Bureau also determined that including the limitations and qualifiers in the technical documentation was not possible within the deadlines for releasing SF 1. According to the Government Accountability Office (GAO), some data users saw the decision as an attempt to suppress the shelter data.<sup>114</sup> Rather, the Census Bureau decided it would issue a special report later in the year on the results of the enumeration of emergency and transitional shelters, with the appropriate caveats. Thus, with the release of SF 1 data beginning in June 2001, the data from the SBE were reported in aggregate in the “other noninstitutional group quarters” category. This category included persons in other types of living arrangements (for example, staff residents of institutions and living quarters for victims of natural disasters) in addition to those enumerated in the SBE.

### Responses to the Census Bureau Decision

Following the Census Bureau's release of the first SF 1 data files in June 2001, considerable discussion occurred in the press, among Census 2000 partners, and in the Congress about the lack of separate reporting categories for the SBE data. On July 3, 2001, Rep. William Lacy Clay, Jr. (D-MO), the ranking member of the House Subcommittee on the Census, and Reps. Carolyn B. Maloney (D-NY) and Dennis J. Kucinich (D-OH), wrote to Acting Census Bureau Director William G. Barron, Jr., expressing their concerns that “. . . the Census Bureau has changed the procedure for the release of information collected during . . . service based enumeration.”<sup>115</sup> In a July 23, 2001, follow-up letter signed by Reps. Maloney and Kucinich and 17 additional members of Congress, the representatives requested the release of data from the SBE, including data pertaining to the TNSOLs, “. . . at the lowest level of geography available, at the earliest possible date.”<sup>116</sup> The representatives stated that:

. . . officials from local governments across this nation invested valuable time and resources in working with the Bureau to collect these data. For some communities, the Service Based Enumeration provides a valuable indicator of the population in need of

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<sup>113</sup> The National Law Center on Homelessness and Poverty filed a suit challenging the procedures and results of the 1990 census S-Night. The plaintiff claimed that the 1990 count of people living in shelters or present at preidentified street sites was “. . . so arbitrarily limited in scope and deficient in execution as to be useless as a count of even a segment of the homeless population.” As relief, the plaintiff sought, among other things, a recount of the “homeless” population using sampling and estimation techniques and the incorporation of those results in the 1990 census counts, as well as the use of similar techniques to count the “homeless” in the 2000 census. This 1990 census lawsuit, *National Law Center on Homelessness and Poverty v. Kantor* (No. 94-5312, 1996 WL 446791 (D.C. Cir. Aug. 9, 1996)), is discussed in more detail in the “Litigation” section of Chapter 11, “Legal Issues.”

<sup>114</sup> U.S. General Accounting Office, “Decennial Census—Methods for Collecting and Reporting Data on the Homeless and Others without Conventional Housing Need Refinement,” Report to Congressional Requesters, GAO-03-227, January 17, 2003, p. 2. By legislation enacted into law in July 2004, the name of the entity was changed to Government Accountability Office. Copies of GAO reports can be obtained from its Web site at <www.gao.gov>.

<sup>115</sup> Rep. William Lacy Clay, Jr. et al, U.S. House of Representatives, to William Barron, Jr., Acting Director, U.S. Census Bureau, July 3, 2001.

<sup>116</sup> Rep. Carolyn B. Maloney et al, U.S. House of Representatives, to William Barron, Jr., Acting Director, U.S. Census Bureau, July 23, 2001.

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service. For other communities, where shelters and soup kitchens are less predominant, the Targeted Non-Shelter Outdoor Location counts are more useful. Local governments expected that these data would be released so that they could make informed decisions on how to address problems in their communities.<sup>117</sup>

The letter concluded by noting that if these data were not made available to local governments, these entities would be less likely to work collaboratively with the Census Bureau on future projects.

The Census Bureau responded by noting the January decision not to release the shelter data as part of SF 1 and informed the members about a planned special report on that population to be released in October 2001. However, the agency clearly stated that it did not intend to release other component data from the SBE. It provided the members with numerous planning documents developed over the decade testifying to the agency's intent not to release separate tabulations of people lacking conventional housing or tabulations of all the individual components of the SBE.<sup>118</sup>

### Data Products on the Emergency and Transitional Shelter Population

In the fall of 2001, the Census Bureau published its special report on the emergency and transitional shelter population.<sup>119</sup> At approximately the same time, the agency also produced a public use data table containing, among other data, counts for counties and tracts with 100 or more people in emergency and transitional shelters.<sup>120</sup> These documents presented data for SBE components 701 and 702 combined. The data for the other SBE components (703–706) were not reported separately, but were included in aggregate (combined with the data for codes 701 and 702) in SF 1 tabulations of the “other noninstitutional group quarters” population.<sup>121</sup>

### GAO Releases Report Evaluating the SBE

In January 2003, GAO released a report examining the Census 2000 SBE and the Census Bureau's decision processes regarding the release of data collected in that operation.<sup>122</sup> The GAO noted that the Census Bureau partnered with local governments and community advocacy groups to obtain lists of service locations and to obtain their assistance in conducting the SBE. According to the report, because the Census Bureau did not always communicate clearly and consistently to its partners and the public regarding its plans for disseminating data from the SBE, misunderstandings and expectation gaps developed regarding what component data would be disseminated.<sup>123</sup> For example, the assistant city attorney of Los Angeles stated she believed the city would receive the TNSOL data—given the city's extensive efforts to identify TNSOL locations for the Census Bureau—that city officials wanted for resource allocation purposes.<sup>124</sup> However, the GAO also acknowledged that the Census Bureau was faced with competing demands from various stakeholders (government entities, service providers, and advocacy groups) regarding how the data should be published. That is, some of these stakeholders did not want any SBE component data released and were displeased with the separate release of the emergency and transitional shelter data.<sup>125</sup>

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<sup>117</sup> Ibid.

<sup>118</sup> William G. Barron, Jr., Acting Director, U.S. Census Bureau, to Rep. William Lacy Clay, Jr., U.S. House of Representatives, August 10, 2001, pp. 1–2.

<sup>119</sup> U.S. Census Bureau, Annetta C. Smith and Denise I. Smith, “Emergency and Transitional Shelter Population: 2000,” Census 2000 Special Reports, CENSR/01-2, October 2001.

<sup>120</sup> “Population in Emergency and Transitional Shelters,” Census 2000 PHC-T-12, October 30, 2001. This data table and the preceding Census 2000 Special Report are both available on the Census Bureau Web site at <<http://www.census.gov/population/www/cen2000/briefs.html#sr>>.

<sup>121</sup> The only exception was the availability of a national-level count of those enumerated at TNSOLs. See “Census 2000—Service Based Enumeration Multiplicity Estimation,” February 28, 2001, p.5.

<sup>122</sup> “Decennial Census—Methods for Collecting and Reporting Data on the Homeless and Others without Conventional Housing Need Refinement,” January 17, 2003.

<sup>123</sup> Ibid., pp. 13–14.

<sup>124</sup> Ibid., p. 12. In fact, the city of Los Angeles later filed a Freedom of Information Act (FOIA) lawsuit in which it sought the SBE component data separately reported at the census tract or lower level of geography for Los Angeles County (*City of Los Angeles v. U.S. Department of Commerce*, CV 02-9122WMB (C.D.Cal. Aug. 27, 2004)). The FOIA request and ensuing lawsuit are discussed in the relevant sections of Chapter 11.

<sup>125</sup> Ibid., pp. 12–13.

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The GAO cited the Census Bureau's lack of well-documented, transparent, clearly defined, and consistently applied guidelines on the minimum quality necessary for releasing data as a key cause of the agency's "shifting" position on the dissemination of SBE data. Finally, with regard to the multiplicity estimator, the GAO inferred that had appropriate testing been conducted during the decade, the problem with the methodology that surfaced in Census 2000 would have been revealed. The GAO stated that the Census Bureau believed that the sample sizes of the relevant populations in the 1998 Dress Rehearsal sites were not large enough to adequately test the methodology.<sup>126</sup>

To incorporate lessons learned in the planning for the 2010 Census, the GAO recommended that:

- The Census Bureau ensure that all procedures for enumerating and estimating segments of the population without conventional housing are properly tested and evaluated under conditions as similar to the census as possible.
- The Census Bureau develop agencywide guidelines for its decisions on the level of quality needed to release data to the public, how to characterize any limitations in the data, and when it is acceptable to suppress the data for reasons other than protecting the confidentiality of respondents. It further recommended that the Census Bureau ensure that these guidelines are documented, transparent, clearly defined, and consistently applied.<sup>127</sup>
- The Census Bureau ensure that its plans for releasing data are clearly and consistently communicated with the public.<sup>128</sup>

### Census Bureau Response to GAO Report

The Census Bureau agreed with the report's recommendations, but took issue with GAO's findings pertaining to (1) the Census Bureau's "shifting" position regarding how data from the SBE would be disseminated, and (2) the consistency with which the agency communicated its dissemination plans for the SBE data. The Census Bureau stated that its ". . . position on releasing SBE figures was entirely consistent and well publicized." It further noted that the only change to the dissemination plans was the delay in releasing the emergency and transitional shelter data and that the decision to delay the release of these data as a separate tabulation was ". . . entirely consistent with the Census Bureau's commitment to releasing data only after ensuring that they meet minimum quality guidelines."<sup>129</sup>

With regard to GAO's second recommendation, the Census Bureau noted that, independent of the report's findings and recommendations, it was undertaking a review of its data quality guidelines. Specifically, the Methodology and Standards Council,<sup>130</sup> under the direction of the associate director for Methodology and Standards, was charged with reviewing the agency's statistical and quality guidelines for surveys and censuses. To further this work, and to ensure an agencywide approach, the Methodology and Standards Council formed an inter-directorate quality framework working group. At the time GAO issued its reports, this group was in the initial stages of its work.

### Implications for the 2010 Census

The Census Bureau's own evaluation of the SBE found it to be a successful program and recommended implementation of a similar program in the 2010 Census to enumerate segments of the

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<sup>126</sup> Ibid., p. 9.

<sup>127</sup> GAO also conducted a study of the Census Bureau's decision to release "questionable" Hispanic subgroup data from Census 2000 and made a practically identical recommendation in that report. The Census Bureau disagreed with GAO's characterization of the process for assessing the quality of the data as well as the quality of the data themselves. See U.S. General Accounting Office, "Decennial Census—Methods for Collecting and Reporting Hispanic Subgroup Data Need Refinement," Report to Congressional Requesters, GAO-03-228, January 17, 2003, p. 21.

<sup>128</sup> "Decennial Census—Methods for Collecting and Reporting Data on the Homeless and Others without Conventional Housing Need Refinement," January 17, 2003, pp. 16–17.

<sup>129</sup> Ibid., p. 21.

<sup>130</sup> The Methodology and Standards Council advised the program associate directors on policy and issues affecting research and methodology for Census Bureau programs. Among other things, the council ensured sound survey and census program methodology and practices, furthered research in all areas in support of the agency's programs, and facilitated communication and coordination of statistical research and methodology throughout the Census Bureau.

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population without conventional housing.<sup>131</sup> The evaluation noted that those individuals enumerated in the SBE were likely to have been missed otherwise, and a large percentage (nearly 60 percent) of the emergency and transitional shelter population reported one or more races other than White.<sup>132</sup> Thus, the operation provided a successful means of enumerating hard-to-count portions of minority populations. Based on the results from Census 2000, the Census Bureau does not plan to use multiplicity estimation in its service-based enumeration in the 2010 Census.

With regard to GAO's recommendation relating to agencywide data quality guidelines, in April 2007, the Methodology and Standards Council issued "Quality Requirements for Releasing Data Products," the last of five quality standards issued by the council pertaining to Census Bureau data products.<sup>133</sup> This quality standard defines a set of public data release criteria and describes procedures for addressing the release of any data products based on surveys and censuses that do not meet these criteria. The Census Bureau expects that the standard will govern 2010 Census data releases.

## **SPECIAL TABULATIONS PROGRAM**

### **Authorization**

The Census Bureau's special tabulations program is authorized in Section 8(b), Title 13, U.S. Code:

Subject to the limitations contained in sections 6(c) and 9 of this title, the Secretary may furnish copies of tabulations and other statistical materials which do not disclose the information reported by, or on behalf of, any particular respondent, and may make special statistical compilations and surveys, for departments, agencies, and establishments of the Federal Government, the government of the District of Columbia, the government of any possession or area . . . , State or local agencies, or other public and private persons and agencies, upon payment of the actual or estimated cost of such work. . . .

### **Program Summary**

Under the program, special tabulations are prepared from the data collected in censuses and surveys conducted under the authority of Title 13. The present discussion addresses the program only as it pertains to special tabulations produced from Census 2000 data; more than 290 special tabulations have been delivered based on these data. The Census Bureau produces special tabulations—when the appropriate criteria are met—for decennial census data users if standard data products do not meet their needs. The agency also produced special tabulations for the four censuses prior to Census 2000.

With the massive amount of Census 2000 data and helpful online tools available from the Census Bureau's Internet-based data dissemination system, the American FactFinder, (which includes electronic versions of all the standard decennial census data products), data users can now create some custom data products from these standard data files without the need for additional computer software or the programming knowledge required to use it. Creating these "custom" data products simply involves manipulating or reformatting existing data sets. The results are usually referred to as "extracts," and they differ from special tabulations. (See the discussion below about policy and terminology changes regarding these various products.)

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<sup>131</sup> U.S. Census Bureau, Tracey McNally, Service-Based Enumeration, Census 2000 Evaluation No. E.6, November 6, 2002, p. v.

<sup>132</sup> Persons enumerated at shelters (including shelters for abused women) constituted 65 percent of the total number of people counted as part of the SBE. *Ibid.*

<sup>133</sup> In the interim, that is, since issuing its January 2003 reports, the GAO issued another report in November 2004 in which it recommended that the Census Bureau hasten its efforts to develop agency-wide data quality review standards to ensure that fully tested standards would be in place for the 2010 Census. See U.S. Government Accountability Office, "Data Quality—Census Bureau Needs to Accelerate Efforts to Develop and Implement Data Quality Review Standards," Report to Congressional Requesters, GAO-05-86, November 17, 2004, "highlights" section.

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The Census Bureau creates special tabulations by using the underlying confidential (prepublication) detail files to produce requested tabulations.<sup>134</sup> Because special tabulations are created from confidential detail files, all requests for them must be approved by the Census Bureau's Disclosure Review Board (DRB).<sup>135</sup> To minimize the likelihood that data provided in a special tabulation could lead to the identification of a respondent (a violation of the confidentiality requirements of Title 13, U.S. Code), and because special tabulations can involve very small population subsets, the DRB requires the implementation of specific disclosure avoidance procedures, such as rounding or applying thresholds, for all such tabulations.

The data collected from the Census 2000 short- and long-form questionnaires are suitable for inclusion in a special tabulation, and the Census Bureau may calculate percentages, rates, or other indicators as part of the tabulation. In terms of geographic scope, special tabulations can be produced for standard census geographic entities, such as states (and state equivalents), counties, census tracts, American Indian and Alaska Native areas, etc., as well as for user-defined geographic areas.

Special tabulations carry no proprietary rights, so once a tabulation is produced and paid for by the sponsor, others can obtain the tabulation for the cost of reproduction (for example, copying it onto a CD or DVD). The Census Bureau maintains a list of special tabulations it has produced (including those pertaining to Census 2000 data). The list includes the names of requesters and brief descriptions of the tabulations; it is available upon request from the Office of Analysis and Executive Support.

### Special Tabulations of General Interest

Although the Census Bureau does not post all special tabulations online, selected Census 2000 special tabulations that are of general interest are available. Examples of such special tabulations include: the Census Transportation Planning Package (CTPP), the Comprehensive Housing Affordability Strategy (CHAS) tabulation, the Voting Rights Determination File, and the Special Equal Employment Opportunity (EEO) File.

CTPP 2000 is the result of a cooperative effort among the American Association of State Highway and Transportation Officials (AASHTO), state departments of transportation, Census Bureau, Federal Highway Administration (FHWA), Bureau of Transportation Statistics (BTS), Federal Transit Administration (FTA), and the Transportation Research Board (TRB). CTPP is a special tabulation of responses from households completing the decennial census long form. It contains tabulations by PLACE OF RESIDENCE (Part I), PLACE OF WORK (Part II), and JOURNEY-TO-WORK (Part III). It is the only source of information with summary tabulations available for traffic analysis zones (TAZs) that have been defined by state and regional transportation agencies. These special tabulations are intended to provide data to support a wide range of transportation planning activities at the state and local levels.<sup>136</sup> Similar tabulations were produced following the 1990, 1980, and 1970 censuses.<sup>137</sup>

The CHAS tabulation, sponsored by the U.S. Department of Housing and Urban Development (HUD) and released in the fall of 2003, is a detailed tabulation providing extensive short- and long-form data on households and housing units (tenure, household income, poverty status, year structure built, etc.) tabulated by HUD-defined variables such as HUD-adjusted median family income. The Census Bureau also provided HUD with a CHAS tabulation in connection with the 1990 Census Special Tabulations program.<sup>138</sup>

The Voting Rights Determination File is a series of data files produced to support the Voting Rights Act Amendments of 1992. The file contains Census 2000 data used to create the mandated listing of jurisdictions requiring language assistance at polling areas. Under Section 203 of the Voting

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<sup>134</sup> See the section of this chapter entitled "Prepublication Data Files" for additional discussion of these files.

<sup>135</sup> See footnote 49 for a brief description of the DRB's functions.

<sup>136</sup> CTPP 2000 also included a "national" tabulation.

<sup>137</sup> U.S. Census Bureau, *1990 Census of Population and Housing, History, Part B* (1990 CPH-R-2B) (Washington, DC: U.S. Government Printing Office, October 1995), p. 10–23.

<sup>138</sup> *Ibid.*

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Rights Act, the Director of the Census Bureau must produce a listing of states and political subdivisions that are subject to the minority language assistance provisions of that section based on the established percentages of the jurisdiction's voting age citizens that fall within the specified criteria. This file is based on decennial census data on English language proficiency, educational attainment, citizenship, and age. If a jurisdiction is so designated, it must provide language assistance to language minority citizens so that they can participate in the electoral process. The Voting Rights Determination File, made available on the Internet in December 2004, is used to identify the jurisdictions subject to Section 203's requirements so that they can comply, and for enforcement purposes.

The Census 2000 Special EEO Tabulation, contracted and paid for by a consortium of four federal agencies,<sup>139</sup> is a special tabulation containing detailed occupation and education data by race, ethnicity (Hispanic/Latino or not Hispanic/Latino), and sex. It serves as the primary external benchmark for comparing the race, ethnicity, and sex composition of an organization's internal workforce with the analogous external labor market, within a specified geography and job category. Consequently, the file is used to monitor and/or challenge employment practices.

The Census 2000 Special EEO Tabulation, released in December 2003, contains information similar to comparable tabulations from the 1970, 1980, and 1990 censuses.<sup>140</sup> The tabulation consists of occupation and educational attainment information for 24 data sets made up of residential data, residence to worksite flow data, and worksite data. Of particular note are the data on occupation by age, occupation by industry, and occupation by earnings. The tabulation shows data for 471 census occupations, 268 Office of Personnel Management occupations, and 8 state and local government occupational categories. Data are provided at the national level, for states, the District of Columbia, county and county sets, metropolitan areas, and places and minor civil divisions of 50,000 or more persons.

### **Change in Policy Governing Special Tabulations and Extracts**

In July 2004, it was revealed that in 2002 and 2003, the Census Bureau had provided tabulations of data on U.S. residents of Arab ancestry to federal law enforcement entities that later became the Bureau of Customs and Border Protection in the Department of Homeland Security (DHS). The specific data provided were the number of persons of Arab ancestry in places of 10,000 or more population and ZIP Code tabulation area (ZCTA)-level estimates of such persons.<sup>141</sup> While these products were extracts of data publicly available on the Census Bureau's American FactFinder system, the fact that the data provided to the DHS focused on a particular ethnic group engendered significant media coverage.

In January of 2003, the Census Bureau had revised its policy criteria for determining when to accept requests for all reimbursable agreements, including special tabulations.<sup>142</sup> These criteria included considerations such as whether the project was consistent with the Census Bureau's mission; whether "sensitive" populations<sup>143</sup> were the focus of the tabulation; and the impact on the agency's reputation of undertaking the project. Within this last category is a query regarding whether the requester is a government agency that conducts domestic law enforcement or regulatory activities. Also included in these criteria was the requirement that the sponsor or requester have adequate funds to pay the costs of producing the tabulation, given that, as noted above, the Census Bureau is directed to perform special tabulations on a cost-reimbursable basis.

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<sup>139</sup>The four federal agencies were the Equal Employment Opportunity Commission, the Department of Justice, the Department of Labor, and the Office of Personnel Management.

<sup>140</sup> However, unlike in previous censuses, the EEO tabulation in Census 2000 was not produced as a standard Census Bureau data product—but only as a special tabulation—due to budget considerations.

<sup>141</sup> "Ethics, Confidentiality, and Data Dissemination," paper by Hermann Habermann, Deputy Director, U.S. Census Bureau, presented at the 55th session of the International Statistical Institute, Sydney, Australia, April 5-12, 2005, p. 2. Data on ancestry or ethnic origin, except for Hispanic origin, were only collected on the Census 2000 long-form questionnaire, which is distributed to a sample of approximately one in six housing units nationwide.

<sup>142</sup> U.S. Census Bureau, "Reimbursable Project Acceptance Policy," Office of Analysis and Executive Support, DSEP Policy #DS-015, revised January 29, 2003.

<sup>143</sup> "The Reimbursable Project Acceptance Policy" (specifically, Attachment 3) defines "sensitive" populations as follows: "Includes children, cognitively impaired persons, comatose patients, the elderly, limited English-speaking or non-English-speaking persons, non-citizens, prisoners, impoverished and terminally ill patients, and small minority groups."

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Responding to inquiries about the 2002 and 2003 data releases that pertained to Arab ancestry, the Census Bureau noted that because the products did not constitute special tabulations, the policy criteria discussed above (for accepting requests for special tabulations) were not applicable. However, the Census Bureau determined that it would be appropriate to review its policies regarding the production of special tabulations and data extracts.

Thus, in August 2004, the Census Bureau announced an interim policy for handling requests for special tabulations and data extracts.<sup>144</sup> In accordance with the interim policy, all requests for special tabulations would be reviewed under the Reimbursable Project Acceptance Policy, regardless of whether or not the cost of the work was reimbursed.<sup>145</sup> In addition, if the request was made by an intelligence agency or by a federal, state, or local law enforcement agency, and/or the data pertained to a “sensitive” population, the new policy required approval by the appropriate Census Bureau associate director before the request could be fulfilled.<sup>146</sup>

In the case of extracts, requesters would be directed to obtain the data from the Census Bureau’s Web site, and the agency would provide assistance in using its Web-based tools. When this approach was not practical, the Census Bureau could fulfill the request, but requests from federal, state, or local law enforcement or intelligence agencies required prior approval from the appropriate Census Bureau associate director before the information could be released. The same approval was required if the data in question pertained to a “sensitive” population.<sup>147</sup>

Following up on the interim procedures issued in August 2004, the Census Bureau, in October 2005, documented its policies regarding the production of “custom” tabulations (to include both special tabulations and extracts) pursuant to Section 8(b) of Title 13, U.S. Code.<sup>148</sup> Among other things, this policy statement expanded the definition of custom tabulations to include extracts requiring significant effort to be produced or that could not be easily produced by novice or casual data users. The new policy also noted specific procedures relating to the disclosure of the identities of requesters and descriptions of their custom tabulations upon a request from any interested party. Thus, requesters of custom tabulations (extracts and special tabulations) are provided the following statement: “The Census Bureau maintains a publicly available list of all custom tabulations that includes the names of the requesters and a brief description of the products. Once produced, custom tabulations also will be available upon request for the cost of reproduction.”

### COUNT QUESTION RESOLUTION PROGRAM<sup>149</sup>

The Census 2000 Count Question Resolution (CQR) was an administrative review program that provided jurisdictions a process to challenge, if desired, particular official Census 2000 counts of housing units and group quarters population in the United States and Puerto Rico.<sup>150</sup> The challenges could be submitted by local or tribal government officials or those acting on their behalf. CQR also included reviews, generated within the Census Bureau, of issues similar to those addressed in the external challenges.<sup>151</sup> The program focused on the geographic misplacement of data collected in the census—it did not involve re-enumeration or adjustment of data. The Census

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<sup>144</sup> Census Bureau News, “U.S. Census Bureau Announces Policy Regarding Sensitive Data,” press release CB04-145, August 30, 2004.

<sup>145</sup> The Census Bureau is not reimbursed when the special tabulation is statutorily required and sometimes is not reimbursed when it performs special tabulations for other government agencies.

<sup>146</sup> U.S. Census Bureau, “Procedures for Providing Assistance to Requestors for Special Data Products Known as Special Tabulations and Extracts,” memorandum for Associate Directors and Division Chiefs, Charles Louis Kincannon, Director, August 26, 2004.

<sup>147</sup> *Ibid.*

<sup>148</sup> U.S. Census Bureau, “Policy on Providing Custom Tabulations under Section 8(b) of Title 13, U.S.C.,” Office of Analysis and Executive Support, DSEP Policy #DS-021, October 20, 2005.

<sup>149</sup> The information in this section is summarized from U.S. Census Bureau, “Count Question Resolution Program,” Census 2000 Informational Memorandum No. 100, April 26, 2001.

<sup>150</sup> The Census Bureau had made a specific determination not to include the Island Areas (Guam, American Samoa, the Commonwealth of the Northern Mariana Islands, and the U.S. Virgin Islands) in the CQR program; see U.S. Census Bureau, “Count Question Resolution Program: Island Areas,” Census 2000 Informational Memorandum No. 93, January 29, 2001.

<sup>151</sup> The Census Bureau internal review checked the Census 2000 counts for internal and intra-product consistency and for consistency with historical and external data sources.



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Bureau identified the types of documentation local or tribal government officials—or their representatives—would have to provide for the Census Bureau to initiate the CQR process in response to a challenge or complaint. CQR was conducted from June 30, 2001, to September 30, 2003.

### Scope of the Program

Similar to the CQR conducted for the 1990 census, the Census 2000 program was carried out to implement the following types of corrections (whether the errors were identified in internal reviews or jurisdictional challenges):

- **Boundary corrections**—The Census Bureau implemented boundary corrections in cases of inaccurate reporting or recording of state, local, or tribal government jurisdictional boundaries in effect as of January 1, 2000. The boundaries of other geographic or statistical areas (such as census designated places, tracts, etc.) were outside the scope of the Census 2000 CQR program.
- **Geocoding corrections**—These corrections pertained to the placement of living quarters and associated population within the correct jurisdictional boundaries (and correctly locating them in smaller geographies such as census tracts, block groups, and blocks). Even if the total count of a local or tribal jurisdiction did not change as a result of such corrections—for example, if housing units or group quarters were simply moved from one block to another within the same jurisdiction as a result of the CQR process—the Census Bureau still informed jurisdictions of such changes.
- **Coverage corrections**—These corrections involved the addition or removal of specific living quarters and persons residing therein that were identified during the Census 2000 process but were erroneously excluded or included due to processing errors.<sup>152</sup> Addresses for those living quarters that were found to be erroneously excluded—but for reasons outside the scope of the CQR program—were added to the Census Bureau’s master address file (MAF) for use in future statistical programs.

The start date of the program was coordinated with the release dates of Summary File 1 (SF 1), which contained block-level population, housing unit, and group quarters population counts. SF 1 data were released on a state-by-state basis from June through August 2001.

In its program materials, the Census Bureau clearly stated that the CQR process would not collect new information. It also noted that the program was not a vehicle for states (or local jurisdictions) to challenge the counts of overseas federally affiliated households that were allocated to the states for purposes of apportionment. The administrative data the Census Bureau obtained to carry out the overseas counts program did not include information that would permit the allocation of these households to substate jurisdictions. In addition, the agency stated that corrections implemented in CQR would not result in changes to any of the Census 2000 prepublication data files nor to any of the data products, including the block-level redistricting data. However, boundary and geocoding corrections were reflected in the MAF and Topologically Integrated Geographic Encoding and Referencing (TIGER®) database.

Corrections implemented through CQR resulted in the issuance of revised official Census 2000 population and housing unit counts that were provided to the affected governmental entities. Additionally, the Census Bureau made the CQR-corrected data available on American FactFinder (AFF) and incorporated the revisions in the agency’s postcensal estimates program beginning in December 2002.

### Results of the Program<sup>153</sup>

The Census Bureau presented revised counts on its Web site for total population, group quarters population, total housing units, and vacant housing units down to the block level for the affected governmental units, including American Indian/Alaska Native areas and municipios in Puerto Rico.

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<sup>152</sup> In the “erroneously included” scenario, these could be housing units that were duplicated in the master address file.

<sup>153</sup> U.S. Census Bureau, 2000 Census of Population and Housing—Notes and Errata, (2000) SF/01-ER, p. 4 (PDF file with links to subsidiary data tables). This publication is available on the Census Bureau Web site at <<http://www.census.gov/dmd/www/CQR.htm>>.

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At the national level, the revised population count for the United States as a result of corrections implemented through the CQR process was 281,424,603, as compared to the original count of 281,421,906. Most of the increase came from the group quarters population. In all, housing unit and group quarters population count changes affected a total of 1,183 governmental units.

## MARKETING, USER SERVICES, AND DISSEMINATION

### Marketing Services Office

Established in 1996, the Marketing Services Office (MSO) helps policymakers, businesses, non-profit organizations, academics, and the public learn about, access, understand, and use Census Bureau information. For Census 2000 and throughout the decennial cycle, MSO worked with partners who provided statistical information services, with the general public, and with other Census Bureau staff to disseminate information about programs, products, and services available from the agency. This office organized data user conferences, developed promotional materials, handled product sales, and conducted training sessions on access to and use of census data.

### Customer Liaison Office

Also formed in the mid-1990s, the Customer Liaison Office (CLO) played a prominent role in the development and implementation of the Census 2000 Partnership Program. (See Chapter 4, “The Partnership and Marketing Program,” for additional information about this program.) CLO facilitated communication between Census Bureau staff and customers—state, local, and tribal governments and national nongovernmental organizations (NGOs)—and worked to provide access to data collected by the Census Bureau. CLO maintained two teams: State and Governmental Programs and Non-Governmental Programs.

**State and Governmental Programs.** In addition to working with state, local, and tribal governments and various governmental organizations (for example, the National League of Cities and U.S. Conference of Mayors) to keep them abreast of decennial census activities, Census Bureau program updates, and data product announcements, the State and Governmental Programs team conducted two major operations: (1) the State Data Center (SDC) and the Business and Industry Data Center (BIDC) programs and (2) the Governors’ Liaison Program.

In 1978, the Census Bureau created the SDC program to make census data available locally to the public through a network of state agencies, universities, libraries, and regional and local governments. In 1988, the agency added the BIDC program to meet the needs of local business communities for economic data. The SDCs provided easy and efficient access to Census Bureau data and information through a wide network of lead, coordinating, and affiliate agencies in each state. SDCs worked in partnership with the Census Bureau through CLO and the agency’s regional offices. Memoranda of agreement with each state, the District of Columbia, Puerto Rico, and the Island Areas supported this partnership.

The SDCs were official sources of demographic, economic, and social statistics produced by the Census Bureau. The agency made these data available to the SDCs at no charge, and the SDCs made these data accessible to state, regional, local, and tribal governments and to non-governmental data users at no charge or on a cost-recovery or reimbursable basis. SDCs also provided training and technical assistance in accessing and using Census Bureau data for research, administration, planning, and decision making by local governments, the business community, and other interested data users.

The SDC network supported Census 2000 activities by providing training for their subordinate organizations as well as for the public. They conducted informational meetings for affiliate SDC/BIDC personnel and promoted training activities for their local data user communities.<sup>154</sup> Activities to support decennial census operations included:

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<sup>154</sup> Renee Jefferson-Copeland, “State Data Center & Business and Industry Data Center Network, 2001 Annual Report,” submitted to the State Data Center/Business and Industry Data Center Network, October 2001.

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- Conducting about 740 general information workshops.
  - Initiating or promoting roughly 2,400 Census 2000 activities through the preparation of flyers, public service announcements, and advertisements.
  - Preparing about 4,700 newsletter articles and press releases.
  - Conducting about 300 training workshops for data users.
  - Providing data, information, and training to approximately 15,000 data users.
  - Testing software for Census 2000 summary file CD-ROMs.

Established in 1997, the Governors' Liaison Program was a partnership between the governor of each state and the Census Bureau to work together to increase participation in Census 2000 and improve its accuracy. This program developed lines of communication between the Census Bureau's CLO and the governors to exchange information and provide updates of census activities and programs taking place in their states.<sup>155</sup> During Census 2000 and after, the Governors' Liaison Program alerted each governor to census activities such as data collection, data delivery, census planning, and geographic programs, including the Boundary and Annexation Survey and boundary updates to school districts and congressional districts.<sup>156</sup>

**Non-Governmental Programs.** CLO's Non-Governmental Programs team coordinated two programs: the Non-Governmental Communications Program and the Census Information Center (CIC) program. The former program entailed communicating with national NGOs to keep them informed about decennial census activities, Census Bureau program updates, and data product announcements.

Additionally, the Non-Governmental Programs team played a significant role in the development and implementation of the Census 2000 Partnership Program. For example, members of the team served on the NGO Conference Steering Committee and thus were heavily involved in planning for the May 29, 1997, National Conference on Census 2000 Partnerships, which was held at the University of Maryland—University College in College Park, MD. This conference was the first of its kind and very successful—attended by nearly 200 leaders from a broad array of NGOs.

The Non-Governmental Programs team was also involved in developing lists of potential partners and then working with numerous NGOs in the final partnership efforts. Formal endorsements were achieved with about one-third of these organizations. Another third supported Census 2000, but did not offer formal, written endorsements; however, these entities provided resolutions, video statements, and other informal endorsements.

A large number of the NGOs that endorsed or otherwise supported Census 2000 included labor unions, umbrella organizations, and constituency groups. Members of the Non-Governmental Programs team made presentations to numerous conventions and meetings of these (and other) organizations and handed out over 30,000 Census 2000 promotional kits and hundreds of thousands of census informational documents. Additionally, these team members participated in many workshops and panel presentations held and/or sponsored by these NGOs.

Founded in 1988, the CIC program was a partnership between the Census Bureau and 58 non-profit national and community-based organizations, including national NGOs, minority colleges and universities, research groups and think tanks, minority chambers of commerce, civil rights and social justice organizations, and groups serving children and rural populations, and one tribal government. CIC provided local access, education, and technical assistance on census data for planning and decision-making by underserved communities.

At the time of Census 2000, the CIC program expanded to 59 organizations and abandoned the "lead/affiliate" structure of the SDC program. Prior to Census 2000, five nonprofit organizations assumed the role of lead organizations. These organizations had a total of 31 affiliate organizations, some of which became CICs in the 2000 expansion. In addition to the services described

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<sup>155</sup> Each state and the District of Columbia named a Census 2000 liaison.

<sup>156</sup> U.S. Census Bureau, "Governors Liaisons" at <<http://www.census.gov/sdc/www/liaisons.html>>.

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above, with regard to Census 2000, these organizations assisted the Census Bureau in much the same way as the NGO partners did. (For more information on these functions, see Chapter 4, “The Partnership and Marketing Program.”) As CICs, they already had joint agreements with the Census Bureau and thus were committed to a successful census that provided accurate data to their user communities.

## ARCHIVING OF DATA PRODUCTS AND RELATED RECORDS

The principal data products from Census 2000, and similar products from past censuses, are federal agency records with enduring historical value. As such, they are scheduled for transfer to the National Archives and Records Administration (NARA) for permanent retention. This section discusses the scheduling and planned transfer of Census 2000 data products and other electronic files. Also examined here are changes to these plans that occurred because these data products did not incorporate a statistical adjustment based on the results of the Accuracy and Coverage Evaluation (A.C.E.) program, as was initially anticipated.<sup>157</sup> The decisions not to incorporate a statistical adjustment in the Census 2000 data products affected not only the production of the data products themselves but, in the case of the sample (long form) data, the production of the underlying detail file as well.

Additionally, this section discusses the archiving of individual census records from Census 2000. Although technically not constituting a data product, these records are the most widely used among all decennial census records. A variety of users consult the records for genealogical and other research purposes when they are released to the public by NARA 72 years following the relevant Census Day.<sup>158</sup> In addition, the Census Bureau uses them in its age search operation.<sup>159</sup>

### Archiving of Census 2000 Data Products and Detail Files

When the Census 2000 Comprehensive Records Schedule was finalized, Census Bureau executives assumed that all official Census 2000 data products would be based on the adjusted data. The language in the schedule reflected this assumption. Descriptions of the principal data products that were to be transferred to NARA reference the incorporation of statistically adjusted data, as do the descriptions of the underlying detail files to be transferred.<sup>160</sup>

Thus, because the Census Bureau expected that the 100 percent detail file incorporating a statistical adjustment would be the detail file for producing the official 100 percent data products, the agency scheduled it for transfer to NARA as a permanently valuable record; similarly, given that the Census Bureau expected to release the adjusted block-level data file as the official redistricting data, this file also had been scheduled as a permanent record.<sup>161</sup>

However, as explained in the “Prepublication Data Files” section, the file containing the Census 2000 adjusted data, summarized to the block-level, became part of the public domain, although not as an official data product as had been anticipated. Nonetheless, it was transferred to NARA for permanent retention as scheduled (appropriately caveated). Similarly, although the 100 percent detail file of microdata records used to tabulate the summary data incorporating a statistical

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<sup>157</sup> The Census 2000 Comprehensive Records Schedule was drafted (and approved) with this expectation in mind. See “Census 2000 Comprehensive Records Schedule,” SF 115—Request for Records Disposition Authority, Job Number N1-29-00-2, approved June 14, 2000.

<sup>158</sup> 44 U.S.C. § 2108 (2006).

<sup>159</sup> Through the Census Bureau’s age search operation, under the authority of Title 13, U.S. Code, Section 8(a), an individual may request a transcript of his or her own census record for those censuses that have not yet been released to the public by NARA. This information is often used to prove age, residency, and/or identity. Additionally, a transcript of the record of a deceased person may be made available, but only to that person’s heirs, legal beneficiaries, or authorized representatives upon proof of death.

<sup>160</sup> Consistent with past records schedules for the decennial censuses, the detail files from Census 2000 were designated as permanent records.

<sup>161</sup> “Census 2000 Comprehensive Records Schedule,” approved June 14, 2000.

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adjustment was not a production detail file for Census 2000, it also was transferred as scheduled (and also was appropriately caveated).<sup>162</sup>

With regard to the sample data, the sample detail file data were weighted to the population totals in the 100 percent detail file,<sup>163</sup> not the 100 percent detail file incorporating a statistical adjustment. Thus, the sample estimated detail file<sup>164</sup>—originally scheduled for transfer to NARA—was not created and the sample edited detail file (SEDF) was transferred in its place.

### Archiving of Individual Census Records From Census 2000

**Background.** The National Archives maintains official decennial census records dating from 1790 to the present. A 1952 agreement between NARA and the Census Bureau (later incorporated into 44 U.S.C. § 2108) provides for public access to individual census returns and other personal information 72 years after the census is conducted.

Census records are among the most widely used records in the National Archives for family, social, neighborhood, and local historical research. The personal information contained in census records makes them particularly valuable as a permanent historical record.

**Discussions regarding Census 2000 records early in the decade.** In the midst of the planning for Census 2000, the Census Bureau contacted NARA to discuss the potential impact of its plans on decennial census records management. Specifically, Census Bureau staff met with a NARA working group to discuss:

- Changes in census-taking contemplated for 2000.
- The impact of these changes on the kinds of records used and produced.
- The consequent effect on the use of these records by future researchers.

For example, in the four censuses prior to Census 2000, producing microform<sup>165</sup> images of the questionnaires was a direct by-product of the data capture technology—FOSDIC (film optical sensing device for input to computer). The microfilmed questionnaires were transferred to NARA as the archival record of individuals' responses. The data capture process for Census 2000 would be a dramatic change from this earlier technology.

As a follow-up to these early discussions, NARA produced a report for the Census Bureau that discussed the impact of changing the technologies for data collection and processing on the future use of Census 2000 records for historical research.<sup>166</sup> The report discussed, in some detail, categories of files and their characteristics that would be “essential” to meet the needs of genealogists, social historians, and other researchers who would eventually use them. The file categories corresponded roughly with what had been provided in the past to meet the requirements for access to individual records and other “permanently valuable” decennial census files.

By this time, the Census Bureau was considering digital imaging technology for Census 2000 data capture.<sup>167</sup> The NARA report recognized that the data collection and processing methods and technologies under consideration for Census 2000 would affect how the records would be stored

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<sup>162</sup> Note that this file contains nonaggregated person records (but without personal identifiers) and was deemed confidential under Title 13. Thus, NARA cannot make this file publicly available for 72 years. A caveat included along with the file indicated that it was not a production 100 percent detail file for Census 2000 and noted that the statistical adjustment methodology was rejected.

<sup>163</sup> The Census 2000 Comprehensive Records Schedule refers to this file as the “detail file” (DF) and the “100 percent detail file” incorporating a statistical adjustment as the 100 percent estimated detail file (HEDF).

<sup>164</sup> This is the term used in the Census 2000 Comprehensive Records Schedule to refer to the sample detail file in which the sample data are weighted to the (statistically adjusted) population totals in the 100 percent detail file incorporating a statistical adjustment.

<sup>165</sup> “Microform” is a generic term encompassing both microfilm and microfiche.

<sup>166</sup> National Archives and Records Administration, “Preserving Census 2000 Records,” Report of the Census 2000 Working Group, March 1, 1995.

<sup>167</sup> Later that year, in the 1995 Census Test, the Census Bureau tested the feasibility of digital imaging data capture in a production environment. The test demonstrated that commercially available hardware and software could be integrated into a production system capable of handling the data capture requirements of the decennial census.

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and later accessed: “. . . [T]he Census Bureau’s proposed plans for the census count might affect eventual research use of the records by the public . . . .If the proposals under consideration are adopted, the Census Bureau will no longer create microform records of census questionnaires.”<sup>168</sup> The report advised that “. . . [the] Census [Bureau] should schedule electronic records for Census 2000 that have replaced the microform records created for earlier censuses.”<sup>169</sup>

**Award of data capture contract for Census 2000.** In 1997, the Census Bureau awarded the contract for the Data Capture System 2000 (DCS 2000).<sup>170</sup> Census Bureau staff discussed the possibilities of mandating production of microform images of the completed questionnaires as a system requirement during the development of the statement of work (SOW) for DCS 2000. The proposal was rejected, with the understanding that an electronic file (in American Standard Code for Information Interchange [ASCII] format) containing respondent data in computer-readable format would satisfy the archival requirement of providing future access to individual census records. This assumption was based on the Census Bureau’s interpretation of the requirements set out in the March 1, 1995, NARA report. Thus, the SOW for DCS 2000 included no requirements to produce archival images of the completed questionnaires.<sup>171</sup>

**Agency work to finalize Census 2000 archival requirements.** Following the 1998 Dress Rehearsal, staff at the Census Bureau sought to finalize its requirements for archiving individual response data and other permanently valuable records from Census 2000. While this work was underway, the Office of Inspector General (OIG) of the U.S. Department of Commerce issued a draft inspection report—dated July 19, 1999—regarding Census 2000 archiving issues that remained unresolved. The report noted that “Census Bureau officials have acknowledged that they have been slow to address archiving.” Specifically, the OIG found that “. . . the bureau has not yet finalized its plans and procedures for questionnaire retention and disposal and cannot do so until a method has been identified for archiving the data that is acceptable to the National Archives and Records Administration (NARA). . . . The bureau needs to resolve the archiving issue as soon as possible. . . .”<sup>172</sup>

On August 18 of that year, the Census Bureau wrote to the chairman of the Census 2000 Working Group of NARA and proposed, as a way to meet the requirement to provide NARA with individual records from the 2000 decennial census, submitting ASCII computer files containing the response data for every household and group quarters resident counted in Census 2000.<sup>173</sup> The Census Bureau noted that each ASCII record would contain all response data, including name and other written entries provided by the respondent, and all address/geographic information contained in the decennial master address file for that housing unit or person living in a group quarters facility.

NARA responded to this proposal on September 8, noting “[w]e concur with the Census Bureau’s proposal to transfer to NARA a single ASCII data file of the individual Census 2000 records. . . . We have also determined that the information content of the ASCII data file described in the plan meets the ‘essential’ characteristics and functions of historically valuable census records which we

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<sup>168</sup> “Preserving Census 2000 Records,” March 1, 1995, p. 1.

<sup>169</sup> *Ibid.*, p. 2.

<sup>170</sup> The Census 2000 questionnaires would be fed into a scanner that would produce a digital image of the questionnaire. The system would then convert the contents of the image files to computer-readable format (specifically, ASCII format) through optical mark recognition (OMR) and optical character recognition (OCR) processes. OMR is used for all check-box data items and OCR “interprets” handwritten responses to write-in data items. See Chapter 6, “Data Processing” for detailed information about Census 2000 data capture and processing operations, including DCS 2000.

<sup>171</sup> The digital image files created in the DCS 2000 process were “intermediate” files, not designed for archival purposes. That is, once the contents of images were converted to computer-readable format through the OCR and OMR processes or in the key-from-image operation, the image files primarily functioned as a short-term backup and recovery system in the data capture centers until confirmation of receipt of the resultant ASCII data files at headquarters for processing.

<sup>172</sup> The referenced language appears verbatim in the final reports as well, so that report is cited here. U.S. Department of Commerce, Office of Inspector General, “Method for Archiving 2000 Decennial Data and Procedures for Disposing of Questionnaires Should Be Finalized,” Inspection Report No. OSE-10758, September 1999, pp. 5 and 2.

<sup>173</sup> Preston Jay Waite, Assistant Director for Decennial Census, U.S. Census Bureau, to Larry Baume, Chairman, Census 2000 Working Group, National Archives and Records Administration, August 18, 1999 (enclosure to letter).

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identified in our March 1, 1995 report titled “Preserving Census 2000 Records.”<sup>174</sup> As the National Archives Assembly later noted, the Census Bureau (certainly after having received NARA’s concurrence on its proposed plan for the transfer of the ASCII data file) was “. . . under the impression that they were meeting the needs of NARA and future generations of researchers by budgeting for, preparing, and eventually arranging for transfer an electronic file . . . [later referred to] as the Individual Census Record File (ICRF). . . .”<sup>175</sup>

The Census Bureau responded to the OIG draft inspection report in early September 1999 by stating that it had transmitted to NARA its proposal for the archiving of individual response data from Census 2000 and anticipated obtaining that agency’s formal approval.<sup>176</sup>

In the fall of 1999, Rep. Henry A. Waxman (D-CA), the ranking minority member of the House Committee on Government Reform, which had oversight responsibility for the Census Bureau, expressed concerns about how the individual respondent data obtained in Census 2000 would be maintained as a permanent record. First, in November, he wrote to the General Accounting Office, raising questions about “. . . the risk to the public if no image of the 2000 census forms is preserved.”<sup>177</sup> In December, Rep. Waxman reiterated his concerns in a letter to Census Bureau Director Kenneth Prewitt.<sup>178</sup> Noting that the agency was in the process of submitting schedules for Census 2000 records to NARA for approval, he urged Director Prewitt to consider proposing to NARA that the digital image files of the scanned questionnaires—as well as the ASCII data file—be scheduled as a permanent record. Rep. Waxman noted that failure to schedule the image files as a permanent record would mark the first time that images or facsimiles of the completed census questionnaires were not preserved.

**Scheduling and appraisal of the digital image files from DCS 2000.** The Census Bureau proposed in one of several schedules submitted to NARA in December 1999, that the digital image files of the scanned questionnaires be scheduled as temporary records. That is, the Census Bureau anticipated having a programmatic or evaluative need to save these files for a period of years, but believed that they lacked enduring historical value to warrant their transfer to NARA for permanent retention. The Census Bureau considered the image files from DCS 2000 (that is, images of the questionnaires) to be intermediate processing files from which, after a number of data capture and processing procedures, the “final” unduplicated, unedited set of individual response data would be produced in electronic format. Furthermore, the agency noted that not all questionnaires would be scanned; for example some respondents’ answers would be captured initially in electronic format (Telephone Questionnaire Assistance [TQA] interviews and Internet Data Collection [IDC] returns, for example), so there would be no images of completed questionnaires for these cases.<sup>179</sup> Thus, the Census Bureau contended that the digital image files of questionnaires had little value as a complete archival record, largely because the files would not constitute a complete set of census returns. The ASCII file (the ICRF), on the other hand, would be a complete record that would include census returns from all response modes and would incorporate

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<sup>174</sup> Marie B. Allen, Director, Life Cycle Management Division, National Archives and Records Administration, to Preston Jay Waite, Assistant Director for Decennial Census, U.S. Census Bureau, September 8, 1999.

<sup>175</sup> The National Archives Assembly, “Resolution Regarding the Disposition of the Census 2000 Image Files,” July 20, 2000, p. 2. The National Archives Assembly was an organization of present and former NARA employees that provided a forum for employee communication on NARA policies and programs to, among other things, convey its members’ views to the archivist of the United States (the head of NARA).

<sup>176</sup> Memorandum on Draft Inspection Report No. OSE-10758 from Kenneth Prewitt, Director, U.S. Census Bureau, to Judith J. Gordon, Assistant Inspector General for Systems Evaluation, Office of Inspector General, U.S. Department of Commerce, September 10, 1999, p. 1.

<sup>177</sup> Rep. Henry A. Waxman, Ranking Minority Member, Committee on Government Reform, U.S. House of Representatives, to the Honorable David M. Walker, Comptroller General, U.S. General Accounting Office, November 4, 1999, p. 2. By legislation enacted into law in July 2004, the name of the entity was changed to Government Accountability Office.

<sup>178</sup> Rep. Henry A. Waxman, Ranking Minority Member, Committee on Government Reform, U.S. House of Representatives, to Kenneth Prewitt, Director, U.S. Census Bureau, December 1, 1999.

<sup>179</sup> Because of the large number of different form types used in group quarters enumeration operations, data from these questionnaires were keyed into computers. See Chapter 5, “Data Collection”, for descriptions of the TQA and IDC programs.

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important processing steps—including the elimination of duplicate records and combining of appropriate portions of multiple returns from the same household. The ICRF would also be used by the Census Bureau in its age search operation (discussed above). The NARA later approved the scheduling of the ICRF as a permanent record.<sup>180</sup>

When NARA conducted its original appraisal of the digital image files, it agreed with the Census Bureau that the files should be scheduled as temporary records. In addition to the points raised above, NARA also cited the following reasons for appraising the images as temporary records:

- The interspersed blank pages (having no value) in the image files (estimated to constitute roughly two-thirds of all the images).<sup>181</sup>
- The lack of an index or the ability to search for/retrieve particular images based on respondent identifiers (name, address, etc.).<sup>182</sup>

**Comments regarding proposed schedule for the image files.** On March 6, 2000, NARA announced that the schedule and appraisal pertaining to the image files were available for comment, and NARA directly solicited comments from a number of genealogical, social science, and public policy organizations. Most of the comments NARA received—including those from Rep. Waxman—urged the permanent retention of the image files. The most common reasons given were:

- Images of the completed questionnaires were available for all previous censuses.
- The images would contain “marginalia” (handwritten comments made in the margins of the questionnaire pages that may or may not be relevant to any particular question) that generally do not get recorded in the data capture process.
- The images would permit future analysis of the handwriting in the case of write-in responses.<sup>183</sup>

**Initial appraisal reversed; digital images scheduled as permanent records.** Even before the comment period closed, NARA conducted another appraisal (dated May 18, 2000) of the images, this time recommending that they be retained permanently. In a letter dated May 17, Assistant Archivist Michael Kurtz wrote to Rep. Waxman, informing the representative that he planned to recommend to the archivist (the head of NARA) that the image files be permanently retained.<sup>184</sup> On June 7, 2000, Archivist John Carlin signed the records disposition schedule authorizing permanent retention of the digital images.<sup>185</sup>

The May 18 appraisal noted that the recommendation that the images be scheduled as permanent records was based on public comments, internal NARA discussions, and discussions with staff from the Census Bureau and General Accounting Office.<sup>186</sup> For example, the appraisal report indicated that the latter discussions enabled NARA to confirm that it was “. . . technically feasible to develop an [sic] computer system that is capable of linking the scanned images to a unique Housing Unit Identification Number, and further by person, address, and other geographic coding.”<sup>187</sup>

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<sup>180</sup> “Census 2000 Records System Disposition (Partial Schedule),” SF 115—Request for Records Disposition Authority, Job Number N1-29-00-001 (Item No. 3), approved March 6, 2000.

<sup>181</sup> Because of the way in which the questionnaire forms/booklets were constructed, the DCS 2000 contractor scanned the entire form/booklet, regardless of the number of persons for whom there were data. The short- and long-form questionnaires had space to provide data for up to six residents.

<sup>182</sup> “Resolution Regarding the Disposition of the Census 2000 Image Files,” July 20, 2000, p. 3.

<sup>183</sup> *Ibid.*

<sup>184</sup> Michael J. Kurtz, Assistant Archivist, National Archives and Records Administration, to Rep. Henry A. Waxman, Ranking Minority Member, Committee on Government Reform, U.S. House of Representatives, May 17, 2000.

<sup>185</sup> SF 115—Request for Records Disposition Authority, Job Number N1-029-00-004, approved June 7, 2000.

<sup>186</sup> Larry Baume, Life Cycle Management Division, National Archives and Records Administration, Appraisal Report, “Job No. N1-29-00-3, Digital Image Files of Census 2000 Questionnaires and Forms,” May 18, 2000, p. 1.

<sup>187</sup> *Ibid.*



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**National Archives Assembly urges archivist to reconsider his decision.** On July 20, 2000, the Executive Board of the National Archives Assembly issued a resolution urging the archivist to revisit his decision scheduling the image files as a permanent record.<sup>188</sup> Some of the issues the assembly raised had already been discussed, but the organization made a number of additional points that argued against the permanent retention of the images. Predominant among these was the sheer volume of images to be transferred—approximately 700 million.<sup>189</sup> As noted earlier, the Census Bureau estimated that roughly two-thirds of these images would be of blank questionnaire pages. NARA acknowledged that, because of the way in which the questionnaire forms/booklets were constructed and thus scanned, removing the images that contained no data before transferring the files was infeasible.<sup>190</sup>

The transfer of the 700 million images—which, in electronic format, would require 160 terabytes (160 x 10<sup>12</sup> bytes) of disk space<sup>191</sup>—would alone increase the total size of NARA’s holdings by 17.5 percent.<sup>192</sup> Depending on the transfer medium, NARA required both a master and a backup copy of the records. If this requirement were to be met, NARA estimated the cost of maintaining those records at between \$14 million and 28 million a year.<sup>193</sup> The National Archives Assembly noted that if microfilm were determined to be the preferred transfer and/or preservation medium, the cost to convert the images to microfilm could easily approach \$70 million (or 10 cents per image) to produce one complete archival record, and existing regulations governing microfilm records required the transfer of both the original film and a backup copy.<sup>194</sup> Thus, the assembly emphasized its concerns about the “. . . inability to determine the exact cost of archival retention because no one has ever attempted to preserve and maintain a collection of this magnitude. . . .”<sup>195</sup>

Finally, the assembly noted that “. . . the normal procedures involving stakeholder review and comment were not followed in the processing of . . . [the revised appraisal and schedule for the image files].”<sup>196</sup> The assembly was referring to NARA’s normal appraisal procedures that required the agency to circulate new disposition schedules and appraisal reports to various stakeholder units as a means of ensuring adequate and proper documentation regarding appraisal decisions. In this case, the assembly noted the appraisal package was not circulated to NARA’s custodial units for review and comment.<sup>197</sup> The assembly concluded:

The [appraisal] dossier for N1-029-00-004 does not contain either a formal or informal technical analysis of the Census 2000 images. The official record also does not address budgetary implications, interspersions of valueless material, or a substantive analysis and verification of concerns expressed in the public comments. Because these issues are not addressed in the appraisal dossier and, therefore were not brought to the Archivist’s attention, he could not consider them.<sup>198</sup>

**Archivist responds to assembly; images to be converted to microform.** On October 23, 2000, the archivist sent a letter to the president of the National Archives Assembly in response to its resolution of July 20, 2000. The letter noted that extensive discussions between NARA and the Census Bureau led to the agreement that the Census Bureau would convert the digital images of

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<sup>188</sup> “Resolution Regarding the Disposition of the Census 2000 Image Files,” July 20, 2000. The National Archives Assembly is briefly described in footnote 175.

<sup>189</sup> *Ibid.*, p. 1.

<sup>190</sup> John W. Carlin, Archivist of the United States, to Lisa Haralampus, President, National Archives Assembly, October 23, 2000, p. 2.

<sup>191</sup> “Resolution Regarding the Disposition of the Census 2000 Image Files,” July 20, 2000, p. 4.

<sup>192</sup> *Ibid.*

<sup>193</sup> *Ibid.*, p. 5.

<sup>194</sup> *Ibid.*, pp. 4–5.

<sup>195</sup> *Ibid.*, p. 1.

<sup>196</sup> *Ibid.*

<sup>197</sup> *Ibid.*, p. 6.

<sup>198</sup> *Ibid.*

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the questionnaires—prior to their transfer to NARA—to microform through a process called computer output to microform (COM).<sup>199</sup> NARA described the many advantages of microform as an interim or long-term storage format, stating:

“NARA maintains all individual census response information from 1790 to the present in microfilm format, and we have a long and successful record of preserving microfilm under strict environmental standards, and making it available to the public.”<sup>200</sup>

The Census Bureau agreed to develop a basic indexing system that would allow future researchers to use the individual census record file (ICRF) to locate the images of the *primary* questionnaire for a household whose information appears on the microfilm through the use of the master address file (MAF) (or census) ID number (a unique number for each housing unit).<sup>201</sup> The archivist’s letter noted the existence of “blowback” technology, which can convert the microfilm images back to digital images if it is decided that a digital medium is the appropriate format in which to make the images of the completed questionnaires available to the public in 2072.<sup>202</sup>

**Census Bureau enlists contractors to complete archiving work.** As mentioned earlier, both the digital image files and microform copies of the questionnaire images would be transferred to NARA for permanent retention. Because the imaging component of DCS 2000 was not designed for archival purposes, extensive work was required to prepare the image files for the COM process and to develop an indexing system based on the MAF ID associated with each image. The DCS 2000 contract was modified to include this image retrieval system development work at a cost of \$17 million.<sup>203</sup>

The Census Bureau, in cooperation with NISH,<sup>204</sup> awarded a \$27 million contract to Business Technology Career Opportunities of Wichita, KS and its partner, Service Source of Alexandria, VA, to conduct the COM work.<sup>205</sup> As an image was copied to microfilm, the microfilm roll and frame number were linked to the MAF ID of the housing unit to which the image pertained.

After completion of the COM conversion, the MAF IDs were used to link the film roll and frame number for a particular image to the relevant housing unit record in the ICRF. Once all the linkages were established, the Census Bureau entered the applicable roll and frame number information into a field in the associated ICRF record. Thus, future researchers working with the ICRF will be able to locate the primary questionnaire images pertaining to a particular household (assuming images were produced for that household’s census return).

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<sup>199</sup> NARA earlier documented the agreement in an October 5, 2000, letter from Archivist Carlin to Rep. Waxman, Ranking Member, Committee on Government Reform, U.S. House of Representatives.

<sup>200</sup> John W. Carlin, Archivist of the United States, to Lisa Haralampus, President, National Archives Assembly, October 23, 2000, p. 1. Thus, microfilm copies of the images (in addition to the digital image files) were scheduled as a permanent record. See SF 115—Request for Records Disposition Authority, Job Number N1-029-03-002, approved July 16, 2003.

<sup>201</sup> John H. Thompson, Associate Director for Decennial Census, U.S. Census Bureau, to Dr. Michael J. Kurtz, Assistant Archivist, National Archives and Records Administration, August 10, 2000, p. 2.

<sup>202</sup> Letter from Carlin to Haralampus, October 23, 2000, pp. 1–2.

<sup>203</sup> See footnote 49 in Chapter 6, “Data Capture and Processing” for additional information regarding this contract modification.

<sup>204</sup> Formerly called the National Industries for the Severely Handicapped, the organization now goes by its acronym.

<sup>205</sup> Additional information regarding this contract is contained in the “Data Archiving” section of Chapter 6, “Data Capture and Processing.”

**Chapter 10.****Testing, Experimentation, Evaluation, and Coverage Measurement Programs**

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# Chapter 10: Testing, Experimentation, Evaluation, and Coverage Measurement Programs

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## INTRODUCTION

Throughout the early twentieth century, the Census Bureau explored various means to evaluate its activities. During the period between World War I and World War II, the agency researched the use of intercensal population estimates, sampling techniques, and methods for evaluating the completeness of the decennial census. After 1940, the agency began a post-censal program to evaluate some of the questions on the census form. With the 1950 census, the Census Bureau established a formal program to complete evaluations of census operations and conduct research through experiments embedded within the census. The 1950 Research, Evaluation, and Experimental (REX) program assessed the accuracy of the census by measuring error and identifying its sources. REX also evaluated coverage through a post-enumeration survey. The 1950 program initiated an era during which the Census Bureau conducted systematic reviews of its current activities and research to improve the design of the next decennial census. The agency continued to expand the REX program to address various concerns over coverage measurement, coverage improvement, content, and quality control.<sup>1</sup>

With Census 2000, the agency sought to further expand the REX program to accomplish five primary objectives: assess data content and quality; evaluate census procedures and operations; conduct research on new methodologies and demographic changes; measure accuracy and coverage in the census; and help guide planning for the 2010 Census. To that end, the Census Bureau established the Testing, Experimentation, and Evaluation (TXE) program for Census 2000. TXE consisted of a testing and experimentation program and an evaluation program.<sup>2</sup> The Census Bureau's Planning, Research, and Evaluation Division (PRED) coordinated the efforts of subject-matter experts (both agency personnel and contractors) involved in the TXE program. Specifically, it established selection criteria for experimentation and evaluation proposals, developed quality assurance guidelines for ensuing reports, and coordinated the production of synthesis reports of each area of evaluation and experiment.

This chapter also includes a discussion of the two principal methods the Census Bureau uses to evaluate coverage in the census. The agency compares the census counts to two sets of estimates of net undercount: (1) estimates produced through dual system estimation (DSE) in conjunction with a post-enumeration survey or coverage measurement survey and (2) estimates produced by a methodology known as demographic analysis (DA). In Census 2000, the coverage measurement survey was called the Accuracy and Coverage Evaluation (A.C.E.). The results from the A.C.E. and DA programs and discussions of how they were used to evaluate net coverage in Census 2000 can be found in the "Coverage Measurement Programs" section of the chapter.

The testing and research program conducted during the course of the decade to develop new approaches and techniques for possible implementation in Census 2000 is discussed in Chapter 2, "Planning the Census."

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<sup>1</sup> For more information on past REX programs, see U.S. Census Bureau, *1990 Census of Population and Housing History, Part D*, 1990 CPH-R-2D (Washington, DC: U.S. Government Printing Office, 1996), Chapter 11, "Census Research, Evaluation, and Experimental (REX) Program."

<sup>2</sup> The discussion of the Census 2000 TXE program in this chapter describes the experiments and evaluations that were carried out under the program and summarizes the findings and recommendations that emanated from their results. How the findings and recommendations are used (or not) to inform and guide the 2010 Census planning process will be the subject of the early planning and development chapter of the *History: 2010 Census*.

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## TESTING AND EXPERIMENTATION PROGRAM

In 1997, the Census Bureau formed a Research and Experimentation Program Steering Committee to develop the Census 2000 program of testing and experimentation that would provide information for use in planning the 2010 Census. The committee requested and reviewed proposals from all organizational units of the Census Bureau. From more than 37 proposals, the committee selected four experiments based on the following four mandatory and three recommended criteria.

Mandatory criteria:

- The experiment must require testing in a decennial census environment.
- The experiment must provide measurable results.
- The experiment must not compromise the success of the census.
- The experiment should provide information that will assist in planning major components of future decennial censuses.

Recommended criteria:

- The experiment should be designed to minimize adverse effects of the experimental treatment on respondents and enumerators.
- The experiment should provide significant potential benefits in terms of cost reduction, improved coverage, improved data quality, improved operational work flow, and/or other measures of benefit.
- The experiment should add no burden or minimal burden to respondents as part of Census 2000.<sup>3</sup>

Those proposals selected included the Census 2000 Alternative Questionnaire Experiment; Administrative Records Experiment in Census 2000; Social Security Number, Privacy Attitudes, and Notification Experiment; and the Response Mode and Incentive Experiment.<sup>4</sup> The committee also added the Census 2000 Supplementary Survey and ethnographic studies to the TXE program. The experiments were embedded in and thus conducted as part of Census 2000 to ensure a census “environment” as the basis for making inferences from the results.

### Alternative Questionnaire Experiment (AQE2000)

Since 1980, the Census Bureau has conducted alternative questionnaire experiments (AQEs) with each decennial census to test the effects of variations in questionnaire design on response rates and data quality. The objective of such experiments is to develop a user-friendly mailout questionnaire that can be completed accurately by respondents. In 1980, the agency tested two FOSDIC (Film Optical Sensing Device for Input to Computers) matrix-style forms and one non-FOSDIC form designed to be visually appealing and easily understood by respondents. The 1990 AQE compared five long-form questionnaires with considerable changes in wording and format from previous designs. For Census 2000, the AQE included three separate experiments—skip instruction, residence instructions, and race and Hispanic origin.

**Skip instruction.** The skip instruction experiment examined how changes in branching instructions and the language types (verbal, symbolic, and graphic) used to create them would affect respondent performance on the census long form. This experiment used two designs. The first combined visual features and instructions to help prevent respondents from making errors before they occurred and the second was designed to help respondents detect errors after they occurred. Other design improvements were used, including visual cues such as large bold type and arrows to prompt respondents to detect and correct their mistakes.

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<sup>3</sup> Florence H. Abramson, *Census 2000 Testing, Experimentation, and Evaluation Program Summary Results*, November 17, 2004, pp. 2–3.

<sup>4</sup> The use of the Employee Reliability Inventory file for the nonresponse follow-up enumerators experiment was originally planned as a component of the TXE program, but was later removed.

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This experiment considered two types of errors—errors of commission and errors of omission. Errors of commission occur when a respondent incorrectly answers questions he or she should have skipped. Such errors often increase response burden and frustration. Errors of omission occur when a respondent skips questions he or she should have answered, resulting in missing data. During the skip instruction experiment, all experimental treatments significantly reduced errors of commission. Errors of omission decreased for the detection treatment (that is, the experimental design intended to help respondents detect errors after they occurred), but significantly increased for every other treatment. Because it reduced both types of errors, the detection treatment was recommended for use in the future design of mail questionnaires.<sup>5</sup>

**Residence instructions.** The use of questionnaires as the principal mode of data collection can often lead to difficulties when the design and data demands of a survey require rules of inclusion that are too complex or counterintuitive for respondents. The residence instructions experiment focused on how the presentation of residence instructions—that is, the instructions to respondents for determining who should be counted as a resident of the household—on the census short form might influence within-household coverage. Changes in presentation included altering the format, placement, and wording of instructions in order to make them more understandable and more likely to be read.

Working with its contractor, Westat, the Census Bureau conducted a series of cognitive interviews to determine how the presentation of the household-roster instructions might be improved. Once an experimental format was selected, it was used on a sample of mailout/mailback forms that was sent out according to the Census 2000 schedule. The Census Bureau then measured coverage through a telephone reinterview operation. The changes in format, presentation, and wording of the residence instructions resulted in a significantly higher response to the household count question.<sup>6</sup> The experimental group also produced significantly fewer omissions among Hispanics in the low-coverage stratum.<sup>7</sup>

**Race and Hispanic origin.** In 1997, the U.S. Office of Management and Budget mandated changes in methods for collecting race data in government surveys and censuses. Such changes included allowing respondents to report one or more races and reversing the sequence of the race and Hispanic origin items. The Census 2000 questionnaire design introduced other changes in format, categories, and wording. For this experiment, the Census Bureau mailed 1990-style short forms to an experimental sample of 10,500 households and a control panel of about 25,000 received Census 2000 questionnaires. The 1990-style form preserved the 1990 question wording, categories, order, and format but incorporated elements of the Census 2000 design. The race and Hispanic origin experiment examined the effects of the differences for these two questions between the Census 2000 and 1990-style forms on race and Hispanic reporting by comparing the responses for the corresponding items.

Overall, the questionnaire revisions substantially improved the completeness of race and Hispanic origin reporting in mailed short-form questionnaires. In addition, Hispanics were less likely to report their race as Some Other Race, and more likely to report as White, in the 2000-style questionnaires. Although there were no apparent questionnaire effects on the fraction of people reported as Hispanic, there were effects on the reporting of detailed Hispanic origin groups. The 1990-style questionnaire obtained more detailed reports of Hispanic origin than the 2000-style questionnaire, probably due to the effects of question wording differences as well as examples. Other findings include, for example, that there were more reports of Native Hawaiian and Other

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<sup>5</sup> Cleo Redline, Don Dillman, Aref Dajani, and Mary Ann Scaggs, *Census 2000 Testing, Experimentation, and Evaluation Program: The Effects of Altering the Design of Branching Instructions on Navigational Performance in Census 2000, Final Report*, September 30, 2002, pp. 1-3 and 7-11; Elizabeth Ann Martin, Eleanor Gerber, and Cleo Redline, *Census 2000 Alternative Questionnaire Experiment, Census 2000 Testing, Experimentation, and Evaluation Program Synthesis Report No. 17, TR-17, March 2004*.

<sup>6</sup> This question serves as an indicator of data that might be missing on a questionnaire and a flag of large households requiring follow-up because the questionnaire only had space to provide data for up to six residents.

<sup>7</sup> Low-coverage areas were composed of sections of the United States with high concentrations of non-White residents and renters, two groups that were associated with low response rates. The rest of the nation comprised high-coverage areas.

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Pacific Islander, and fewer reports of Some Other Race with the Census 2000 questionnaire design as compared to the 1990-style form. The experiment demonstrated that some questionnaire design changes made in Census 2000 resulted in substantial improvements in data quality, but that other changes had unintended consequences.<sup>8</sup>

### Administrative Records Experiment in 2000 (AREX 2000)

AREX 2000 was the Census Bureau's first attempt to use administrative records as the foundation for a short-form decennial census. It examined the feasibility of conducting an administrative records census (ARC) as well as the use of administrative records as an ancillary method of data collection for the decennial census. AREX 2000 compared two methods of conducting an ARC. One relied solely on administrative records—such as birth and death records—and the other combined traditional enumeration methods with the use of administrative records. AREX 2000 also tested the potential uses of administrative records data for substitution processes and for other methods of defining and enumerating the nonresponse follow-up (NRFU) universe.

The Census Bureau conducted AREX 2000 in two sites selected for their variety of population and housing characteristics. This variety would help to reveal the challenges that might arise from conducting an ARC. The agency selected for the experiment, Baltimore City and Baltimore County in Maryland, and Douglas, El Paso, and Jefferson Counties in Colorado. Each site was believed to have approximately one million housing units and a population of approximately two million persons.<sup>9</sup>

AREX 2000 used a two-phase process to complete the enumeration. In the first, or top-down, phase the Census Bureau assembled records from a number of national administrative record systems and unduplicated individuals' records that appeared more than once within the combined systems. This was followed by computer geocoding of street addresses to the level of census block, and two attempts to obtain and code physical addresses for those that could not be geocoded by computer. Finally, the "best" demographic characteristics for each individual and "best" street address within the experimental sites were selected. The second, bottom-up, phase consisted of correcting errors in administrative records addresses through address verification (analogues to coverage improvement follow-up) and the addition of persons missed in the administrative records (analogues to nonresponse follow-up). With the top-down and bottom-up processes considered as part of one overall design, AREX 2000 can be thought of as a prototype for a conventional census with the initial mailout replaced by a top-down administrative records enumeration. There were four principal limitations on the experiment:

- The administrative records source files were limited to those used in the creation of the Statistical Administrative Records System (StARS) 1999, which relied primarily on files for tax year 1998 and other files extracted early in calendar year 1999. These files neither exhausted the national-level administrative records that might have been available for the AREX 2000 nor were they the most timely with respect to April 1, 2000, Census Day for Census 2000.
- The number of experimental sites was small. Although it would not have been reasonable or realistic to attempt to mount this first administrative records experiment in a representative sample of geographic areas large enough to make national estimates, additional sites would have provided more confidence that the results were not idiosyncratic to the sites selected.
- There was no experimental variation in key design parameters, such as the clerical operations, field operations, and the address-selection algorithm. Without some factorial or fractional factorial structure, direct estimates of operational impacts of components, individually or in combination, were not possible.

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<sup>8</sup> Florence H. Abramson, *Census 2000 Testing, Experimentation, and Evaluation Program Summary Results*, Appendix A: Summary Results of Individual Evaluations and Experiments, November 17, 2004, p. A104-05; Elizabeth Martin, *Census 2000 Alternative Questionnaire Experiment: Questionnaire Effects on Reporting of Race and Hispanic Origin: Results of a Replication of the 1990 Mail Short Form in Census 2000, Final Report*, December 12, 2002.

<sup>9</sup> Barry V. Bye and Dean H. Judson, *Results from the Administrative Records Experiment in 2000*, Census 2000 Testing, Experimentation, and Evaluation Program Synthesis Report No. 16, TR-16, March 2004.



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- The measurement of race and Hispanic origin in administrative records at the national level is deficient. Attempts were made to improve the measurement through the use of certain statistical models, but the results were not entirely satisfactory.

The Administrative Records Research Staff (ARRS) of PRED conducted four evaluations of ARES 2000: the process evaluation, the request for physical address evaluation, the outcomes evaluation, and the household evaluation.

The process evaluation analyzed components and procedures of the top-down and bottom-up methods in order to identify errors or deficiencies. It documented the processes by which raw administrative data became final ARES 2000 counts and attempted to identify the relative contributions of each process.<sup>10</sup> The request for physical address evaluation assessed the impact of non-city-style addresses. These addresses presented a significant hurdle to the use of an administrative records census on either a supplemental or substitution basis. A particular problem was the determination of residential addresses and their associated geographic block-level allocation for individuals whose administrative record address was a P.O. box or rural route.<sup>11</sup> The outcomes evaluation compared the top-down and bottom-up ARES counts by county, tract, and block-level counts of the total population by race, Hispanic origin, age groups, and gender, with comparable decennial census counts.<sup>12</sup> Finally, the household evaluation focused on household-level comparisons between administrative records and Census 2000. It assessed the potential for NRFU substitution and household imputations and for predictive capability.<sup>13</sup>

These evaluations noted the potential for significant cost savings through the use of administrative records substitution for NRFU households. They also observed limitations on the availability of data for the under 18 population as well as data for race and Hispanic origin using administrative records. The ARRS recommended improvements in computer matching and rematching processes, master address file development, address selection rules, and forms design. For the 2010 Census, the recommended research agenda for administrative records included the following items, among others:

- Additional evaluation of the impact of clerical and field operations in ARES 2000.
- Person unduplication in the ARES bottom-up process.
- Repeating ARES 2000 with Statistical Administrative Records System 2000 data.
- Analysis of coverage gaps in administrative records related to persons in group quarters.
- Contributions to subnational demographic analysis.

### **Social Security Number, Privacy Attitudes, and Notification (SPAN) Experiment**

Anticipating an increased reliance on administrative records in future decennial censuses, the Census Bureau conducted the SPAN experiment as part of the Census 2000 TXE program. The SPAN experiment combined a survey component and a panel component (that is, the use of experimental groups and a control group to test different treatment effects) to assess the public's attitudes on privacy and confidentiality issues related to an administrative records census and to further examine how the notification of administrative records use and the request for a social security number would affect overall census response rates and nonresponse rates to particular questions.<sup>14</sup>

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<sup>10</sup> Michael A. Berning and Ralph H. Cook, *Census 2000 Experiment: Administrative Records Experiment in 2000 (ARES 2000) Process Evaluation, Final Report*, April 17, 2003.

<sup>11</sup> Michael A. Berning, *Census 2000 Experiment: Administrative Records Experiment in 2000 (ARES 2000) Request for Physical Address Evaluation, Final Report*, April 17, 2003.

<sup>12</sup> Harley K. Heimovitz, *Census 2000 Experiment: Administrative Records Experiment in 2000 (ARES 2000) Outcomes Evaluation, Final Report*, April 17, 2003.

<sup>13</sup> Mark Bauder and D. H. Judson, *Census 2000 Experiment: Administrative Records Experiment in 2000 (ARES 2000) Household Level Analysis, Final Report*, April 17, 2003.

<sup>14</sup> For more information on SPAN, see Jennifer A. Guarino, Joan M. Hill, and Henry F. Woltman, *Census 2000 Testing, Experimentation, and Evaluation Program: Analysis of the Social Security Number Notification Component of the Social Security Number, Privacy Attitudes, and Notification Experiment, Final Report*, November 13, 2001; E. Singer, J. Van Hoewyk, and R. Tourangeau (Survey Research Center, University of Michigan), and D. M.

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For the survey component, the agency commissioned The Gallup Organization and the Institute of Social Research at the University of Michigan to gather information on public attitudes toward the census, data sharing by federal government agencies, and issues of confidentiality and privacy such as willingness to provide social security numbers (SSNs). Between July and October 1999 and April and July 2000, The Gallup Organization carried out two surveys, one before Census Day and one after. The pre-census survey was conducted before the launch of the Census 2000 publicity campaign, and the post-census survey occurred immediately after Census Day. These studies built upon earlier research conducted in 1995 by the University of Maryland in consultation with the Census Bureau. In 1996, Westat conducted a similar study, the Study of Privacy Attitudes Toward Administrative Records Use, to determine how public opinion on such matters might have changed in a year. Following Census 2000, the Census Bureau commissioned a small telephone survey of Puerto Rico.

The panel component consisted of two studies examining respondents' behavioral responses to SSN requests and/or public notification of administrative records use. The Social Security Number Notification study evaluated the effects on mail response rates and form completeness of the SSN request and the notification of administrative records use. The Social Security Number Validation study focused on the accuracy of SSNs provided by respondents and examined the effects of the SSN request and administrative records notification on their validation rates. Both studies used data collected during Census 2000, with ten panels using different experimental treatments.

In brief, the results of the Survey of Privacy Attitudes in 2000 indicated that:

- The public steadily increased its knowledge and awareness of the census, its uses, and laws related to confidentiality practices between 1995 and 2000. The Census 2000 publicity seemed to enhance the public's knowledge of and endorsement to cooperate with the census.
- Long-term survey trends showed increases in the public's belief that the Census Bureau actually protects data confidentiality; however no changes were shown in the public's trust in the Census Bureau to keep data confidential between 1999 and 2000, suggesting that census publicity had no effect upon public attitudes related to confidentiality issues.
- General privacy concerns showed a very small, yet statistically significant, decline between 1999 and 2000; however long-term trends showed small increases in public concerns about personal privacy and the loss of control over personal information. The proportion who viewed the census as an invasion of privacy did not change between 1999 and 2000.
- Trends revealed that increasing percentages of respondents expressed disapproval towards data sharing or providing one's social security number. Around 45 percent in 1999 and 2000 stated that it would bother them "a lot" if their census information was shared, a significant increase from prior years. Expressed willingness to provide one's social security number declined from 68 percent in 1996 to 55 percent in 1999, with no change in 2000.
- Relationships were revealed between Census 2000 survey respondents' attitudes and self-reported exposure to census-related media. Those exposed to both positive and negative media were more knowledgeable about the census, considered it more important, and were more likely to endorse an obligation to cooperate with the census than those with no media exposure. The group with only negative exposure had similar responses to those with both positive and negative media exposure, while more differences were shown between the group with only positive exposure and those who reported exposure to both types of census-related media.
- Attitudes were shown to predict respondents' behavior. High privacy concerns, negative views on the Census Bureau's confidentiality practices, disapproval of data sharing, and a lack of willingness to provide social security numbers, were reliable negative predictors of whether

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Steiger, M. Montgomery, and R. Montgomery (The Gallup Organization), *Census 2000 Testing, Experimentation, and Evaluation Program, Final Report on the 1999-2000 Surveys of Privacy Attitudes*, December 10, 2001; Linda Brudvig, *Census 2000 Testing, Experimentation, and Evaluation Program: Analysis of the Social Security Number Validation Component of the Social Security Number, Privacy Attitudes, and Notification Experiment, Final Report*, January 13, 2003.

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respondents returned their Census 2000 forms and provided mailing addresses that could be used to determine the return status of their forms. Reported demographics showed that non-White respondents were less likely to return their forms.

The Social Security Number Notification panel study results revealed that:

- The social security number request for one or all household members decreased mail response rates, yet the decreases were smaller than expected based on past research. Specifically, results suggested that the social security number request for all household members would decrease response by 2.1 percent in high census-coverage areas and 2.7 percent in low census-coverage areas compared to no request.<sup>15</sup> The difference between the drop in response rates of the high- and low-coverage areas was not statistically significant.
- The request to provide social security numbers for all household members was associated with more missing data, yet there was no effect shown on missing data for Person 1.<sup>16</sup>
- Taken together, specific and general notification of administrative records use was shown to decrease mail response. Separately, however, specific notification did not demonstrate the predicted stronger effects than the general notification. Furthermore, there was not sufficient evidence to conclude that use of administrative records notification further discouraged response in the presence of a social security number request compared to notification alone.
- Notification was not shown to affect item nonresponse rates, whether the two notification types were grouped together or examined separately. Further, there were lower responses to the social security number item for Person 1 when the request was made without notification (contrary to prediction). This occurred regardless of whose numbers were requested (Person 1 only versus all household members) and regardless of the notification type. Also, there were no individual effects upon form completeness by type of notification.

Finally, the Social Security Number Validation panel study results showed that:

- The degree of accuracy for the social security numbers provided by respondents was high, with an overall match rate of 94.8 percent between the provided numbers and the Census Numident file (provided by the U.S. Social Security Administration). Only 5.2 percent of the reported social security numbers were considered invalid.
- The valid social security number rates for high- and low-coverage areas revealed a small, but statistically significant, 2.4 percent difference between the accuracy rates of respondents' reported numbers within the two coverage areas (high, 95.2 percent, and low, 92.8 percent).
- The valid social security number rates for Person 1 were not affected by whether a social security number request was made for Person 1 only or for all household members. Person 1 valid rates were high across the panels (about 96 to 97 percent). Results also revealed patterns of decreasing valid rates for Person 2, Person 3, and so on through Person 6 among the panels that requested numbers for all household members. Nevertheless, their valid rates were high, with a range of over 95 percent to the lowest rate of 80.2 percent for Person 6.
- Notification of administrative records use had no effect on the valid rates of provided social security numbers for Person 1. Also, there were no differences between the valid rates of those who received the specific notification type versus the general notification type.<sup>17</sup>

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<sup>15</sup> Low-coverage areas were composed of sections of the United States with high concentrations of non-White residents and renters, two groups that were associated with low response rates. The rest of the nation comprised high-coverage areas.

<sup>16</sup> Person 1 is the adult respondent in the household—preferably one who owns or rents the housing unit—who fills out the census questionnaire on behalf of the entire household.

<sup>17</sup> Florence H. Abramson, *Census 2000 Testing, Experimentation, and Evaluation Program Summary Results*, Appendix A: Summary Results of Individual Evaluations and Experiments, November 17, 2004, pp. A113–16.

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## Response Mode and Incentive Experiment (RMIE)

With the advent of new computer technologies to facilitate the collection of data, the Census Bureau included in Census 2000 an experiment designed to assess the effect on respondent behavior of options to answer the census by electronic means and incentives to do so. The RMIE evaluated the public's willingness to provide census data using computer-mediated data collection methods, including computer-assisted telephone interviews (CATIs), interactive voice response (IVR), and the Internet. The RMIE also evaluated the quality of data collected through such media. The ability of incentives, in the form of telephone calling cards, to promote the use of computer-mediated response options was also studied.<sup>18</sup>

For this experiment, the Census Bureau selected a random sample of households in the mailout/mailback universe. It divided the sample into two categories—low-coverage area and high-coverage area. While a selection of households in the sample served as a census control group—receiving a form and letter identical to those used in the national mailing—the remaining households in the sample received special instructions that gave them the choice of providing their census data either by completing the paper form or by using a computer-assisted method such as CATI, an IVR system using the Automated Spoken Questionnaire, or a Web-based survey. To encourage the use of one of these alternative response modes, the Census Bureau offered half of the households in the experimental groups an incentive—a 30-minute telephone calling card to be activated once the household provided its responses using the computer-assisted method.

RMIE also included an operation to follow up with nonrespondents of the census control group. During this follow-up, all the nonrespondent households were offered the opportunity to use a computer-assisted response mode to provide their census data. Half of these households received calling-card incentive offers. This component of RMIE evaluated the effect of incentives and response-mode alternatives on response among a group representing a population that is traditionally difficult to enumerate.

The last component of RMIE evaluated Internet usage. The agency conducted a telephone survey of those households that received the offer to complete the Internet version of the short form but opted to mail back the completed paper form. This survey explored the reasons why these respondents chose not to use the Internet option.

Based on the RMIE, the Census Bureau concluded the following:

- The Internet was an attractive alternative as a data-collection mode for the decennial census.
- The use of an incentive was an effective means of promoting the use of alternative response modes. However, some of this effect may have been attributable to the use of the insert that drew the respondent's attention to the availability of the alternative mode.
- Data quality was improved using the CATI mode (compared with mail), however this mode required substantial cost investments for hardware, software, and programmer and interviewer time.
- Without significant improvements in the voice-user interface, the IVR technology was probably not a viable alternative for Census 2010.
- The use of alternative modes did not increase overall response rates to the census.<sup>19</sup>

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<sup>18</sup> Sid Schneider, David Cantor, Paul Segel, Carlos Arieira, and Luu Nguyen, *Census 2000 Testing, Experimentation, and Evaluation Program: Response Mode and Incentive Experiment for Census 2000, Final Report*, October 25, 2002, pp. 1–2. For more information on CATI, IVR, and Internet data collection, see Chapter 5, "Data Collection."

<sup>19</sup> Florence H. Abramson, *Census 2000 Testing, Experimentation, and Evaluation Program Summary Results*, Appendix A: Summary Results of Individual Evaluations and Experiments, November 17, 2004, p. A119. For more information on the RMIE, see Jennifer Guarino, *Census 2000 Testing, Experimentation, and Evaluation Program: Assessing the Impact of Differential Incentives and Alternative Data Collection Modes on Census Response, Final Report*, July 10, 2001; and Rachel Caspar, *Results from the Response Mode and Incentive Experiment in 2000*, Census 2000 Testing, Experimentation, and Evaluation Program Synthesis Report No. 18, TR-18, March 2004.

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## Census 2000 Supplementary Survey (C2SS)

C2SS served as a large-scale demonstration of the operational feasibility of continuous measurement (ongoing data collection throughout the decade). In the late 1980s, the Census Bureau began to explore the use of a rolling sample design in the context of the decennial census, and as the following decade progressed, the agency acknowledged the need for more-frequently updated data. In 1994, the Census Bureau established the Continuous Measurement program to develop a method for collecting detailed demographic and housing data on a yearly basis. This program continued to evolve and expand, and out of this initiative emerged the American Community Survey (ACS). Testing of ACS data-collection methods began in November 1995 with surveys at four sites, using three modes of data collection—mailout/mailback, telephone nonresponse follow-up, and personal visit nonresponse follow-up.

By 2000, the Continuous Measurement program included 36 counties. To assess the operational feasibility of the ACS, the Census Bureau conducted the C2SS in 1,239 counties, of which 36 were the ACS test counties and 1,203 were new counties. While the ACS test sites used the proposed ACS sample design, the remaining counties in the C2SS used a sample design similar to the Current Population Survey (CPS)—a monthly demographic survey conducted by the Census Bureau for the Bureau of Labor Statistics. Data gathered from the CPS-based C2SS, conducted in the 1,203 counties, combined with the 36 ACS test counties, provided national-level data. Following 2000, the Census Bureau continued data collection activities in all of these counties to demonstrate the data's usability and reliability.

Despite competition from Census 2000 for resources and lack of experience with a nationwide workload, C2SS had sufficient staffing, carried out major operations as anticipated, and observed high response rates. The C2SS operation provided insight into activities needing improvement or revision, given the large increase in workload over the 1999 Continuous Measurement program. In particular, Telephone Questionnaire Assistance (TQA) and edit follow-up operations required more staff to handle the increase. The results of the C2SS demonstrated that full implementation of the ACS was not only operationally feasible, but would improve planning, simplify census design, and provide timely and relevant demographic and socioeconomic data to policymakers.<sup>20</sup>

## Ethnographic Studies

In the early 1970s, the Census Bureau began using ethnographic techniques to study survey coverage. With its establishment in 1984, the National Academy of Science's Panel on Decennial Methodology recommended that the Census Bureau undertake a series of participant observation studies to discern the behavioral processes that contributed to underenumeration. During the 1990 census, the agency conducted numerous ethnographic studies and evaluations focusing on issues such as language and illiteracy barriers, residential mobility, irregular housing and household arrangements, and resistance (active or passive) to outsiders. These 1990 studies examined population groups that included the homeless, migrant workers, African Americans, Latinos, American Indians, and Asians.

Through the combined efforts of personnel from the Census Bureau's Statistical Research Division (SRD), Planning, Research, and Evaluation Division (PRED), and various contractors, the Census Bureau conducted six ethnographic research projects as part of the TXE program and the Ethnography for the New Millennium program. Three were considered part of the TXE experimentation program and three were considered TXE evaluations (see Evaluation Program, Category J: Ethnographic Studies). Designed to improve coverage of selected segments of the population, these studies addressed enumeration challenges in the decennial census. Such issues included respondent sensitivities to privacy issues; cultural and social beliefs that influenced decennial census compliance; increased number of foreign-born persons and undocumented immigrants; increased

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<sup>20</sup> U.S. Census Bureau, *Design and Methodology: American Community Survey*, TP67 (Washington, DC, GPO: 2006), pp. 2-4-2-5; Deborah H. Griffin and Sally M. Obenski, *Census 2000 Testing, Experimentation, and Evaluation Program: A Demonstration of the Operational Feasibility of the American Community Survey, Final Report*, September 28, 2001, pp. 1 and 18.

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diversity in household type and housing arrangements; and behavior patterns of selected mobile populations. Census Bureau advisory committees' suggestions and prior experiences with ethnographic research guided the selection of topics and formulation of research questions for these studies.<sup>21</sup>

**Privacy Schemas and Data Collection: An Ethnographic Account.** This study examined the effects of concerns about privacy on participation in Census 2000 and other surveys. By conducting interviews with respondents in Washington DC, Boston, Chicago, San Diego, Los Angeles, Oakland, Miami, and Northern Virginia, researchers sought to elicit the reasoning process used by respondents to decide whether to participate in a survey or census and to decide how much information to provide. Researchers presented respondents with a series of vignettes in which a character was asked to share information in a variety of contexts (for example, private- and government-sponsored data collections) and using different data collection modes (for example, telephone survey, Internet request, or in-person interview). Through these vignettes, researchers gleaned information about respondents' views on the risks associated with sharing information and on the credence given to assurances of confidentiality.

The findings from this study indicated that privacy reactions are highly situational, varying with the context in which the request for information is presented and with the respondent's background and experiences with federal agencies and private surveys. This study also produced a descriptive model for understanding how respondents decided whether to divulge information. The model comprised three main parts: an assessment of the sponsor of the questions, an assessment of whether the questions were relevant to some legitimate purpose of the sponsor, and an assessment of risks and benefits of divulging information. While this decision model was widely followed in all groups, some differences emerged. Technologically sophisticated people, for example, were more comfortable with providing information on the Internet. Such respondents, however, also did not believe that it was possible for any institution to completely assure privacy or confidentiality to persons providing information.

**Generation X Speaks Out on Civic Engagement and the Decennial Census: An Ethnographic Approach.** This study examined the attitudes of members of Generation X about civic engagement, community involvement, government, and decennial census participation. For this study, ethnographers defined Generation X as persons aged 21 to 32 (born between 1968 and 1979), and they recruited respondents from "hard to reach" populations such as ethnic minorities, lower socioeconomic classes, immigrants, and alienated young adults. Researchers conducted 150 interviews, ten focus groups, a survey, and participant observation activities in a variety of locations among primarily "working-class" respondents with levels of education ranging from high school dropout to those in pursuit of Ph.Ds.<sup>22</sup> Interview and survey questions were designed to gauge respondents' experiences with and views on civic responsibility.

Findings from this study indicated that skepticism and mistrust toward the government was pervasive among the Generation X respondents. However, while many respondents shared a considerable degree of cynicism about government civic engagement (for example, formal organizations and political activities) as well as a sense of alienation from national politics, such attitudes did not preclude respondents from seeing the value of participation in the census. Respondents often viewed the decennial census as a nonpartisan national resource and as an easy way in which a generation could give back to the community while empowering the community. While many also expressed concerns about the Census Bureau's statements regarding privacy and confidentiality, most were still willing to provide personal information.<sup>23</sup>

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<sup>21</sup> Manuel de la Puente, *Census 2000 Ethnographic Studies*, Census 2000 Testing, Experimentation, and Evaluation Program Topic Report No. 15, TR-15, March 2004, pp. 3–4.

<sup>22</sup> Research for this study was conducted in Oregon, Illinois, Florida, Texas, Maryland, Virginia, and Washington, DC.

<sup>23</sup> Melinda Crowley, *Census 2000 Ethnographic Study: Generation X Speaks Out on Civic Engagement and the Decennial Census: An Ethnographic Approach, Final Report*, June 17, 2003. See also Manuel de la Puente, *Census 2000 Ethnographic Studies*, Census 2000 Testing, Experimentation, and Evaluation Program Topic Report No. 15, TR-15, March 2004.

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**Complex Households and Relationships in the Decennial Census and in Ethnographic Studies of Six Race/Ethnic Groups.** This study used a series of small-scale ethnographic studies to explore the range and functioning of complex households in six ethnic groups in the United States and to determine how well census response categories captured the diversity and complexity of household structure. Such studies were also designed to assess how well census methods, questions, relationship categories and household composition typologies describe the emerging diversity of household types; suggest revisions to the relationship question and response categories for the 2010 Census test cycle; and call for new research.<sup>24</sup> Researchers conducted a series of interviews with 25 households they deemed representative of their assigned ethnic group. The groups included in this study were drawn from the race and ethnic categories mandated by the U.S. Office of Management and Budget for the census and federal surveys. Participants in this study included African Americans in southeastern Virginia; Korean immigrants in Queens, New York; Latino immigrants in central Virginia; rural non-Hispanic Whites in western New York; Navajo Indians on an Arizona reservation; and Inupiaq Eskimos, known as the Inupiat, in Alaska.<sup>25</sup> During interviews, respondents first completed a mock census form and researchers observed how it was completed. Ethnographers then conducted semistructured interviews that included questions on demographic characteristics, coverage probes to identify potential omissions and erroneous enumerations, and open-ended questions on living situations and mobility patterns.

Five common themes emerged from these studies. The first noted that conceptual differences in the definition and application of the key concept “household” could potentially result in coverage errors. While the census definition of “household” included all people sharing one housing unit, some groups viewed the extent and depth of social interaction, rather than a shared physical structure, as the criteria for defining a household. This suggests that respondents were likely to use their own culturally defined criteria for deciding who to list on their census forms and may ignore, or not even read, the residence rules specifying who should and should not be counted.

Another common theme indicated that culture, language, and nationality could lead to a different understanding of census concepts, methods, and procedures. These included differences in naming customs, adoption practices, and kinship terms. Inconsistencies with how the census defines these terms, may affect the accuracy of counts and household data.

These studies identified three issues with relationship questions focusing solely on relationships to Person 1. First, interrelationships among others in the household can be masked and not identifiable, either from the form itself or the data produced. Second, the classification of household type may change depending on who is listed as Person 1, possibly distorting the distribution of household types that are used in developing programs, implementing the poverty definition, and allocating funding. Third, Person 2 may not be the biological parent of a coresident child. Ethnographers recommended development and testing of an individual-level question to identify all interrelationships in the household.<sup>26</sup>

The fourth theme identified in these studies focused on mobility patterns. Mobility patterns and conceptions of who is a household member often may not be consistent with the census concept “usual residence.” Seasonal mobility, cross-national mobility, and permanent immigration can create ambiguities in determining where a person should be counted in the census.

The last theme running through the Navajo, African American, and Korean and Latino immigrant studies was a fear and mistrust of the government and its confidentiality pledges. Fears of losing

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<sup>24</sup> The term “complex household” is a research category, not an official Census Bureau type of household. For this study, a complex household was defined as a non-nuclear family household, including nonrelatives, such as roommates and unmarried partners; more-distant relatives not listed on the census form, such as nephew/niece, cousin, brother-/sister-in-law; persons shared across households, such as children in joint custody arrangements and persons tenuously attached to more than one housing unit; and more than one family sharing a housing unit.

<sup>25</sup> For a summary of these studies, see Laurie Schwede, *Census 2000 Testing and Experimentation Program: Complex Households and Relationships in the Decennial Census and in Ethnographic Studies of Six Race/Ethnic Groups, Final Report*, August 27, 2003.

<sup>26</sup> Florence H. Abramson, *Census 2000 Testing, Experimentation, and Evaluation Program Summary Results*, Appendix A: Summary Results of Individual Evaluations and Experiments, November 17, 2004, p. A123.

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benefits or leases, being deported, or having personal data misused were prevalent among participants. Researchers recommended expanding outreach efforts to encourage participation.

## EVALUATION PROGRAM

The Census Bureau planned an ambitious program of formal evaluations for Census 2000. Using metrics from production activities and from data collected in field follow-up surveys, this program analyzed and measured the effectiveness of methods, procedures, operations and processes as well as the impact of new initiatives on data quality and the core census processes.<sup>27</sup> The Testing, Experimentation, and Evaluation (TXE) program also included operational assessments that provided accounting information (for example, total volumes and rates) for distinct operations, functions, and processes. The quality assurance (QA) programs instituted for some specific census operations also provided assessments.<sup>28</sup>

The Census 2000 Dress Rehearsal, conducted in 1998, included evaluations of questionnaire design, field operations, data processing, and estimation. Over 40 of these evaluation studies informed the final Census 2000 design. For Census 2000, Census Bureau personnel submitted study plans for each proposed evaluation to an Evaluations Program Steering Committee. At the time of the census, the agency planned to conduct more than 140 evaluations. In early 2002, however, resource constraints prompted a reassessment of the evaluation program, reducing the total number of evaluations. Also, planned evaluations that overlapped with Executive Steering Committee for Accuracy and Coverage Evaluation Policy (ESCAP) analyses and documentation were canceled, as they were subsumed by the ESCAP reports.<sup>29</sup> The final count of evaluations was 87, organized into 18 broad categories. The Census Bureau began releasing the evaluation final reports in March 2002, with the final evaluation report released in September 2003. The Planning, Research, and Evaluation Division (PRED) also released a series of topic reports written by subject-matter specialists and one summary-level report to synthesize the findings of the evaluations, experiments, and other related research and to make recommendations for the 2010 Census.<sup>30</sup>

### Category A: Response Rates and Behavior Analysis

Mail response rates and mail return rates were important measures of participation in the census, with the former being used to determine the nonresponse follow-up (NRFU) workload.<sup>31</sup> The 12 evaluations in this category focused primarily on respondent behavior and its impact on response rates. These evaluations assessed the effectiveness of assistance programs used in Census 2000, including questionnaire guides, the Census 2000 Web site, and Telephone Questionnaire Assistance (TQA). They also examined various modes of providing responses to the census in addition to mailout/mailback questionnaires. These included Internet Data Collection (IDC), Be Counted forms, and coverage edit follow-up returns.

Using data from customer satisfaction surveys, evaluators noted that the public responded favorably to initiatives such as TQA and IDC. They recommended, moreover, that the Census Bureau make more extensive use of electronic self-response modes in future censuses and encourage respondents to use these modes. Evaluators also noted that the Be Counted program successfully increased coverage among traditionally undercounted groups.

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<sup>27</sup> Florence H. Abramson, *Census 2000 Testing, Experimentation, and Evaluation Program Summary Results*, November 17, 2004, pp. 2–3.

<sup>28</sup> Many of the QA programs involved relisting or reinterviewing procedures that were often conducted on a sample basis.

<sup>29</sup> ESCAP was a committee of senior Census Bureau officials charged with making a recommendation to the director regarding whether the official Census 2000 redistricting data should incorporate a statistical adjustment. Following the decision to not statistically adjust the redistricting data, the ESCAP conducted additional research and analyses to further assess the accuracy of the adjusted data and to inform a second decision, this one pertaining to possible nonredistricting uses of the data, including their incorporation in Census 2000 sample (long form) data products, intercensal estimates, and survey controls. This additional work by the committee was known as ESCAP II. The ESCAP and ESCAP II research and analyses are discussed in the “Coverage Measurement Programs” section of this chapter, and the documentation is available online at <<http://www.census.gov/dmd/www/EscapRep.html>> and <<http://www.census.gov/dmd/www/EscapRep2.html>>, respectively.

<sup>30</sup> Evaluation, topic, and summary reports are available online at <<http://www.census.gov/pred/www/>>.

<sup>31</sup> For more information on mail response and mail return rates, see Chapter 5, “Data Collection.”



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## Category B: Content and Data Quality

The eight evaluations for this category focused on data completeness and accuracy, as well as questionnaire content and how it was interpreted by respondents. Data completeness was measured by computing imputation rates using substitution, allocation, and assignment, and by item nonresponse rates.<sup>32</sup> Response variance, measured by the Content Reinterview Survey (CRS), also served as an indicator of data quality. This category also included assessing the documentation of the Master Trace Sample database established by PRED to trace response and operational data through the stages of Census 2000 processing. Lastly, these evaluations addressed responses to questions on race both stateside and in Puerto Rico.

Evaluations of imputation rates noted that almost 1.5 million households (1.39 percent of the occupied housing units) were substituted in Census 2000.<sup>33</sup> Within these households, the agency substituted over 3.4 million people, accounting for 1.26 percent of the 273.6 million people in housing units. Total item imputation rates (assignments plus allocations) for the 100 percent data items in Census 2000 ranged from 1.98 percent for the sex item to 5.48 percent for tenure (whether the housing unit is rented or owned).<sup>34</sup> Overall, the data completeness statistic indicated that about 97 percent of non-substituted person records contained at least four of the five 100 percent population items with nonimputed data.

The CRS re-asked the long-form questions to calculate an index of inconsistency for response variance. Of the 58 population characteristics evaluated by the CRS, 16 showed low inconsistency, 26 showed moderate inconsistency, and 16 showed high inconsistency. Of the 36 housing characteristic items measured, 5 showed low inconsistency, 15 showed moderate inconsistency, and 16 showed high inconsistency.<sup>35</sup>

Census 2000 marked the first decennial census in which respondents were asked to indicate “one or more races.” To evaluate responses to race questions and compare the single-race methodology to the multiple-race methodology, the Census Bureau conducted the Census Quality Survey (CQS). The CQS contacted a sample of 55,000 addresses twice; once with “mark one race” instructions and again with “mark one or more races” instructions. Data gathered through the CQS allowed for comparison of the consistency of race responses. The CQS indicated that 40 percent of the non-Hispanic respondents who reported two or more races in Census 2000 also reported two or more races in the initial contact of the CQS. Similarly, 41 percent who reported two or more races in the census also reported two or more races in the recontact of the CQS. In contrast, 97 to 98 percent of those who reported a single race of White, Black, or Asian in Census 2000 reported the same race in the CQS.

## Category C: Data Products

The Census Bureau carried out one formal evaluation on Census 2000 data products. For additional information about the data products and their dissemination, see Chapter 9, “Data Products and Dissemination.” This evaluation examined the effect of the agency’s disclosure-limitation procedure, also called data swapping or confidentiality edit, on the data products.<sup>36</sup> In data swapping, data from households with characteristics at variance with the area’s norm are swapped

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<sup>32</sup> For more information on imputation, see Chapter 6, “Data Capture and Processing.” Item nonresponse refers to whether there is an entry for a data item, regardless of it being an acceptable response. This includes apparent responses that are not valid answers or are inconsistent with other information for the person. In such cases, the entry was not accepted and the item was treated as a blank in the imputation process.

<sup>33</sup> Cases such as noninterviews where all of the 100 percent data items (so called because these questionnaire items are asked of all respondents and at all housing units) are imputed by the replication of data from a household of the same size with fully reported 100 percent data are called “whole household substitutions.”

<sup>34</sup> Assignments and allocations pertain to the imputation of a value for an individual data item when the response is missing or inconsistent with other responses. In “assignments,” the value is determined from other information reported for the person or housing unit. An “allocation” is carried out when an “assignment” cannot be made and uses the reported value from another person in the household or from a nearby housing unit.

<sup>35</sup> Paula J. Schneider, *Content and Data Quality in Census 2000*, Census 2000 Testing, Experimentation, and Evaluation Program Topic Report No. 12, TR-12, March 2004, pp. 18–20.

<sup>36</sup> Phil Steel and Laura Zayatz, “The Effects of the Disclosure Limitation Procedure on Census 2000 Tabular Data Products (Abridged),” Census 2000 Evaluation No. C.1, April 15, 2003.

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with “paired” or “partnered” households in the area to reduce the risk of disclosure. The Census Bureau applied data swapping to tabulations of the edited 100 percent and sample data files to limit the possibility of disclosure of a respondent’s identity. The goal was to minimize the likelihood that an individual respondent’s answers could be identified; the risk cannot be eliminated altogether, unless the Census Bureau were to release no data on small areas. In implementing its disclosure limitation procedure for Census 2000, the Census Bureau strove to achieve the appropriate balance between protecting confidentiality and maintaining data quality.

Analyses of the resultant files indicated that the data swapping procedure was implemented correctly and consistently. For the 100 percent data records: (1) all those identified as having the highest degree of disclosure risk were swapped and (2) in only a small percentage of cells did the cell value change. For the sample data, a small percentage of records were swapped in each state; most records deemed as having a disclosure risk were swapped.

While the data swapping procedure for Census 2000 was successfully implemented, the evaluation noted that the Census Bureau should continue to conduct research on disclosure-limitation techniques.

### **Category D: Partnership and Marketing**

The Census Bureau conducted formal evaluations of the Census 2000 Partnership and Marketing Program (PMP). The PMP evaluations measured the effectiveness of the PMP’s components and attempted to attribute the contributions of each to the relative success of Census 2000. Because the PMP’s contributions could not be measured directly, the analysis strategy relied on a simple behavioral model: attitudes and motivation are a function of the information individuals have about the decennial census. In short, the PMP attempted to convey the right message, at the right time, to impact response to the census.<sup>37</sup>

The evaluation supported the belief of the Census Bureau and the PMP contractor (Young & Rubicam) that awareness and positive attitude toward the census should improve participation and response rates. However, despite the Census Bureau’s best efforts, a direct link between the PMP and improved response rates could not be established.

The PMP evaluations determined that many of the campaign’s initiatives had positive, though difficult to measure, influences on the outcome of Census 2000. These influences included an increased awareness of the census among hard-to-enumerate populations; greater support, participation, and funding for census-related activities by private organizations; and a questionnaire design and mandatory notice on the questionnaire envelope that likely contributed to increased census participation.

In conclusion, the Census Bureau determined that although the impact of the PMP could not be verifiably measured, the fact remained that Census 2000 was much more successful than predicted and more successful than the 1990 census. As a result, the evaluations supported the continuation of a PMP in the spirit of continuous improvement.

### **Category E: Special Places and Group Quarters**

During Census 2000, the Census Bureau used special procedures to enumerate people living in group quarters such as college dormitories, nursing homes, correctional facilities, convents, group homes, migrant-worker dormitories, and emergency and transitional shelters. To document and analyze the effectiveness of these procedures, the Census Bureau conducted three evaluations focusing on group quarters (GQs) and service-based enumeration (SBE).<sup>38</sup>

Conducted between April 1, 2000, and May 6, 2000, the GQ enumeration operation enumerated 7.8 million people living in 192,286 GQs throughout the United States. Of these, colleges and universities, correctional institutions, and nursing homes were the largest special places measured by number and percent of population. In its evaluation of GQ enumeration, the Census Bureau noted

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<sup>37</sup> For more information, see Chapter 4, “The Partnership and Marketing Program.”

<sup>38</sup> Seven evaluations were originally planned for this category, but in 2002, four were canceled due to data limitations.

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that more GQ questionnaires were completed from administrative data than by any other method and about 2.6 percent of all GQ person records required all characteristics to be imputed.<sup>39</sup> For 2010 planning, evaluators recommended expanding research on the use of administrative records, improving the process of creating address lists and the tracking of questionnaires from enumeration to data capture, and tailoring enumeration strategies to each major category of group quarters.<sup>40</sup>

To enumerate selected service locations serving people without conventional housing, the Census Bureau conducted the SBE from March 27 to March 29, 2000, at shelters, soup kitchens, and regularly scheduled mobile food van stops. The operation also included the enumeration of targeted nonsheltered outdoor locations. The Census Bureau's evaluation noted that SBE appeared to be a successful method of including in the census people without conventional housing. SBE accounted for the tabulation of 283,898 people. Of these, 35,121 were included as a result of the Be Counted program. Given that 59.2 percent of the emergency and transitional shelter population reported one or more races other than White, evaluators recommended the use of SBE in 2010 to continue to aid in reducing the differential undercounting of minorities.<sup>41</sup>

### Category F: Address List Development

The evaluation of address list development covered a broad spectrum of activities involved with building address files and the related geographic database, including field operations from which address information and related map updates were gathered. The address list development category included evaluations of the master address file (MAF) and the Topologically Integrated Geographic Encoding and Referencing (TIGER®) database. These evaluations included examination of the completeness and accuracy of address information in the MAF. A variety of census field and local/tribal partner operations were evaluated to measure the impact of each operation on the MAF and on the TIGER database. These operations included, but were not limited to, address listing, block canvassing, update/leave (U/L), list/enumerate (L/E), and multiple cycles of the Local Update of Census Addresses (LUCA) program. Combined, these field operations offered comprehensive address checks in rural and urban areas and were a primary source of address information used for MAF and TIGER enhancement. Additional evaluations focused on the geocoding accuracy of addresses in the census.

The series of operations used to build the address list in mailout/mailback (MO/MB) areas included the use of the 1990 census address list, information from the U.S. Postal Service (USPS), block canvassing, and information from local governments. Subsequent operations, such as non-response follow-up (NRFU), contributed to the completeness of the address list as well.

Areas with mail delivery to predominantly city-style addresses were referred to as “inside the blue line.” Areas with mail delivery to predominantly non-city-style addresses were referred to as “outside the blue line.” These areas were further delineated by specific types of enumeration areas. Different procedures were used to develop the Census 2000 address lists, depending on the designated type of enumeration area (TEA).<sup>42</sup>

**Address listing.** The evaluation of the address listing operation for Census 2000 examined the operation's impact on creating the MAF for certain areas of the country. This evaluation considered the number, geographic location, characteristics, and quality of addresses listed during the operation. Stateside, about 22 million housing units were listed in the address listing operation, and an additional 1.4 million addresses were listed in Puerto Rico.<sup>43</sup>

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<sup>39</sup> See Chapter 5, “Data Collection” and Chapter 6, “Data Capture and Processing,” respectively, for more information on GQ enumeration and processing.

<sup>40</sup> Kimball Jonas, *Group Quarters Enumeration*, Final Report, Census 2000 Evaluation E.5, Revision 1, August 6, 2003, pp. v–vi.

<sup>41</sup> Tracey McNally, *Service-Based Enumeration*, Final Report, Census 2000 Evaluation E.6, November 6, 2002, pp. iv–v.

<sup>42</sup> Frank A. Vitrano, Robin A. Pennington, James B. Treat, *Address List Development in Census 2000*, Census 2000 Topic Report No. 8, TR-8 (Washington, DC: U.S. Census Bureau, 2004).

<sup>43</sup> The Census Bureau conducted the address listing operation from July 1998 to May 1999 and used the results to create the initial address list for areas that would be enumerated using update/leave (U/L) methodology during Census 2000. In the address listing operation, census enumerators identified the mailing address

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Despite address listing occurring in mostly rural areas of the United States, over 73 percent of the units had complete city-style (house number, street name) addresses. About 14 percent of the units had incomplete or no address information, but location descriptions of the units were recorded for over 95 percent of those units. Using both city-style address information and location descriptions enabled enumerators to locate the units on the ground when they delivered the census forms during U/L and other census field operations. The presence of a map spot, a unique identifier for a housing unit within a block on a census map, was also crucial in locating a unit in rural areas. Over 99 percent of the addresses added through address listing (referred to as adds) had map spots.

Addresses eligible for the decennial master address file (DMAF) included those that represented potential residential housing units that were coded to census blocks and had map spots. Over 99 percent of the address listing adds were delivered to the DMAF, and approximately 94 percent of all address listing adds were included in the final Census 2000 counts.

In areas where most mailing addresses were city-style, the Census Bureau created the MAF by combining addresses from the 1990 census address control file with addresses in the USPS delivery sequence file (DSF). Approximately 43 percent of addresses added in address listing matched to addresses that were identified as residential on or before the September 1998 USPS DSF. About 280,000 blocks in U/L areas had all of their addresses match to the DSF. About 14 percent of these blocks had at least one unit listed during the address listing operation.

If a lister could not locate a unit on the ground, the lister was allowed two telephone callbacks to try to collect mailing address information during the address listing operation. In 36 of the approximately 3,000 counties in which address listing was done, three additional personal visit callbacks could be used to obtain address information. These 36 counties were the sites of the 1999 American Community Survey (ACS). The additional callbacks were made to maximize mail response in that survey. It appears that the additional callbacks may have contributed to the success of obtaining additional address information, although not in any significant manner.

Evaluators recommended that the Census Bureau reassess its methodology of delineating MO/MB versus U/L areas and noted that it may be reasonable in some Census 2000 U/L enumeration areas to use the DSF as a tool for building the address list.<sup>44</sup>

**Local Update of Census Addresses 98 (LUCA 98).** The Census Bureau conducted the LUCA 98 program in MO/MB areas from May 1998 to June 2000. The Census Bureau invited local and tribal governments to participate. Those who participated were sent lists of housing units in the census blocks of their areas. The address list for LUCA 98 included addresses from various MAF sources (including the 1990 address control file), two USPS DSF deliveries, and the block canvassing operation. There were approximately 81.5 million addresses from these sources on the MAF that were eligible for review in LUCA. Governments updated the lists by adding, deleting, or correcting addresses. The Census Bureau then verified most of those updates.

Of the 17,424 governmental units eligible, 9,263 governments participated in LUCA 98. The housing units in these jurisdictions geographically covered approximately 92 percent of the housing units in all areas eligible for LUCA 98. Although about half of all eligible governments participated, a little more than a third provided updates in the form of adds, deletes, or corrections. Such a level of participation indicates that the Census Bureau should investigate ways to increase government participation, especially focusing on ways to aid governmental units in providing updates.

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and physical location of addresses in areas where the Census Bureau believed problems were likely with developing an accurate mailing list and delivering census questionnaires through the mail. The enumerators also located each housing unit with a map spot on a block map and collected an occupant name and telephone number, when possible. All of Puerto Rico was canvassed during the address listing operation and was enumerated using U/L methodology. For more information on address listing, see Chapter 8, "Addresses and Questionnaire Printing and Mailing."

<sup>44</sup> Megan C. Ruhnke, "The Address Listing Operation and Its Impact on the Master Address File, Final Report," Census 2000 Evaluation F.2, January 30, 2002.

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The evaluation concluded that smaller governments (as determined by the number of housing units in a government's jurisdiction in 1990) generally had lower participation rates than larger ones and that participation may have been hindered by insufficient resources or by assumptions that larger nearby governments were already updating addresses for the Census Bureau.

In total, LUCA 98 participants added 5,302,094 addresses to the MAF (a 6.5 percent increase in housing units in MO/MB enumeration areas), deleted (or declared nonresidential) 490,613 addresses, and corrected 2,762,050 addresses. Participating governments appealed 313,853 addresses. Approximately 505,530 addresses in Census 2000 were solely provided by LUCA 98.<sup>45</sup>

**Block canvassing.** The block canvassing operation was one of the largest operations the Census Bureau conducted to update the MAF in preparation for Census 2000. The Census Bureau conducted the operation in winter/spring 1999 and required field listers to conduct a 100 percent canvass of residential addresses in areas containing predominantly city-style addresses. Results from block canvassing were used to assign each housing unit to one of six basic action-code categories: verify, add, delete, address corrected, geographic corrections, and add and verify.

Block canvassing listers added 6,389,271 addresses to their listing pages and deleted 5,146,320 addresses. Around 78 percent of the added units were valid housing units in Census 2000, and almost 24 percent of the deleted addresses were later enumerated as housing units in the census. About 96 percent of the addresses coded as existing by block canvassing ended up as valid housing units in the census. Also, 96 percent of all addresses sent to block canvassing to be verified showed consistent results between block canvassing and the census.

Although a relatively large number of block canvassing adds and deletes turned out to be inconsistent with final census results, the consistency between block canvassing and the census, as a whole, appeared to be relatively good. Not only did block canvassing improve the coverage of addresses on the MAF, but it also improved the geocoding of MAF addresses. Block canvassing played a significant role in correcting unit designations in multiunit basic street addresses. If the block canvassing listers had not checked individual addresses within multiunits, but only verified the number of units at the multiunits, the MAF would not have had this added improvement.<sup>46</sup>

**Local Update of Census Addresses 99 (LUCA 99).** The Census Bureau conducted the LUCA 99 program in U/L and update/enumerate (U/E) areas from January 1999 to June 2000. Of the 30,375 functioning governmental units eligible to participate in the LUCA 99 program, 10,925 participated. Approximately 23,227,788 addresses from address listing (in the United States and Puerto Rico) were geocoded with a map spot and eligible for review in LUCA 99. The Census Bureau sent 2,186,765 addresses out for review to participating governments in the stateside LUCA 99 Recanvass operation. Field representatives verified that about 76 percent existed as residential units. They deleted approximately 6 percent of the addresses, determined that less than two-tenths of a percent were nonresidential, and made corrections to the remaining 18 percent of addresses on their lists.

The Census Bureau sent a total of 35,563 addresses out for review in Puerto Rico. Field representatives verified that about 93 percent of them existed as residential units. They deleted approximately 7 percent, and determined that less than one-tenth of a percent were nonresidential. There were no corrected addresses in Puerto Rico.

Field representatives for the LUCA 99 Recanvass updated the address list and added any unit that existed as a residential unit in the block, but was not already on the list. The 328,174 added addresses represented a 15 percent increase in housing units in U/L enumeration areas in the United States (excluding Puerto Rico) that were recanvassed. Field representatives added 9,874 addresses in Puerto Rico, about a 28 percent increase in housing units in areas that were recanvassed. Approximately 99.5 percent of LUCA 99 Recanvass adds in the United States and Puerto Rico were included on the initial census address list. About 85.2 percent of those adds were in the final census housing-unit inventory.

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<sup>45</sup> Karen L. Owens, "Evaluation of the Local Update of Census Addresses 98 (LUCA 98), Final Report" Census 2000 Evaluation F.3, April 16, 2003.

<sup>46</sup> Joseph A. Burcham, "Block Canvassing Operation," Census 2000 Evaluation F.5, April 5, 2002.

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LUCA 99 Recanvass field representatives deleted (or declared nonresidential) 145,378 addresses in the United States and 2,543 addresses in Puerto Rico. They corrected 388,838 addresses in the United States and Puerto Rico.

After receiving feedback from the Census Bureau, participating local governments could appeal specific addresses. Participants appealed 18,442 addresses. Approximately 54 percent (10,053) of the addresses appealed by local governments were included on the final census address list.

As a result of LUCA 99, evaluators recommended that the Census Bureau continue to pursue LUCA-type programs in non-city-style address areas for future censuses and tests, and that the Census Bureau should investigate ways to increase government participation in LUCA programs.<sup>47</sup>

**Update/leave (U/L).** The Census Bureau used U/L in areas with some addresses that were not city-style. In the U/L operation, enumerators hand-delivered questionnaires with preprinted address labels to every housing unit on the U/L address list. Any existing housing unit that was not listed on the address register also required a questionnaire. In such cases, the questionnaire was hand-addressed and hand-delivered to the housing unit, and the housing unit's address added to the address register. Staff also made other updates to the address list and to the maps during the U/L operation.<sup>48</sup> The U/L evaluation assessed the effectiveness and value of the operation to the census-taking process.

The U/L operation included 23,525,257 addresses stateside and 1,471,225 in Puerto Rico. These numbers represent any address that had either a labeled questionnaire or a hand-addressed questionnaire. Questionnaires were to be distributed to all housing units appearing in U/L areas. Some of the addresses on the U/L address list were deleted as nonexistent or nonresidential in the U/L operation, and the labeled questionnaires were not delivered.

Stateside U/L operations added 1,644,174 addresses, while 111,787 addresses were added during U/L in Puerto Rico. The number of corrections in stateside areas was 9,045,814, with 751,156 in Puerto Rico. Not every address added in the U/L operation was included in the census. Some records were not included because they did not contain sufficient address information for adding to the address list or data sufficient to be assigned to a block. Other added records were found in subsequent operations to represent housing units that did not exist in the designated block, either because the unit was nonexistent or because the unit existed in another block. Of the 1,644,174 U/L adds in the United States, 85.2 percent were in the final census counts. In Puerto Rico, 83.7 percent of the 111,787 added addresses were included in the counts.<sup>49</sup>

**Urban update/leave (UU/L).** The Census Bureau conducted the UU/L operation from March 3 to March 31, 2000. The objective of the operation was to improve coverage by improving the deliverability of questionnaires and updating address information and census maps. The UU/L operation targeted areas deemed unsuitable for MO/MB, which included multiunit buildings where the USPS delivered the mail to drop points instead of individual unit designations and urban communities where, despite the existence of city-style addresses, many residents picked up their mail at post office boxes. The UU/L operation relied on authorities in the local regions to identify areas based on their knowledge of whether the USPS could adequately deliver the census questionnaires.<sup>50</sup>

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<sup>47</sup> Karen L. Owens, "Evaluation of the Local Update of Census Addresses 99 (LUCA 99), Final Report," Census 2000 Evaluation F.6, May 14, 2002.

<sup>48</sup> Non-city-style addresses, such as rural route and box or post office box, are often not linked to the physical location of the housing unit. When there is only a location description for a unit but no address, mail delivery of the questionnaire is not a possibility. U/L areas were primarily rural, but not too remote or sparsely populated. Designation of U/L areas was made by block. In Puerto Rico, U/L was the sole enumeration method. For more information on U/L, see Chapter 5, "Data Collection" and for information on U/L in Puerto Rico, see Chapter 12, "Puerto Rico and the Island Areas."

<sup>49</sup> Robin A. Pennington, "Evaluation of the Update/Leave Operation, Final Report," Census 2000 Evaluation No. F.10, June 6, 2003.

<sup>50</sup> In UU/L areas, enumerators delivered the census questionnaires and updated address registers and census maps, concurrently. Residents were asked to complete and mail back their census questionnaires. Eight regions participated in UU/L: Atlanta, Boston, Chicago, Dallas, Denver, Detroit, Philadelphia, and Seattle. Twelve states and Washington, DC, had UU/L areas. Nationwide, 12,843 blocks were covered by urban U/L. Almost 60 percent of these blocks contained housing units. The MAF had 314,059 residential addresses in

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UU/L contributed to the success of Census 2000 by improving the address list and successfully targeting hard-to-enumerate areas. Of the 267,005 addresses in the address registers, 18.1 percent were updated. There were 13,131 additions during questionnaire delivery, a 4.9 percent increase to the addresses printed in the address registers.

For 2,114 blocks, 75 percent or fewer of the housing units in the block matched the DSF. These blocks contained 15.3 percent of the housing units in UU/L areas. Such blocks would presumably present mail delivery challenges for the USPS.

Less than 1 percent of UU/L housing units were drop-delivery; that is, mail delivered to a central location instead of to individual units of a multiunit structure. While these addresses were included in UU/L, they did not make up a large proportion of the UU/L housing units in the census. Furthermore, the variable used to identify drop-delivery status was not robust.

Matching the Census 2000 tracts to the planning database, 189,045 addresses, or 79.4 percent of the UU/L housing units in the census, were in census tracts that could be matched between the 1990 census and Census 2000.<sup>51</sup> Close to one-quarter of the housing units in the census with hard-to-count scores were in the hardest hard-to-count class.

Persons under 18 years old, African Americans, and renters were over-represented in UU/L areas as compared to the nation. These traditionally undercounted persons were enumerated by mail at lower percentages than the average household or persons in UU/L areas.<sup>52</sup>

**Update/enumerate (U/E).** The U/E method targeted communities with special enumeration needs and areas where most housing units may not have had house-number and street-name mailing addresses between March 13 and June 5, 2000. These included resort areas with high concentrations of seasonally vacant housing units, selected American Indian reservations, and colonias.<sup>53</sup> This evaluation examined the extent of address updating, descriptive statistics of the addresses, demographic characteristics of the households and people living in U/E areas, and timing and cost of the operation.

The U/E operation improved the address list and demonstrated that areas suited to field enumeration were identified. Of the 926,861 U/E addresses in the address registers, 37.2 percent were updated. Corrections (change in the address), which were the most frequent updates, were made to 284,127 addresses. The remainder of the updates were nearly all deletions. There were 129,692 U/E additions during field enumeration, a 14.0 percent increase to the addresses printed in the address registers.

For 71.9 percent of blocks, no more than 25 percent of the housing units in a block matched the DSF. These blocks contained 60.6 percent of the U/E housing units. Such blocks would presumably present mail delivery challenges. Of the addresses in the census, 15.2 percent had no address information; that is, the housing unit was missing the house number, street name, rural route, or post office box information.

Using the planning database in a similar way as described above in the “Urban update/leave” section, the Census Bureau matched the Census 2000 tracts to the planning database and found that 59.2 percent of the U/E addresses in the census were in tracts that matched. The matching indicated that about one-quarter of the addresses were in the top three hard-to-count classes, but few

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UU/L blocks. After removing known duplicates, there were 310,114 addresses. Of the 310,114 addresses, 280,086 addresses, or 90.3 percent, were delivered to the DMAF. Ultimately, 238,216 addresses, or 85.1 percent of the DMAF addresses, were enumerated in the census as either occupied or vacant housing units. For more information on UU/L, see Chapter 5 (“Data Collection”).

<sup>51</sup> The planning database provided a 1990 census tract-level hard-to-count score, a composite measure of characteristics correlated with success in counting people. Evaluators classified each hard-to-count score into one of ten hard-to-count classes.

<sup>52</sup> Miriam Rosenthal, “Urban Update/Leave, Final Report,” Census 2000 Evaluation F.11, October 3, 2002.

<sup>53</sup> In U/E areas, enumerators updated their address registers and census maps and enumerated the housing unit at the time of their visit. LCOs, using general guidelines, designated areas for U/E. Every regional census center (RCC) except Detroit had areas enumerated using the U/E methodology. Thirty-five states had U/E areas. Nationwide, 183,889 blocks were covered by U/E and 75,827 of these blocks (41.2 percent) contained housing units. The MAF had 1,169,090 residential addresses in U/E blocks, after removing known duplicates. Of the 1,169,090 addresses, 90.4 percent were delivered to the DMAF. Ultimately, 956,214 U/E addresses (90.5 percent of the DMAF addresses) were enumerated in the census as either occupied or vacant housing units. For more information on U/E, see Chapter 5, “Data Collection.”

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addresses (0.6 percent) were in the bottom two hard-to-count classes; thus, U/E was not limited to the most difficult hard-to-count classes. These results show that the Census Bureau followed the 1995 Census Test recommendation not to target U/E based on hard-to-enumerate criteria.

The average household size in U/E areas was 2.9 persons, compared to 2.6 persons nationally. The U/E vacancy rate of 38.7 percent was higher than the national vacancy rate of 9.0 percent. Most vacants were seasonal vacants. Of occupied housing units, 76.1 percent were owned, compared to 66.2 percent nationally. Of persons, 49.6 percent were male, compared to 49.1 percent nationally; 31.9 percent were under 18 years old, compared to 25.7 percent nationally; 23.6 percent were Hispanic, compared to 12.5 percent nationally; 1.5 percent were African American, compared to 12.3 percent nationally; and 27.7 percent were American Indian/Alaska Native, compared to 0.9 percent nationally.<sup>54</sup>

**List/enumerate (L/E).** List/enumerate (L/E) was an operation used in sparsely populated areas of the country during Census 2000. Census enumerators canvassed assigned areas and were given census maps for these areas. The enumerators listed addresses within their areas on blank address register pages, located the addresses on census maps (map spotting), and for each address conducted an interview to collect census information. The operation, which included reinterview and field follow-up components, was carried out from mid-March 2000 to the beginning of July 2000.

L/E added 392,368 addresses nationwide to the MAF. Of these addresses, 391,276 met the eligibility criteria to be in the census. This is about 99.7 percent of all added L/E addresses. Of the addresses eligible to be in the census, 389,749 were actually included in the final census count. This represents 99.6 percent of the eligible L/E addresses and 99.3 percent of all added L/E addresses.

A total of 47,927 blocks had at least one L/E address. Of these blocks, 4.7 percent had all of their addresses recognized by the USPS. This indicates that these blocks could have possibly been converted to the MO/MB enumeration methodology. These blocks contained 1.4 percent of the addresses added during L/E.<sup>55</sup>

**An assessment of addresses on the MAF “missing” in the census or geocoded to the wrong collection block.** One of the outcomes of the Accuracy and Coverage Evaluation (A.C.E.) was a representative sample of addresses that were coded as “missing” from the census. This evaluation conducted additional research to better understand these “missing” addresses and to examine the reasons for their status of “missing” after the A.C.E. final housing unit work was completed.<sup>56</sup> One of the reasons the A.C.E. coded addresses as “missing” from the census was that the addresses were incorrectly geocoded in the census to a collection block outside of the scope of the A.C.E.’s geographic search area. Thus, evaluators tried to match the addresses coded as “missing” to all nonduplicate housing units on the MAF, which included a larger geographic search area than the one used by the A.C.E. Evaluators also searched for matches in the tract that included each address and in all surrounding tracts. The main focus in understanding these “missing” addresses was to determine if they were actually included in the census as housing units, but were incorrectly geocoded to a collection block outside of the A.C.E. geographic search area. Given that matching was not limited to census addresses, but included all nonduplicate housing units on the MAF, evaluators were able to examine addresses that were on the MAF or the DMAF but were excluded from the census.

About 8,900 of the sample units coded as “missing” by the A.C.E. were matched to units on the MAF during this evaluation. About 4,800 of them were matched to addresses that were included in Census 2000. Of those census matches, about 3,100 were geocoded in error in the census to a collection block that was different than the block provided by the A.C.E. The other 1,700 units were matched to census addresses that were geocoded to the same block as the A.C.E. “missing” addresses.

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<sup>54</sup> Miriam Rosenthal, “Update/Enumerate: Final Report,” Census 2000 Evaluation No. F.12, December 10, 2002.

<sup>55</sup> Kevin J. Zajac, “List/Enumerate: Final Report,” Census 2000 Evaluation No. F.13, May 23, 2002.

<sup>56</sup> Megan C. Ruhnke, “An Assessment of Addresses on the Master Address File ‘Missing’ in the Census or Geocoded to the Wrong Collection Block,” Census 2000 Evaluation No. F.15, August 19, 2003.



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There are two primary reasons that these census units were not included in the census address list used for the A.C.E. address matching. The first reason is that some of these units were identified as potential duplicates during the Census 2000 housing unit unduplication operations and were therefore kept out of the A.C.E. final housing unit matching operation. About 78 percent of the matches to in-census units in the same block were potential duplicates that ultimately were reinstated in the census. The remaining 22 percent of the in-census matches to A.C.E. “missing” units in the same block were not reinstated duplicates. A reason that these units were excluded from the address list used for the A.C.E. address matching is that they were not geocoded to an A.C.E. sample block at the time of the final housing unit matching, but were moved into an A.C.E. sample block in time for evaluation work.

Of the approximately 8,900 sample addresses coded as “missing” by the A.C.E. that matched to the MAF in this evaluation, about 4,000 were not included in Census 2000. That is, these units were listed and confirmed as good, residential addresses during the A.C.E., but the Census Bureau’s rules for creating the DMAF and the 100 percent census unedited file excluded them from the census. Those units represent a weighted estimate of 1.3 million units coded as erroneously excluded from the census as measured by the A.C.E. and this evaluation.

About 28 percent of the cases coded as erroneously excluded units were never delivered to the DMAF. The Census Bureau’s rules for developing the Census 2000 address frame provided a number of reasons units on the MAF would have not been sent to the DMAF. One of the reasons a unit would not be included on the DMAF was its coding by the USPS as nonresidential on the DSF. The Census Bureau excluded those addresses from the original census address list to avoid the imprudence of mailing questionnaires to all nonresidential addresses. The Census Bureau relied on field listing operations to add those units that were actually residential by Census Bureau definitions.

About 49 percent of the cases coded as erroneously excluded units were on the DMAF, but were deleted during the “kill process.” The goal of the kill process was to identify units that were most likely bad addresses (for example, a unit for which no census form was received and that was deleted in both the NRFU and coverage improvement follow-up [CIFU] operations) and remove them from the census.

About 22 percent of the cases coded as erroneously deleted units were on the DMAF but were determined to be potential duplicates during the housing unit unduplication operation through address- and person-matching algorithms. The Census Bureau ultimately decided to exclude those units from Census 2000. The amount of erroneous deletions from the unduplication operation as measured in this evaluation is potentially overstated. This comes from the fact that the A.C.E. may have coded a unit as missing from the census, when the unit was actually included in the census with a different form of the address. The unduplication operation may have recognized the duplication but removed the version of the address that the A.C.E. listed.

The estimated percentage of census addresses that were geocoded to the incorrect Census 2000 collection block was 4.8 percent (standard error of 0.3 percent). The estimated percentage of geocoding error in the census was significantly higher in MO/MB enumeration areas (5.5 percent) than in U/L (1.7 percent) or L/E areas (1.2 percent).

Geocoding error was more prevalent among housing units in multiunit structures. Housing units in both small and large multiunit structures had a significantly higher geocoding error estimate than single units or housing units in two-unit structures. Additionally, large multiunits (housing units in structures with ten or more units) had a significantly higher geocoding error estimate than small multiunits (housing units in structures with three to nine units). The geocoding error estimate for both single housing units and two-unit structures was about 3 percent, for small multiunit structures about 5 percent, and for large multiunit structures, about 11 percent. Geocoding errors were expected to be higher for units in multiunit structures because geocoding error is a structure-based problem. Geocoding the structure to the wrong block causes every unit in that structure to be geocoded to the wrong block. The larger the structure, the larger the number of geocoding error cases if the structure is geocoded to the incorrect block.

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Geocoding error of census addresses was less frequent in certain regions of the country. The geocoding error estimate for the Midwest (3.8 percent) was significantly lower than the geocoding error estimate for the South (5.7 percent). There were no other significant differences. Geocoding error estimates also differed for some of the regional offices (ROs). The Boston and Kansas City ROs both had significantly lower geocoding error estimates than the national estimate of 4.8 percent.

**Evaluation of the block splitting operation for tabulation purposes.** The evaluation of the block splitting operation for tabulation purposes measured the percent of the country affected by collection blocks that were split for tabulation purposes and the accuracy of that block splitting.<sup>57</sup> Collection blocks, geographic areas that are usually defined by visible features, were used by the Census Bureau to conduct field operations. Often, collection blocks crossed governmental unit boundaries, such as city and town or other required data tabulation boundaries.

At the end of Census 2000, the Census Bureau redefined census collection blocks for tabulation of census data by recognizing the boundaries of governmental units and other geographic entities. One of the steps needed to achieve this involved using an automated system to split collection blocks in certain situations. This block splitting process was based on address ranges and map spot information in the TIGER database. To evaluate the block splitting process, evaluators selected a sample of 1,000 collection blocks for field verification that had at least one tabulation boundary that split the block. Field representatives determined whether the housing units in these blocks were allocated to the correct side or the wrong side of each tabulation boundary.

About 916,000 blocks out of the 5.1 million blocks in the country were split for tabulation purposes. A total of 282,457 blocks formed the sampling universe used to evaluate the block splitting process. The 633,337 split blocks excluded from the sampling universe were either located in remote Alaska or in Puerto Rico, or were split by the boundaries of special-purpose governmental or administrative entities such as school districts, split by the boundaries of statistical entities, or contained no housing units or group quarters. Remote Alaska and Puerto Rico were excluded from the evaluation to minimize cost. Boundaries of special-purpose governmental, administrative, and statistical entities were excluded because this evaluation relied on the knowledge of residents of the block, and they would not necessarily know where these types of boundaries existed in their blocks. Split blocks that contained no housing units or group quarters were excluded because the purpose of the evaluation was to measure the error associated with placing housing units and group quarters in the wrong tabulation block. The estimated number of blocks that fell into each of these categories was not available, but the sum total was 633,337 blocks. A little more than 10 percent of the 115.5 million housing units in the country were located in the split collection blocks in the sampling universe.

Results showed that over 26 percent of these split collection blocks in the sampling universe contained at least one housing unit allocated to the wrong side of the tabulation boundary. Although this percentage was high, split collection blocks with at least one housing unit allocated to the wrong side of a tabulation boundary represented less than 2 percent of the collection blocks in the country. This meant that of the 12 million housing units in the split collection blocks in the sampling universe, 3.65 percent were allocated to the wrong side of a tabulation boundary. These errors represented 0.37 percent of the housing units in the country. For the group quarters in the sample, none were allocated to the wrong side of a tabulation boundary. Although the estimate of the number of group quarters allocated to the wrong side of a tabulation boundary was zero, the Census Bureau could not conclude that no group quarters were in error throughout the country. The preliminary August 2002 results from an administrative program in which the Census Bureau received input from local governmental entities showed that 1,867 group quarters in the country were in fact allocated to the wrong side of a tabulation boundary. This is less than 1 percent of all group quarters.

For this evaluation, collection blocks were categorized in the MO/MB, UU/L, and urban UU/E enumeration areas as “inside the blue line.” The term “inside the blue line” refers to areas where almost all mail delivery was to city-style addresses. Except for Remote Alaska, all other types of

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<sup>57</sup> Somonica Green and Cindy Rothhaas, “Evaluation of the Block Splitting Operation for Tabulation Purposes: Final Report,” Census 2000 Evaluation No. F.16, Revision 1, April 7, 2004.

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enumeration areas were categorized as “outside the blue line.” This term refers to areas where mail delivery was to non-city-style addresses. A mixture of city-style and non-city-style addresses occurred in some types of enumeration areas, especially those “outside the blue line.”

For the housing units affected by block splitting, the percent in error for enumeration areas “inside the blue line” was comparable to the percent in error for enumeration areas “outside the blue line.” For housing units affected by block splitting, fewer than 4 percent of the 11.1 million housing units with city-style addresses and fewer than 3.5 percent of the 773,000 housing units with non-city-style addresses were allocated to the wrong side of a tabulation boundary. The percent in error for both address types in the country was the same (0.37 percent).

### **Category G: Field Recruiting and Management**

Following Census 2000, the United States Census Bureau contracted Westat to conduct an evaluation of its recruiting and management performance at 519 of 520 local census offices (LCOs). As part of its study, the evaluation reviewed pay (relative to local pay), recruiting goals, area characteristics, and managerial turnover in an attempt to identify deficiencies and potential corrective measures.

To perform the evaluation, Westat compared the LCOs in February 2000, when the majority of LCOs had reached recruitment goals, to April 2000. Individual LCOs were categorized by performance, retention, and workload, as well as certain LCO area characteristics. Through regression analysis, Westat drew conclusions about LCO recruiting and management.

Westat’s evaluation showed considerable variation in recruiting performance across LCOs; however, despite expectations, the LCOs substantially exceeded recruiting goals. The key to LCO recruiting success was largely attributed to enumerator pay and LCO management.

Management turnover, including resignations, termination for cause, or leaving for any other reason, during the recruiting period was associated with about a 12 percent reduction in the number of recruits. Such reductions would likely be avoided if management issues are resolved quickly and existing managers are trained and supported to respond to unanticipated challenges.

Finally, Westat noted that the variations in recruiting performance could usually be balanced by redistributing resources, including the hiring of recruiting assistants and use of special mailings to areas where goals were not being met. However, Westat noted that even among those LCOs that failed to meet recruiting goals, only five fell substantially below 70 percent of their goals and that every LCO had at least 3.25 applicants for each enumerator position to be filled.

### **Category H: Field Operations**

During Census 2000, the Census Bureau conducted a variety of field operations designed to curb problems with questionnaire delivery and enumeration and to obtain census data from individuals who had not responded to the census by April 18, 2000. The seven evaluations in this category assessed the effectiveness of field data collection operations, including field verification, nonresponse follow-up, Questionnaire Assistance Centers, and the first use of U/L enumeration in Puerto Rico.<sup>58</sup> Analyses in this category also examined efforts to use special enumeration methods, such as blitz enumeration and team enumeration, and the use of local facilitators to count populations considered hard to enumerate.

The field verification operation sent enumerators to visit the locations of units without a confirmed census address (that is, addresses without an assigned census identification number) to verify their existence before Census 2000 included the addresses. Such non-ID responses came from the Be Counted program, Telephone Questionnaire Assistance, service-based enumeration, group quarters enumeration, military/maritime crews of vessels enumeration, military enumerations, and in-movers/whole-households programs. During Census 2000, 884,896 cases were sent to field verification. Of these, enumerators coded 51 percent of the assigned addresses as valid

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<sup>58</sup> For more information on the enumeration in Puerto Rico, see Chapter 12, “Puerto Rico and the Island Areas.”

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living quarters, 35 percent as nonexistent, and 14 percent as duplicates. Overall, 49.2 percent of the addresses without a confirmed census address (non-ID cases) were coded as valid census addresses, and 52.9 percent of the addresses deleted in two or more previous operations (double deletes) for which the Census Bureau received a return were coded as valid addresses. Evaluators noted that while the field verification operation provided useful information for the overall census address files, further research into the source of census duplicates and the impact of additional response methods would prove beneficial to 2010 Census field verification planning efforts.<sup>59</sup>

The Census Bureau conducted nonresponse follow-up (NRFU) in mailback areas between April 27 and June 26, 2000, to obtain completed questionnaires from households that had not responded by mail, through the Internet, or by Telephone Questionnaire Assistance. Evaluators observed that of the 26.4 million occupied housing units in the NRFU universe, 0.4 percent had no population count. Approximately 4.2 million housing units were enumerated multiple times, mostly through NRFU and by a paper mail-return questionnaire. Additionally, some housing units had an unrealistically large number of continuation forms (as many as 99) attached. Evaluators recommended more stringent real-time monitoring of the NRFU workload to reduce the number of cases with unknown population counts or lost returns. They also recommended periodically removing from the NRFU workload addresses for which questionnaires had been returned late to reduce multiple data captures; implementing a sufficient quality assurance program to ensure the accuracy of NRFU production files; and using proper enumeration techniques to prevent the need for recounts.<sup>60</sup>

For Census 2000, a total of 23,556 Questionnaire Assistance Centers (QACs) were established. Approximately 60 percent of these centers collected information. Of the respondents who needed assistance, most asked for help in completing the short form.<sup>61</sup>

### Category I: Coverage Improvement

The coverage improvement evaluations examined various Census 2000 operations designed to improve the coverage of both housing units and people in the census. Following the mailback efforts to complete the census, the Census Bureau conducted a series of operations to ensure that people were counted at their correct Census Day address, to confirm the status of housing units that were deleted or enumerated as vacant, and to ensure the inclusion of all people in a household when the returned form showed discrepancies in the number of people enumerated. These operations included coverage edit follow-up (CEFU), follow-up of specific cases enumerated during nonresponse follow-up (NRFU), and coverage improvement follow-up (CIFU).

Designed to increase within-household coverage and improve data quality, CEFU resolved 2,544,072 cases. Of these, 55 percent required follow-up for large-household cases, and the remaining were count-discrepancy cases. This operation resulted in a net loss of 105,199 people compared to the originally completed Census 2000 self-response forms. Although the net change to the census was a decrease in population, the accuracy of Census 2000 was improved.<sup>62</sup>

Evaluators also assessed the whole household usual home elsewhere (WHUHE) and mover probe questions used during NRFU. The WHUHE probe, designed to improve questionnaire coverage, was used to determine if all members of a household on the day of the interview had another residence where they lived most of the time. During NRFU, enumerators completed a total of 151,775 questionnaires for WHUHE households to help determine usual place of residence. Of these returns, 58,027 matched to an existing address on the DMAF; 55,286 were geocoded but did not match to an existing address; and 38,462 could not be geocoded or matched to an existing address. About 29,300 people were not enumerated by other operations and were added to the

<sup>59</sup> Michael Tenebaum, "Assessment of Field Verification: Final Report," Census 2000 Evaluation No. H.2, July 24, 2001.

<sup>60</sup> Darlene A. Moul, "Nonresponse Follow-up for Census 2000," Census 2000 Evaluation No. H.5, July 25, 2002, pp. vi–vii.

<sup>61</sup> John Jones and Diane F. Barrett, "Questionnaire Assistance Centers for Census 2000: Final Report," Census 2000 Evaluation No. H.4, June 25, 2003, pp. ii–iv.

<sup>62</sup> Dave Sheppard, "Coverage Edit Follow-up: Final Report," Census 2000 Evaluation No. I.1, July 29, 2003.

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census by the WHUHE probe. The mover probe on questionnaires used in NRFU allowed enumerators to identify households that moved into the housing unit after April 1, 2000, and did not return a census questionnaire for their Census Day address. Of the 105,480,101 occupied housing units enumerated in Census 2000, 22,850 (0.02 percent of the total U.S. occupied housing unit count) would not have been enumerated without the mover probe.<sup>63</sup>

The CIFU operation was designed to improve coverage of housing units in the MO/MB, U/L, and UU/L areas. The workload (including Puerto Rico) consisted of 8,854,304 housing units, most of which were classified as vacant or delete in NRFU. As a result of CIFU, approximately 21.9 percent of the vacant units were converted to occupied. These converted units resulted in a net gain of approximately 3.1 million people. Approximately 18.1 percent of the deletes were converted to vacant.<sup>64</sup>

## Category J: Ethnographic Studies

**Comparative ethnographic research on mobile populations.** Given the prominence of residential mobility in the United States, mobile groups present special enumeration challenges to the Census Bureau. Some Americans have unstable living conditions due to economic factors (for example, unemployment, low income, and/or high rent), while others choose a life of mobility, traveling for business or pleasure. As part of the Census 2000 Testing, Experimentation, and Evaluation program, the Census Bureau commissioned four ethnographic studies of selected mobile populations to gain insights into the characteristics and behaviors that made such groups difficult to enumerate and to provide suggestions for how best to tailor enumeration methods to address these difficulties.

Chosen primarily for their excessive mobility, the groups examined in these studies included urban gang members, Irish Travelers in Mississippi and Georgia, Arizona Snowbirds, and American Indians in the San Francisco Bay area. In addition to their mobility, each group exhibited characteristics that made the members hard to enumerate using traditional methods. Gang members often do not have a place of their own and frequently stay with a variety of different people. They also have a strong aversion to the government, making them less likely to participate in the census. Irish Travelers are historically nomadic people who have more recently settled into permanent communities. Their use of aliases, suspicion of outsiders, and tendency to change living location on a regular basis made them particularly difficult to enumerate. Arizona Snowbirds are seasonal residents in the Sunbelt who typically travel and camp during the winter months in the southwestern United States or travel year-round in recreational vehicles (RVs). Given that most maintain a permanent residence elsewhere, establishing residency status for this population according to census residence rules can be problematic. Lastly, American Indians living in the urban San Francisco Bay area have households that are often fluid in composition, and unlike their counterparts on reservations, urban American Indians tend not to be geographically concentrated. While many are homeless, others choose to live a mobile life either for work or pleasure.

Through interviews and observations, these studies identified several barriers to enumeration common among these groups. Residential mobility often made residents hard to contact using traditional enumeration methods. Such mobility and, in some cases, irregular household arrangements, made it difficult for many individuals to provide a specific place of residence using the residence rules presented on the form. Another barrier to enumeration stemmed from a broad sense of distrust in government agencies. Many in these groups feared that information provided to the Census Bureau would not be kept confidential. For those engaged in illegal or unconventional activities, this prompted a reluctance to divulge any information for fear that doing so might result in some penalty or prosecution if the information fell into the wrong hands. Irregular and complex household arrangements made it unclear to respondents whom they should classify

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<sup>63</sup> Mark A. Viator and Nicholas Alberti, "Evaluation of Nonresponse Follow-up—Whole Household Usual Home Elsewhere Probe: Final Report," Census 2000 Evaluation No. I.2, February 20, 2003, pp. 4–5; and Don Keathley, "Evaluation of Nonresponse Follow-up—Mover Probe: Final Report," Census 2000 Evaluation No. I.3, March 29, 2004, pp. 4–5.

<sup>64</sup> Darlene A. Moul, "Coverage Improvement Follow-up: Final Report," Census 2000 Evaluation No. I.4, May 9, 2003.

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as a household member. Disinterest also presented challenges to enumeration efforts. For many in these groups, the Census Bureau's outreach efforts had little impact. Residents either were not exposed to the campaign or chose not to believe the claims made in it.<sup>65</sup>

To overcome some of these barriers to enumeration, ethnographers recommended strategies to tailor outreach and enumeration methods to these groups. Researchers encouraged the continued and increased use of community-based organizations and direct outreach to hard-to-enumerate populations in order to increase awareness of the census and its value to the community. Also recommended were the continued and extended use of nontraditional enumeration sites such as RV sites, parks, community centers, service organizations, and so on to provide mobile populations opportunities to participate in the census.<sup>66</sup>

**Ethnographic social network tracing of highly mobile people.** To learn more about how residential mobility impacts census coverage and accuracy, researchers traced the social networks of six groups of highly mobile people using participant-observation methods. The groups participating in these studies included:

- Survival campers who lived out of their vehicles and tents and moved among campgrounds and public parking areas every few days or weeks.<sup>67</sup>
- Seasonal workers who circulated among an average of three term-assignments at different distant work sites.<sup>68</sup>
- A folkloric dance group made up of Mexican former farm workers and their families settling in the rural Midwest.<sup>69</sup>
- Older Haitian seasonal agricultural workers in the South.<sup>70</sup>
- Commercial fishermen on the Atlantic coast.<sup>71</sup>
- A local chapter of an American Indian men's society.<sup>72</sup>

This observation period began before Census Day and lasted for 6 months. During this time, ethnographers identified and characterized participants and traced their moves among domiciles and sets of coresidents. Ethnographers reported which participants interacted with each other, noted the addresses, locations, and types of domiciles they occupied, and identified and characterized the participants' coresidents. Researchers located the domiciles reported in census geography and on the master address file, and they used person level address records collected at and near the domiciles where participants were traced in order to match records to participants or their reported coresidents.

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<sup>65</sup> Jennifer Hunter, Manuel de la Puente, and Matt Salo, "Comparative Ethnographic Research on Mobile Populations: Final Report," Census 2000 Evaluation No. J.3, September 11, 2003, pp. iii–2.

<sup>66</sup> For more information on nontraditional enumeration sites, see Chapter 5, "Data Collection."

<sup>67</sup> P.A. Dee Southard, "Ethnographic Social Network Tracing among Non-recreational Homeless Campers in the Pacific Northwest," Census 2000 Ethnographic Evaluation Report 1, Final Report for Purchase Order Contract 43-YA-BC-030126 (June 2001).

<sup>68</sup> Nancy Murray, "Ethnographic Social Network Tracing among Young Adult Seasonal Workers," Census 2000 Ethnographic Evaluation Report 4, Final Report for Purchase Order Contract 43-YA-BC-032725 (June 2001).

<sup>69</sup> Alicia Chavira-Prado, "Ethnographic Social Network Tracing among Mexican Former Migrant Farm Workers in the Midwest," Census 2000 Ethnographic Evaluation Report 3, Final Report for Purchase Order Contract 43-YA-BC-030731 (June 2001).

<sup>70</sup> Louis H. Marcelin and Louise M. Marcelin, "Ethnographic Social Network Tracing among Haitian Migrant Farm Workers in South Florida," Census 2000 Ethnographic Evaluation Report 6, Final Report for Purchase Order Contract 43-YA-BC-033108 (September 2001).

<sup>71</sup> Kathi R. Kitner, "Ethnographic Social Network Tracing among South Atlantic Commercial Fishermen," Census 2000 Ethnographic Evaluation Report 5, Final Report for Memorandum of Agreement 91-00-MOA-01 between the Census Bureau and National Marine Fisheries Service of the U.S. Department of Commerce (July 2001).

<sup>72</sup> Brian Joseph Gilley, "Ethnographic Social Network Tracing among Native American Men in Oklahoma," Census 2000 Ethnographic Evaluation Report 2, Final Report for Purchase Order Contract 43YA-BC-031738 (June 2001).

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These studies indicated that most of the habitually and residentially mobile social network participants who were found to be enumerated shared certain traits as well as a common social identity. Most had census residences in conventional housing. Most maintained ties with and repeatedly and routinely returned to the same set of residentially sedentary residents in one locality. Those who lacked any of these traits were more often omitted from the census. Of those omitted, a majority occupied a series of domiciles in transient quarters, commercial accommodations, and other domiciles that Census 2000 did not list as units of enumeration.<sup>73</sup>

Based on these studies, researchers provided the following recommendations:

- Consider adapting census methods to more closely fit the cultural habits of distinct populations, including the traditionally, seasonally, and occupationally mobile.
- Design and test the feasibility of census operations appropriate for the contemporary patterns of mobility in the United States, including transnational migration.
- For the existing categories of census units of enumeration, continue to improve the master address file; the listing of housing units, group quarters, and service-based sites; and Census Bureau geographic programs and electronic maps.
- To include the uncovered transient quarters, work quarters, and types of residential accommodations that were unrecognized or excluded by definition as units of enumeration in Census 2000, develop and test more inclusive enumeration operations for types of domiciles that are often the default census residences of mobile people.
- Consider seasonal differences in the distribution of the population of the United States when estimating population, and consider developing the capacity to measure seasonal differences in the distribution of the population.

**The enumeration of colonias in Census 2000: perspectives of ethnographers and census enumerators.** Colonias are generally unincorporated subdivisions located along the border between the United States and Mexico. The settlements lack basic infrastructure and services and are home to low-income residents. Although these settlements have existed for decades, during the 1980s and 1990s, the low cost of land in colonias provided opportunities for home ownership and attracted many poor, border-city residents. This study examined how Census 2000 was conducted in selected colonias to determine what, if any, barriers to enumeration exist. For this study, the Census Bureau commissioned four ethnographic studies conducted in colonias located in Dona Ana County, NM (two sites), El Paso County, TX, and Riverside County, CA. These studies consisted of participant observation, interviews, and focus groups conducted by a team of ethnographers. In addition, personnel from the Statistical Research Division and the Planning, Research and Evaluation Division traveled to local census offices and conducted nine focus group studies with census enumerators, four with crew leaders and crew leader assistants, and two with cultural facilitators.

The findings of these studies indicate that four major barriers to enumeration in the colonias existed. These included irregular housing, limited formal education or knowledge of English, concerns about confidentiality, and complex or fluid households. While each presented obstacles in all colonias, the extent to which these barriers posed problems varied. To overcome these obstacles in future censuses and surveys, researchers suggested that the Census Bureau expand its outreach efforts through using promotional materials in Spanish and English, placing a greater emphasis on on-the-job training in the field, and in particular, employing Spanish-speaking enumerators and cultural facilitators familiar with these areas.<sup>74</sup>

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<sup>73</sup> Leslie A. Brownrigg, "Ethnographic Social Network Tracing of Highly Mobile People: Final Report," Census 2000 Evaluation No. J.2, October 16, 2003, p. iii-iv; Manuel de la Puente, *Census 2000 Ethnographic Studies*, Census 2000 Testing, Experimentation, and Evaluation Program, Topic Report No. 15, (Washington, DC: U.S. Census Bureau), pp. 20-21.

<sup>74</sup> Manuel de la Puente and David Stemper, "The Enumeration of Colonias in Census 2000: Perspectives of Ethnographers and Census Enumerators: Final Report," Census 2000 Evaluation No. J.4, September 22, 2003.

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## Category K: Data Capture

During Census 2000, the Data Capture System 2000 (DCS 2000) processed over 120 million census forms using optical mark recognition (OMR) and optical character recognition (OCR) to translate responses on questionnaire pages into digital images.<sup>75</sup> The Census Bureau conducted two evaluations to assess the performance of the DCS 2000, its components, and the data capture audit resolution (DCAR) process and to measure the impact of the data capture process on data quality.

One evaluation focused on DCAR, a three-phased process to review and correct, if necessary, OMR interpretations for status and population-count roster entries.<sup>76</sup> Of the 126,866,759 returns sent to DCAR, 124,194,637 (97.89 percent) passed the edit. Of the failed cases, 33.03 percent were processed for count check, and 66.97 percent for status review. The percent of returns sent to count check and status review increased for mail returns faster than for enumerator returns the further from Census Day the return was checked in. This indicated more consistent quality for enumerator returns over time. The evaluation found that DCAR corrected the data for a large number of cases that would have been included in coverage edit follow-up (CEFU) without the corrections made by the DCAR process.

The second evaluation considered how well the interpretation of census forms could be delegated to automated data capture and imaging technology. Both the evaluation and production automated technologies were prone to any one of the following errors: failure to read a field on the form, picking up content that was not really there (as in trying to interpret a stray mark), incorrectly capturing the content on the paper, or correctly capturing what the respondent wrote but not what the respondent intended. The standard for key-from-paper entry was to capture content with no more than a 2.0 percent error rate. Among other patterns, this evaluation noted the following:

- The performance of the automated technology depended on whether the character recognition algorithm determined the content was clear enough to process. If the automated technology determined the content of a write-in field was clear, it processed the content with a typical error rate of 1.0 to 1.1 percent. If the automated technology determined the content of a check-box field was clear, it processed the content with a typical error rate of 1.2 to 1.5 percent.
- If the automated technology rejected content as unclear, the typical error rate after remedial keying by human operators was 4.8 to 5.3 percent. This key-from-image mode tends to deal with content particularly hard for human or machine to interpret, and therefore the error rate is not necessarily a poor reflection on the automated technology or on the keyers.
- The most frequent causes for failing to capture the intended response were the respondent's extra entry in a check-box, missing a character, or entering a wrong character. The most common reasons found for these problems were poor handwriting, no reason found, or rules not followed.

## Category L: Processing Systems

Once captured by the DCS 2000, census data continued through a series of processing steps that converted raw ASCII data into a standardized decennial response file (DRF), census unedited files, and ultimately the 100 percent census edited file and the sample census edited file. The agency completed five evaluations in this category. These evaluations examined a variety of postcensus processing activities used to prepare the data from the original responses for release of the official counts and tabulations.<sup>77</sup>

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<sup>75</sup> For more information on this topic, see Chapter 6, "Data Capture and Processing."

<sup>76</sup> The roster entries comprise the names of individuals in the housing unit. For more information on DCAR, see Chapter 6, "Data Capture and Processing."

<sup>77</sup> Florence H. Abramson, *Census 2000 Testing, Experimentation, and Evaluation Program Summary Results*, November 17, 2004, p. 25. For more information on the DRF, the PSA, and the HCUF, see Chapter 6, "Data Capture and Processing."



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One evaluation examined the processes of linking returns and, from that, setting housing unit status and expected household size on the DRF. Linked returns were returns comprised of two or more forms. Of 129,389,529 returns, 1.07 percent were linked. Of these, 2.82 percent had three or more forms. Most linked returns included an enumerator first form and an enumerator continuation form. For returns that comprised two or more forms and were completed by the respondent, the number of valid person records and roster names corresponded to the reported household size. The evaluation recommended attempting to link only enumerator first and enumerator continuation forms to simplify the linking process and cause very little loss of data. It further recommended redesigning the interview summary section of the enumerator forms and using mobile computing devices to improve the consistency of responses.<sup>78</sup>

Two evaluations of the primary selection algorithm (PSA) indicated that less than 10 percent of all Census IDs on the DRF were enumerated by more than one return. Most of these were enumerated by two returns. Households that the PSA verified as having two returns were most often formed by two enumerator returns or one mail return combined with one enumerator return. When two enumerator returns formed a PSA household, over 91 percent were the result of one return from NRFU and one return from CIFU. This was expected due to the design of the CIFU operation. Of the 8,716,359 Census IDs with two eligible returns, over 70 percent had a redundant return (a return containing only person level address records represented on the basic return of a PSA household). For those Census IDs with residents in two PSA households, the “best” household or a household which was identical in terms of net residents to the other household at the Census ID was selected about 80 percent of the time.<sup>79</sup>

Another evaluation examined the processes for creating the 100 percent census unedited file (HCUF). The HCUF contained all the household and person records included in Census 2000. This file was used to determine which addresses were included in the census and to determine the count of persons at each address. Evaluators noted that nearly 128 million addresses were on the decennial master address file (DMAF) following the completion of various Census 2000 operations. Approximately 117.3 million were ultimately confirmed as housing unit addresses. Just over 9 million addresses on the DMAF were determined to be not valid addresses. Of the 117.3 million addresses resolved as housing unit addresses, 106.7 million were determined or imputed to be occupied, and the remaining 10.6 million were determined or imputed to be vacant. Approximately half a million addresses had their status resolved by imputation. There were 195,245 addresses determined to be valid census addresses whose occupancy status could not be determined; occupancy status had to be imputed as a result. There were 296,617 addresses whose validity as census addresses could not be determined. As a result, their validity and their occupancy status were both imputed. There were no enumeration data on the DRF or the DMAF for 251,477 (84.8 percent) of the addresses whose validity as census addresses could not be determined. Based on their review of the HCUF creation process, evaluators recommended using stronger processes for software quality assurance to ensure more complete adherence to specifications and improving the timing of census follow-up operations to ensure that addresses added by those operations are placed on the DMAF in time for the data to be included in the census.<sup>80</sup>

Another evaluation focused on the “beta site.” As the software testing site for Census Bureau application developers, the beta site also served as an integration center for regional census center (RCC) and local census office (LCO) systems, a testing center for all systems, and a support center for RCC, LCO, and the National Processing Center systems. The beta site analysis included information on how successfully the data collection systems were integrated and the benefits of the software testing and release process. Evaluators noted that given the unprecedented reliance on automated systems during Census 2000, the beta site played an important role in the decennial census. They indicated that the underlying concept of the beta site and its role in software

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<sup>78</sup> Miriam Rosenthal, “Operational Analysis of the Decennial Response File Linking and Setting of Housing Unit Status and Expected Household Size,” Census 2000 Evaluation L.2, June 30, 2003, pp. iv–3.

<sup>79</sup> Stephanie Baumgardner, “Analysis of the Primary Selection Algorithm, Final Report,” Census 2000 Evaluation No. L.3a, November 26, 2002, p. ii; and Stephanie Baumgardner, “Resolution of Multiple Census Returns Using a Re-interview, Final Report,” Census 2000 Evaluation No. L.3b, September 10, 2003, p. ii.

<sup>80</sup> Kim Jonas, “Census Unedited File Creation, Final Report,” Census 2000 Evaluation L.4, July 31, 2003, p. iii.

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validation were generally viewed as beneficial. However, evaluators also recommended that processes and communications between the beta site and its customers be improved for the 2010 Census. Additionally, the evaluation recommended improving testers' knowledge about the purpose and capabilities of the software to be tested, as well as adopting the Capability Maturity Model for software development.<sup>81</sup>

### Category M: Quality Assurance Evaluations

Census 2000 involved more than 20 major field operations and, at its peak, more than 500,000 temporary workers. Managing the quality of the deliverables produced by this large, decentralized, and transient workforce was a major challenge for the Census Bureau. Census 2000 continued the tradition, initiated in the 1960 census, of incorporating into field operations numerous quality assurance activities to minimize and prevent the clustering of significant performance errors and to promote continuous improvement. There were two evaluations for this category. The first reviewed the effectiveness of quality assurance (QA) programs, noting their strengths and deficiencies, and provided a critique of the Census Bureau's QA philosophy. This evaluation noted the following:

- Given the many developments, it is not surprising to find that the overall perception throughout the Census Bureau, and at all levels, is that the Census 2000 QA field program was an important element in preventing significant errors and in preventing the clustering of significant errors.
- Based on the evaluations and comments from those involved, many of the Census Bureau's early activities in preparing for Census 2000 are seen as having utilized a full QA approach that met the Census Bureau's stated goal of promoting timely and continuous improvement. However, in the context of what actually transpired during the data collection phase, the perception is less clear and decidedly mixed.
- A vital aspect of the QA program for promoting continuous improvement—real-time capture and dissemination of data during the data collection process, with which to monitor, evaluate, and react—was not implemented.

The second report evaluated the effectiveness of various variables in the administrative reinterview that was part of the nonresponse follow-up (NRFU) reinterview program. The Census 2000 NRFU reinterview program included three components: random reinterview, administrative reinterview, and supplemental reinterview. The purpose of the reinterview program was to identify faulty data collection, both intentional and unintentional. This report noted the following:

- Random reinterviews represented 93.09 percent of the cases selected for the reinterview program. The remainder of the reinterview cases were administrative and supplemental reinterviews (4.34 percent and 2.57 percent, respectively).
- Over the entire NRFU operation, 291,441 enumerators were identified as outliers based on a comparison of questionnaire characteristics of each enumerator against the average for their area. This was 62.57 percent of enumerators with completed work.
- Supplemental cases with complete reinterview information showed a higher frequency of enumerator error between the original enumeration and the reinterview (11.30 percent) than random and administrative cases (9.42 percent and 9.67 percent, respectively). This higher incidence of error identification shows the effectiveness of the supplemental reinterview component.
- Of the characteristics reviewed for the administrative sample, a high delete variable had the biggest impact for identifying enumerators with error.

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<sup>81</sup> Titan Systems Corporation/System Resources Division, "Operational Requirements Study: The Beta Site Systems Testing and Management Facility, Final Report," Census 2000 Evaluation L.5, January 14, 2003, pp. iii–vi.

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## Category N: Accuracy and Coverage Evaluation (A.C.E.) Survey Operations

For this category, the Census Bureau planned 21 evaluations designed to measure how well the agency carried out different components of the A.C.E. from an operational perspective. While some of these evaluations were canceled due to resource constraints or insufficient data, five were completed. Additionally, the balance of the planned evaluations were instead carried out as Executive Steering Committee for A.C.E. Policy (ESCAP) analysis reports. Following the ESCAP process, the Census Bureau conducted additional research and analysis of the A.C.E. operations and estimates. This additional work is known as ESCAP II. (See footnote 29 for additional information about ESCAP and ESCAP II.)

## Category O: Coverage Evaluations of the Census and of the A.C.E. Survey

For this category, the Census Bureau planned 26 evaluations. Although nine were canceled and ten evaluations were halted and shifted to ESCAP reports, the agency published seven evaluations that focused on measures of coverage for the census counts and the A.C.E. estimates. These studies identified person characteristics and housing unit characteristics that were related to being missed or erroneously enumerated. Analyses in this area also studied the quality of data from proxy respondents and the frequency and patterns of geocoding error. Furthermore, census counts were compared to demographic analysis (DA) benchmarks to evaluate accuracy and completeness. This last evaluation of subnational DA benchmarks is summarized below.

Subsequent to the ESCAP II work, the Census Bureau embarked on additional research to further evaluate census coverage and evaluate and possibly revise the A.C.E. estimates. This research work, known as A.C.E. Revision II, is discussed in the “Coverage Measurement Programs” section of this chapter.

**Examination of the consistency of census data with demographic benchmarks at the subnational level.** The Census Bureau conducted numerous analyses relating to the measurement of net coverage in Census 2000 as part of the ESCAP and ESCAP II processes. As in the previous census, these analyses included use of demographic analysis (DA) national-level estimates to evaluate census net coverage by age, sex, and race groups and to assess the accuracy of coverage measurement survey estimates. Summaries of these analyses and their findings, as well as a basic description of the DA methodology, can be found in the “Demographic Analysis” section of this chapter. Other ESCAP-related analyses that the Census Bureau conducted are discussed in the “Accuracy and Coverage Evaluation” section.

The Census Bureau also used DA to provide independent housing benchmarks (based on administrative data on the housing stock) to assess the completeness of its address lists (the master address file [MAF]) and to evaluate national-level housing unit coverage in Census 2000. Additionally, the Census Bureau carried out a Census 2000 coverage evaluation (separate from the ESCAP processes) using subnational DA housing and demographic benchmarks; that evaluation is summarized here.<sup>82</sup>

Before 1990, the use of DA estimates to evaluate the census was, for the most part, restricted to national-level estimates. However, the Census Bureau did conduct work with subnational DA estimates in conjunction with the 1990 and earlier censuses, and the analysis associated with the evaluation discussed here expanded upon the earlier work. In the current evaluation, researchers compared both subnational housing unit benchmarks and population demographic benchmarks with the associated Census 2000 data. Demographic housing unit benchmarks for groupings of counties within regions were the basis of comparison with census data for examining subnational differences in housing unit coverage.<sup>83</sup>

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<sup>82</sup> Arjun L. Adlakha, J. Gregory Robinson, Kirsten K. West, and Antonio Bruce, “Assessment of Consistency of Census Data with Demographic Benchmarks at the Subnational Level,” Census 2000 Evaluation No. O.20, August 18, 2003.

<sup>83</sup> Subnational DA housing benchmarks were also used to evaluate housing unit coverage in the Census 2000 dress rehearsal (conducted in 1998) sites. The results of this analysis confirmed the need for the Census Bureau’s reengineering of the MAF building process for Census 2000. See U.S. Census Bureau, Census 2000 Dress Rehearsal Evaluation Summary, Planning, Research, and Evaluation Division, August 1999, pp. 7–8.

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With regard to DA population benchmarks, three different types of DA administrative data were used to evaluate coverage of three age segments of the population, by region or groupings of counties: school enrollment data for 1990 and 2000 to provide an independent benchmark of the school-age population; Medicare data for 1990 and 2000 to produce an independent estimate of the population ages 65 and older; and intercensal birth data to provide an independent benchmark for the population of children ages 0 (less than a year) to 9.<sup>84</sup>

In DA, the Census Bureau analyzed sex ratios<sup>85</sup> to evaluate the quality of census data on sex composition, as classified by age. For example, as is explained in the “Demographic Analysis” section of this chapter, the Census Bureau compared the sex ratios from the census data with “expected” sex ratios from DA for both the Black and non-Black adult populations to make inferences about differential coverage.

However, because DA cannot produce expected sex ratios for subnational areas (due to the lack of sufficiently accurate data on internal migration rates), the sex ratio analysis for this evaluation consisted of comparing census sex ratios for the Black and non-Black populations for regions of the country, and inferring, consistent with national-level findings, that, for the most part, differences in these ratios were the result of differential coverage.

The subnational DA benchmarks used to assess Census 2000 net coverage produced findings consistent with the national-level DA results and provided some geographic context for noted changes in net coverage as compared to 1990 as well as for differences between the Black and non-Black populations. For example, school enrollment ratios and Medicare enrollment ratios for 1990 and 2000 indicated that net coverage improved for these age groups from the 1990 census to the 2000 census and showed that the degree of improvement (defined as the percentage point change in the net undercount rate) was greatest for counties with higher concentrations of minorities and those designated as the most difficult-to-enumerate. These findings were consistent with national-level DA results that showed that improvement in net coverage from 1990 to 2000 was greater for Blacks than for non-Blacks.<sup>86</sup>

Net coverage in the census improved for the population ages 0 to 9 from 1990 to 2000 for all regions, but the pattern of regional differences remained the same. Thus, the data revealed that the net undercount rate for this age group was below the national average in the Midwest and Northeast regions and above it in the South and West regions. The data also revealed that coverage improvement was greater for Black children than non-Black children in every region, resulting in a narrowing of coverage differentials between these two groups. However, net undercount rates remained higher for Black children in every region except the West, where a large proportion of non-Black children in this age group was Hispanic. The analysis indicated that Hispanic children had higher net undercount rates than non-Hispanic children—results which were consistent with other findings.<sup>87</sup>

Finally, the census sex ratio analysis for all regions showed lower sex ratios for Blacks than non-Hispanic Whites. This was most likely attributable to the higher net undercount rates for Black men in all regions. Additionally, the Black/White sex ratio gap remained about the same as it was in 1990 across all regions, implying approximately equal improvements in coverage for Black adult males and females in Census 2000.<sup>88</sup>

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<sup>84</sup> “Assessment of Consistency of Census Data with Demographic Benchmarks at the Subnational Level,” pp. iii–iv. Some of these subnational DA demographic benchmark analyses and data are also contained in the ESCAP-related reports; see, for example, U.S. Census Bureau, J. Gregory Robinson, “Accuracy and Coverage Evaluation: Demographic Analysis Results,” DSSD Census 2000 Procedures and Operations Memorandum Series B-4\*, March 12, 2001, Table 9.

<sup>85</sup> The sex ratio is defined as the ratio of the number of males per 100 females.

<sup>86</sup> “Assessment of Consistency of Census Data with Demographic Benchmarks at the Subnational Level,” p. iv.

<sup>87</sup> *Ibid.*, pp. iv–v.

<sup>88</sup> *Ibid.*, p. 30.

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The evaluation recommended:

- The use of subnational DA benchmarks as a tool to evaluate decennial census data be continued and expanded. Specifically, the report recommended that subnational DA benchmark estimates be used to formally evaluate the 2010 Census and that DA research and development activity be undertaken to expand the coverage assessment to the individual state or county level.
- Housing benchmark analysis be incorporated with other evaluations of the master address file that are implemented throughout the decade.
- The use of demographic benchmark analysis (along with other measures) in evaluating coverage in census tests.<sup>89</sup>

### **Category P: A.C.E. Statistical Survey Design and Estimation**

The evaluations in this category were designed to examine the quality of the A.C.E. estimates. The analyses underlying these evaluations were instead conducted as part of the ESCAP process. As noted above, the Census Bureau followed up the initial ESCAP examination of the quality of the A.C.E. estimates with the ESCAP II and A.C.E. Revision II work.

### **Category Q: Organization, Budget, and Management Information System**

In March 2001, the Census Bureau retained IBM Business Consulting Services to conduct an evaluation of the management structure, processes, and tools for Census 2000. According to the study plan provided by the agency's Decennial Management Division, the contractor evaluated seven areas: the management model for Census 2000, organizational structures and processes, decision-making processes, management information tools, staffing, external influences, and the use of contracts.<sup>90</sup> Using interviews with Census Bureau personnel and qualitative analyses of the interview data, this evaluation assessed the impact of the political environment, the internal census environment, and changes in the management model on decennial activities.

Evaluators noted the following conclusions:

- Key performance indicators revealed that, in certain respects, Census 2000 was the most successful U.S. decennial census ever conducted. In Census 2000, the net undercount estimate of the household population was minus 0.49, meaning that there was a small estimated overcount. Achievement of a small net coverage error that is close to zero is an important success factor.
- The national response rate that determined the Census 2000 NRFU workload was 65 percent, which matched the 65 percent response rate from the 1990 census; this indicated that the Census Bureau had stemmed the decline in response that had been the trend over recent decades.
- The NRFU effort was completed ahead of schedule.
- Post 1998, the Census Bureau operated within an organization that was well structured to support its performance objectives. The decennial organization was organized by a business process that drew from functional capabilities residing within the participating divisions as required. In many of the substructures and teams within the decennial organization, however, the leaders of the teams and decision-making bodies were not given or did not choose to exercise true decision-making authority. Although the intent behind the creation of these organizational bodies was to push decision-making to the lowest management levels technically possible, there was no decision-making authority in place at these lower levels to support that intent.

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<sup>89</sup> *Ibid.*, p. v.

<sup>90</sup> U.S. Census Bureau, Census 2000 Study Plan for Evaluation Q.1—Evaluation of the Management Processes and Systems of the 2000 Decennial Census (undated).

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- A knowledge-management capability to retain corporate knowledge, to support responses to external reporting requirements, and to communicate programmatic changes to decennial census participants in a timely manner would assist in improving communications and in stabilizing and maintaining the decennial census knowledge base throughout the decade.

### Category R: Automation of Census Processes

In June 2000, the Census Bureau commissioned Titan Systems Corporation to conduct evaluations of 12 systems used during Census 2000. These systems facilitated activities for data collection and capture, cost and progress reporting, management controls, customer reaction, quality assurance and analysis, the Internet, and more. The evaluations focused on the effectiveness of methodologies, employed during the planning stages, that were used to determine system requirements and their impact on overall system functionality. Using information drawn from interviews with both Census Bureau staff and contractors involved with the planning, development, operation, and management of Census 2000 systems, the contractor assessed whether the correct requirements and proper functionality were specified and whether the systems performed adequately in terms of either impact on data quality or in providing useful management information. The contractor also assessed contract management issues and the effectiveness of the Census Bureau's contract management practices.

In its evaluations of systems for Telephone Questionnaire Assistance; coverage edit follow-up; Internet Questionnaire Assistance; Internet Data Collection; laptop computers for A.C.E.; American FactFinder; Operations Control System 2000 (OCS 2000); matching and review coding system for A.C.E.; A.C.E 2000 control system; Pre-Appointment Management System/Automated Decennial Administrative Management System (PAMS/ADAMS); Management Information System 2000; and Data Capture System 2000, the contractors noted the following:

- **Process improvement recommendations:** From a systemic perspective, certain supporting processes and methodologies should be in place to provide a sound framework for system development activities. The absence of such a framework permits development on an ad hoc, rather than a structured basis, and usually leads to poor planning and inefficient use of resources. The evaluation reports presented recommendations to improve internal processes so that systems can be designed, developed, and managed using a disciplined approach.
- **Requirements definition issues:** Because the phase in which requirements are defined is critically important, it should be performed in accordance with an agency-approved methodology or set of guidelines that prescribe the steps inherent in the process. These guidelines need not be inflexible; they can be written to allow for various circumstances and constraints, but should, in any case, identify all requirements issues that can impact system functionality. The evaluation reports presented suggestions on ways to improve the requirements definition function.
- **Outsourcing and contract management:** Due to the Census Bureau's long-standing reliance on in-house resources for programming support, Census Bureau staff were not sufficiently prepared to make the transition to outsourcing. This policy shift required that Census Bureau personnel who either managed, or were working closely with, contractors have a basic understanding of contracting principles and an awareness of the legal/contractual issues inherent in the statement of work. Given that information technology contracts are typically far more complex than other types of contracts, the potential for misinterpretations in the scope of work and content of deliverables could easily have given rise to contract disputes and performance problems. Fortunately, the Census Bureau succeeded in avoiding many problems by awarding contracts to many qualified vendors. The automated systems evaluations included findings that can help the Census Bureau to better manage the risks associated with outsourcing in the future.

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Despite these considerable managerial, technical, and contractual challenges, however, the Census Bureau successfully deployed all of the decennial systems for Census 2000. Evaluators and interviewees attributed such successes to the use of some highly effective techniques. These evaluations identify those “best practices” viewed by participants as the most beneficial in terms of their contributions to the success of Census 2000 systems.<sup>91</sup>

## COVERAGE MEASUREMENT PROGRAMS

The undercount has been a significant issue in census-taking since the first census in 1790. Both President Washington and Secretary of State Jefferson thought that the 1790 census total population—reported as 3.9 million—should have been over 4 million.<sup>92</sup> Crude historical estimates of percentage net undercount date back as far as 1880.<sup>93</sup> Beginning in the 1940s, the Census Bureau produced demographic-based estimates of census net undercount, focusing on specific demographic subgroups.<sup>94</sup> By the 1960s, the Census Bureau had increasing evidence that African Americans and other minorities were undercounted at higher-than-average rates. Evaluations of the census since that time have indicated that this “differential undercount” also affects young adult males and renters. By the late 1970s, the Census Bureau had done significant work in developing survey-based tools for estimating net coverage in the census, and during the 1980s, it significantly refined these tools for measuring the number of people missed by the census for relatively large areas and groups. For 1990, the Census Bureau employed the first true “coverage measurement survey” to measure net overcounts and undercounts in the census; it was referred to as the 1990 post-enumeration survey.<sup>95</sup>

Today, the Census Bureau employs two principal methods—both of which have been vastly improved since their earliest uses—to evaluate coverage in the census. That is, the agency compares the census counts to two sets of estimates of net undercount: (1) estimates produced by the methodology known as demographic analysis and (2) estimates produced through dual system estimation in conjunction with a coverage measurement survey. In Census 2000, the coverage measurement survey was called the Accuracy and Coverage Evaluation.

### Accuracy and Coverage Evaluation (A.C.E.)

**Introduction.** The Census Bureau designed the A.C.E. program to measure net coverage errors in Census 2000 and to potentially carry out a statistical adjustment of the Census 2000 data for nonapportionment purposes, based on the results of the A.C.E. sample survey. Earlier legal challenges to the Census Bureau’s planned uses of sampling in Census 2000 resulted in a 1999 Supreme Court decision (*Department of Commerce v. U.S. House of Representatives*); this ruling states that Section 195 of Title 13, U.S. Code (Title 13 provides the statutory authority for conducting the census) precludes the use of statistical sampling (including statistical adjustment based on sampling) to produce congressional apportionment numbers. As a result of the Supreme Court ruling that sampling could not be used for apportionment purposes and the Clinton administration’s interpretation of the decision as affirming the legality of using statistical sampling for purposes other than apportionment, including redistricting, if doing so were determined to be “feasible,”<sup>96</sup> the Census Bureau proceeded with plans to produce a statistically adjusted census count for redistricting and other nonapportionment purposes.

Thus, as discussed in this section and elsewhere (see “The Debate Over the Use of Sampling” section of Chapter 11, “Legal Issues”), the Census Bureau and the Commerce Department made a

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<sup>91</sup> Florence H. Abramson, Census 2000 Testing, Experimentation, and Evaluation Program Summary Results, November 17, 2004, pp. 31–32.

<sup>92</sup> U.S. Census Bureau, *Census and You*, Volume 25, No. 8, August 1990, p. 2.

<sup>93</sup> J. Gregory Robinson and Kirsten K. West, “Demographic Analysis” in *Encyclopedia of the Census*, Margo J. Anderson, Editor-in-Chief (Washington DC: Congressional Quarterly Press, 2000), p. 166.

<sup>94</sup> *Ibid.*

<sup>95</sup> For more information about the 1990 census PES, see U.S. Census Bureau, *1990 Census of Population and Housing, History, Part D*, 1990 CPH-R-2D (Washington, DC: U.S. Government Printing Office, March 1996), pp. 11-19–11-36. For information about litigation over statistical adjustment of the 1990 census based on the results of the PES, see the “1990 Litigation” section of Chapter 11 of the *Census 2000 History*.

<sup>96</sup> This is the term used in Section 195 of Title 13, United States Code.

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series of decisions regarding the possible use of the A.C.E. results in producing the redistricting and long-form (sample) data products, intercensal estimates, and survey controls. As a result of these decisions, the Census Bureau used unadjusted Census 2000 data for all such purposes.<sup>97</sup>

**Overview of A.C.E. design/methodology.** The Census 2000 A.C.E. program involved comparing survey results to the census itself, using a methodology known as dual system estimation (DSE), to measure net overcounts and undercounts in the census—and was similar to both the 1990 census post-enumeration survey (PES) and the 1980 census Post-Enumeration Program in that regard.<sup>98</sup> This methodology required two independent systems of measurement: the population sample (P-sample) and the enumeration sample (E-sample). The P-sample measured the housing unit population, as did the census, but was conducted independently of the census. This was done by selecting a sample of block clusters (geographically contiguous groups of blocks), canvassing each block cluster to find all housing units, and interviewing the people in the listed housing units. Results of the P-sample were matched to census enumerations to determine the non-match rate in the P-sample and to indicate potential omissions (people who were missed) in the census. The E-sample, which consisted of the census enumerations in the same sample block clusters as the P-sample, was used to measure the erroneous enumeration rate in the census. Erroneous enumerations included duplicate enumerations, people who were counted at the wrong address, and fictitious people. Thus, the E-sample was the basis for measuring the correct enumeration rate, and the P-sample was the basis for measuring the match rate.

These overlapping samples reduced both the variance of the dual system estimator and the level of field activities required, as well as their cost, and resulted in efficient data processing. The two samples produced an estimate of the true population that was used to estimate net coverage error.

**First-phase sampling.** At the time of the January 1999 Supreme Court decision prohibiting the use of sampling for apportionment, the Census Bureau was already planning the first phases for identifying the sample to be used in the Integrated Coverage Measurement (ICM) program. As part of the original Census 2000 plan unveiled in February 1996, the ICM was one of several planned uses of sampling that the Census Bureau believed would, taken together, increase the accuracy and decrease the cost of the census.<sup>99</sup> The goal of the ICM was to produce a “one-number census” that corrected for net coverage errors. That is, unlike the 1990 census, when adjusted data were produced after delivery of the apportionment and redistricting data, results from the ICM coverage measurement survey would be “integrated” into the census to produce estimates that were to serve as the official decennial census data for all purposes, including apportionment.<sup>100</sup> Consequently, the ICM was designed to produce reliable estimates of coverage of each state’s total population, and this required a very large sample; the Census Bureau had planned a 750,000 housing-unit sample.

As discussed earlier, following the Supreme Court ruling, the Census Bureau proceeded with plans to produce statistically adjusted data for purposes other than apportionment. Thus, the goal of

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<sup>97</sup> U.S. Census Bureau, *Accuracy and Coverage Evaluation of Census 2000: Design and Methodology*, DSSD/03-DM, issued September 2004, is a one-volume publication that provides a comprehensive overview of: the design and methodology of the A.C.E.; analyses and evaluations of its results; and subsequent research to produce revised estimates and of assessments of those data (known as A.C.E. Revision II). Descriptions of the A.C.E. and A.C.E. Revision II methodologies presented here include information summarized from this document. A PDF version of the document is available on the Census Bureau’s Web site at <<http://www.census.gov/dmd/www/refroom.html>>. Additionally, this Web page provides access to a wealth of information regarding the A.C.E., including documents relating to the decisions about the possible use of the initial A.C.E. estimates and the A.C.E. Revision II estimates.

<sup>98</sup> For information about the 1990 PES, see U.S. Census Bureau, *1990 Census of Population and Housing, History, Part D*, 1990 CPH-R-2D (Washington, DC: U.S. Government Printing Office, March 1996), pp. 11-19–11-36. For information about the 1980 PEP, see U.S. Census Bureau, *1980 Census of Population and Housing, History, Part E*, PHC80-R-2E (Washington, DC: U.S. Government Printing Office, August 1989), pp. 9-8–9-11.

<sup>99</sup> For a discussion of the other planned uses of sampling and the changes to the operational plans for Census 2000 brought about by the Supreme Court ruling, see the “Debate Over the Use of Sampling” section of Chapter 11.

<sup>100</sup> See the 1995 Census Test and Census 2000 Dress Rehearsal sections of Chapter 2, “Planning the Census,” for more information about the ICM program.



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the “new” Census 2000 coverage measurement survey (the A.C.E.) was to measure census coverage (and correct for measured net coverage errors) for national and subnational population domains having different census coverage properties. The Census Bureau believed it could produce estimates for these domains with sufficient precision with a sample of about 300,000 housing units.<sup>101</sup>

The Census Bureau determined that it was more efficient, particularly from a software quality perspective, to select the A.C.E. sample by subsampling the completed ICM sample. Thus, the entire ICM sample was selected as originally planned and refined through various steps to yield the A.C.E. housing-unit sample. Specifically, the A.C.E. sample design was derived from the ICM design using a double-sampling approach.<sup>102</sup>

The A.C.E. primary sampling unit was the block cluster, a group of one or more geographically contiguous census blocks, with a target size of about 30 housing units, although block clusters varied in size. Block clusters were stratified within each state using a preliminary census address list, according to the following categories:

- Small (0 to 2 housing units).
- Medium (3 to 79 housing units).
- Large (80 or more housing units).

The Census Bureau created a separate sampling stratum in states with American Indian reservations. Within each sampling stratum, the Census Bureau selected an equal probability systematic sample of block clusters. This phase of sampling yielded 29,136 block clusters with an estimated 2 million housing units in the 50 states and the District of Columbia.

Field staff canvassed the sample block clusters and created an independent address list of all housing units, including those at special places. The goal of this operation was to create an independent address frame of all housing units in the sample block clusters likely to exist on Census Day, April 1, 2000. Potential housing unit structures were included on the independent address list. During housing unit follow-up, field staff visited these structures to confirm that they contained housing units on Census Day.

**Second-phase sampling.** In the second phase, the Census Bureau selected block clusters from the first phase to be the final A.C.E. sample areas. Reducing the first-phase sample prior to performing the housing unit matching and field follow-up operations was important because of the labor-intensive nature of those operations. The principal steps/considerations in the second-phase sampling can be summarized as follows:

- The computer programs stratified block clusters using two housing unit counts: (1) a count from the independent listing operation and (2) a count from the DMAF updated as of January 2000.
- The Census Bureau retained all first-phase clusters from the American Indian reservation stratum in the second-phase sample.
- For the medium and large cluster strata, the Census Bureau allocated the national sample roughly in proportion to state population, with some additional sample allotted for the smaller states. Differential sampling was employed within states in order to (1) provide sufficient sample to support reliable estimates for several subpopulations and (2) control the variance by assigning a higher probability of selection to clusters with the potential for high omission or erroneous enumeration rates as identified by inconsistent housing unit counts between the independent list and the updated DMAF for the cluster.

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<sup>101</sup> Estimates of net coverage error were not produced for persons living in group quarters or in remote areas of Alaska. A separate sample was selected in Puerto Rico; the results were subject to higher than expected variances and are not discussed here.

<sup>102</sup> The specifics of this methodology are described in U.S. Census Bureau, *Accuracy and Coverage Evaluation of Census 2000: Design and Methodology*, Section I, pp. 3-9–3-16.

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- For the small cluster stratum, one goal was to avoid having small clusters with overall probability of selection much lower than the probability of selection of other clusters in the sample. A second goal was to have higher probabilities of selection for small clusters in which the number of housing units found in the independent listing process or in the updated DMAF was greater than the 0 to 2 housing units indicated in the initial census listing.

The second-phase sample contained 11,303 block clusters for the 50 states and the District of Columbia.

Census Bureau staff computer-matched the housing units on the updated DMAF of January 2000 to the A.C.E. independent address list, and using maps and other supplemental materials, they conducted a clerical review of the results to find additional matches. They also conducted a clerical search—limited to the block cluster—for duplicate housing units in both the A.C.E. and census lists. Finally, the Census Bureau carried out a field operation to clarify discrepancies.

**Targeted extended search (TES) sampling.** In the 1990 census PES, the Census Bureau reduced the effect of geocoding (placing a housing unit in its correct census block) errors by expanding the search for matches and correct enumerations to include not only the block cluster, but the surrounding ring of blocks, and even further in rural areas, where geocoding is more difficult. The Census Bureau defined the search area as the sample block clusters and the surrounding blocks. Thus, a P-sample person was considered a match if the corresponding census enumeration was found anywhere in the search area. Similarly, an E-sample person was considered a correct enumeration if he/she was determined to have been a Census Day resident anywhere in the search area. In theory, these two operations balance in the surrounding blocks and should increase the correct enumeration and match rates by the same amount, with little effect on the estimates but with potentially significant variance reduction. Because geocoding problems tend to be clustered, the matching staff in 1990 found the surrounding block search to be both fruitless and tedious for most block clusters. Thus, for the A.C.E., the Census Bureau decided to limit the surrounding block search to only those block clusters most likely to yield results. The TES did not change the A.C.E. block cluster sample, but it eliminated the surrounding block search for those block clusters not expected to have missing housing units or geocoding problems. This revision was designed to allow the analysts to concentrate their review on the block clusters that did have these types of units.

The Census Bureau implemented the TES in a subset of A.C.E. block clusters selected through a combination of certainty and probability sampling. Computer systems used the initial housing unit matching results to identify the A.C.E. housing unit nonmatches and potential census housing unit geocoding errors. Clusters with many potential A.C.E. housing unit nonmatches or census geocoding errors were selected with certainty; those that appeared to have fewer such problems were selected by a probability sample. Clusters without potential A.C.E. housing unit nonmatches or census geocoding errors were out of scope for the targeted extended search sampling.<sup>103</sup>

**Subsampling within large block clusters.** The Census Bureau used subsampling in large block clusters for the final selection of housing units to be included in the P-sample. The objective was to reduce costs and yield manageable field workloads without significantly reducing the precision of the A.C.E. by taking advantage of the high intraclass correlation expected in large block clusters. That is, the selected portion of a large block cluster provided good representation of the portion not selected, so it was more efficient to include only a portion of the large block clusters, which allowed for a larger and more geographically diverse sample of clusters. The large block clusters had a higher initial probability of selection than medium block clusters, so this reduction in sample size, which was prespecified, affected the precision of the A.C.E. estimates only minimally. Subsampling of housing units within large clusters brought the overall probability of selection of these housing units in line with housing units in the medium-size clusters. Block clusters with 80 or more confirmed A.C.E. housing units, based on the initial housing unit match, were eligible for this subsampling. Within each block cluster, the Census Bureau formed segments with

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<sup>103</sup> For additional information on TES sampling, see *Accuracy and Coverage Evaluation of Census 2000: Design and Methodology*, Section II, pp. 4-12–4-14.

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roughly equal numbers of housing units; these were designed to provide compact interviewing workloads and to facilitate the identification of an overlapping E-sample. Systems staff then selected one or more segments from each cluster for A.C.E. person interviewing. The A.C.E. housing units retained after all of the subsampling made up the P-sample. After the Census Bureau completed the reduction of housing units within large block clusters, the A.C.E. interview sample size for the 50 states and the District of Columbia was approximately 300,000 housing units.

The E-sample consisted of the census enumerations in the same sample areas as the P-sample, excluding census persons who were not data-defined and person records that were temporarily removed from the census because they might be duplicates. To be a census data-defined person, the person record needed to have responses to at least two 100 percent (so called because these questionnaire items are asked of all respondents and at all housing units) data items. The E-sample consisted of approximately 713,000 persons in 311,000 census housing units for the 50 states and the District of Columbia.

**A.C.E. person operations.** The Census Bureau conducted the A.C.E. person interview using a computer-assisted personal interview (CAPI) instrument.<sup>104</sup> Staff began the process by conducting telephone interviews with households for which the census questionnaire responses had been data-captured and included a telephone number. To minimize contamination (the circumstance where response, or lack thereof, to one interview is affected by the other) between the census interview and the coverage measurement survey interview, field staff conducted the remaining interviews in person only after completion of almost all census field operations in a given area. The Census Bureau conducted some nonresponse conversion<sup>105</sup> interviews and some interviews in gated communities or secured buildings by telephone. If an interview with a household member could not be obtained during the first 3 weeks of interviewing, staff attempted a “proxy” interview with a nonhousehold member. During the last 2 weeks of interviewing, the Census Bureau used the best interviewers available during the nonresponse conversion operation.

The Census Bureau established rules for determining those person records from both the P- and E-samples with sufficient information for matching. Acceptable person records required a complete name and two other characteristics. The Census Bureau coded persons in the E-sample with less information as “insufficient information for matching” and treated them as erroneous enumerations in estimation. The Census Bureau removed from the P-sample those person records with less than the required amount of information.

Staff then matched all P-sample persons who lived in a sample housing unit on Census Day to the people enumerated in the census anywhere in the block cluster. This matching was a computer operation with clerical review. Analysts used variables such as name, address, date of birth, age, sex, race, Hispanic origin, and relationship to householder to identify matches between the P-sample and census enumerations.

Search areas for qualifying TES cases included the ring of blocks beyond the sample block cluster. In the absence of contradictory information, a match constituted evidence that the P-sample person was a Census Day resident of the block cluster. Similarly, census persons in the E-sample who matched P-sample persons in the block cluster were considered to be correctly enumerated. The Census Bureau identified duplicates in both the P- and E-samples.

The person follow-up interview, using a paper questionnaire, collected additional information that was sometimes necessary for the accurate coding of the residence status of the nonmatched P-sample people and the enumeration status of the nonmatched E-sample people. The goal of this operation was to determine whether P-sample nonmatches actually lived in the sample block cluster on Census Day. Field staff interviewed persons in cases of possible matches to resolve their match status. Other cases sent to follow-up included matched people with unresolved residence

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<sup>104</sup> For information on A.C.E. automation, see Chapter 6, “Data Capture and Processing” and Titan Systems Corporation, *Census 2000 Evaluation R.2.b: Laptop Computers for Accuracy and Coverage Evaluation, System Requirements Study, Final Report*, December 9, 2002.

<sup>105</sup> In the nonresponse conversion operation, all A.C.E. person interviewing cases were brought in from the field at a specified cutoff date. The operation was a last attempt to convert refusals to responses.

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status and other types of cases considered to have the potential for geocoding errors in the P-sample. Interviewers gathered information that permitted each person to be coded as a nonresident, or as a nonmatched or matched resident of the block cluster on Census Day. Similarly, the Census Bureau conducted follow-up interviews in E-sample nonmatch cases to determine whether the persons were correctly or erroneously enumerated in the block cluster.

For TES blocks, analysts coded people who were enumerated in the sample block cluster but who lived in the ring of blocks surrounding the block cluster as correctly enumerated. The Census Bureau placed considerable emphasis on obtaining a knowledgeable respondent for the person follow-up interview. After field staff completed the follow-up interview, clerical analysts reviewed the results and assigned final status to these cases, assisted by an automated system.

Because the Census Bureau used the results of the matching operation in the estimation phase of the A.C.E., staff had to determine the match, the correct enumeration, and the residence status of all sample cases. When these could not be resolved through computer and clerical matching or through field follow-up interviews, the Census Bureau imputed the match, correct enumeration, or residence probabilities based on the distribution of outcomes of the resolved follow-up interviews.

Additionally, as in the census, some respondents did not answer all the questions in the A.C.E. interview. The Census Bureau imputed answers to unanswered questions in the E-sample as part of the census processing. For P-sample individuals, if the tenure (whether the person rents or owns the housing unit in which he/she resides), sex, race, Hispanic origin, or age responses were left blank, the Census Bureau imputed the missing information based on the distribution of the variable within the household or the overall distribution of the variable or by using hot-deck methods, depending on the variable. Finally, staff implemented a noninterview adjustment for P-sample housing units to account for the weights of households that should have been interviewed in the A.C.E. but were not.

**Housing unit duplication.** Preliminary analysis during the summer of 2000 indicated the possibility of a significant duplication of housing units in the DMAF.<sup>106</sup> While investigating the problem, the Census Bureau identified and flagged these census housing units and their occupants as potential duplicates. The Census Bureau reinstated those determined to be legitimate housing units for the final census counts of both housing units and people. Because the Census Bureau was unsure which housing units would be permanently deleted and which reinstated, these housing units and their occupants were not included in the housing unit or person E-samples. For coverage estimation, the Census Bureau treated both the housing units and the persons as non-data-defined and did not allow for the matching of P-sample housing units or persons to them. These cases are referred to as “late adds” or “temporarily removed from the census.” (See the section below entitled “Late Adds and Whole Person Imputations” for a brief discussion of the effect of late adds on the A.C.E. estimates.)

**A.C.E. estimation.** The A.C.E. used dual system estimation to estimate the net coverage error of the household population included in the census. The term “dual system estimation” signifies that data from two independent systems are combined to measure the same population. The dual system estimator assumes that all people have the same probability of being captured in the census and the same probability of being captured in the P-sample, but these two probabilities need not be the same. This assumption, designed and appropriate for capture-recapture fixed wildlife population studies, is obviously an oversimplification for the U.S. population as a whole and would result in a downward bias. Because dual system estimation only assumes equal capture probabilities within any group for which estimates are made, the Census Bureau uses what is called “post-stratification” to group together individuals—based on certain characteristics or variables—with similar probabilities of being included in the census (or similar coverage probabilities). Thus, separate estimates are produced for each of these groupings or post-strata. For the

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<sup>106</sup> The Housing Unit Unduplication Program is discussed in more detail in the “Headquarters Processing” section of Chapter 6, “Data Capture and Processing.” In that discussion, it is referred to as the “Duplicate Delete Operation.”

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Census 2000 A.C.E., the post-strata were defined by the following variables: race/Hispanic origin domain, age/sex, tenure, census region, metropolitan statistical area (MSA) size/type of enumeration area, and census return rate.<sup>107</sup>

A complete cross-classification of these variables would have increased the variances of the estimates due to small expected sample sizes in many of the post-strata. Consequently, many detailed cells for the smaller race/ethnicity groups were combined; thus a total of 448 potential post-strata were formed. Once the Census Bureau obtained actual observed sample sizes and coefficients of variation, analysts further collapsed these to 416 post-strata.

Matching the P-sample to the census, the Census Bureau used the P-sample to measure the post-stratum level match or included-in-the-census rate for those P-sample persons determined to have been Census Day residents during the A.C.E. interview. Nonresidents were effectively dropped from the P-sample. The Census Bureau calculated a post-stratum level data-defined rate to account for those person records with limited information in the census and thus excluded from the E-sample and used the E-sample to measure the post-stratum level correct enumeration rate.

**The dual system estimate.** The dual system estimate for a post-stratum is defined as the census count multiplied by the data-defined rate multiplied by the following term: the correct enumeration rate divided by the match rate. This can be represented by:

$$\text{DSE} = \text{Census} \times \text{Rate}_{\text{DD}} \times \frac{\text{Rate}_{\text{CE}}}{\text{Rate}_{\text{Match}}} = \text{Census} \times \frac{\text{DD}}{\text{Census}} \times \frac{\text{CE}}{\text{E}} \times \frac{\text{P}}{\text{M}}$$

Because of the complexities of the A.C.E. design, the Census Bureau could not always use the simplest formulation of these quantities. In particular, the agency developed special procedures for people who moved between Census Day and the time of the A.C.E. interview. People who moved into the sample blocks were relatively easy to capture in the P-sample, but it was hard to match them to the census at their reported previous addresses. People who moved out of the sample blocks between the census and the A.C.E. interview were more difficult to find in the A.C.E., but it was relatively easy to determine whether the ones who were found were counted in the census. Therefore, the primary dual system estimator (DSE-C) used the estimated number of in-movers as an estimate of the number of movers and the estimated match rate for out-movers as an estimate of the match rate for movers. For small post-strata, specifically if there were fewer than ten out-movers in the A.C.E. sample, DSE-C could give anomalous results, and therefore the Census Bureau replaced it with DSE-A, which used only out-mover data.<sup>108</sup>

**Synthetic estimation for small areas.** The Census Bureau designed the A.C.E. to serve two primary purposes:

- To provide information on net coverage error in the census, particularly differential coverage (that is, differences in net coverage between minorities and nonminorities, young adult males and other age/sex groups, and renters versus owners).
- To potentially adjust the census for such error for nonapportionment uses of the data, if deemed appropriate.

The sample sizes used in the A.C.E. provided adequate reliability for such estimates for the United States as a whole. However, they were too small to provide reliable direct estimates for most states, counties, and cities, and other governmental entities from townships to school districts that make use of census data. As a result, model-based (or synthetic) estimation was used for these areas.

The Census Bureau obtained a coverage correction factor for each post-stratum by dividing the dual system estimate by the census count of persons in housing units. Because the A.C.E. excluded people in group quarters or in remote Alaska, these people had an effective coverage

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<sup>107</sup> For more information on the Census 2000 A.C.E. post-stratification design, see *Accuracy and Coverage Evaluation of Census 2000: Design and Methodology*, Section I, pp. 7-5-7-13.

<sup>108</sup> For more information on the procedures for the treatment of movers, see *Accuracy and Coverage Evaluation of Census 2000: Design and Methodology*, Section I, pp. 7-4-7-5, and 7-19.

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correction factor of 1.00. The Census Bureau calculated a synthetic estimate for any area or population subgroup  $b$  by summing up for the relevant post-strata in the area or group the product of the coverage correction factor by the census count. Coverage correction factors for population groups with good coverage were close to 1.00. Population groups with poor coverage had coverage correction factors higher than 1.00, while coverage correction factors less than 1.00 in a post-stratum occurred when overcounts or erroneous enumerations in the census exceeded undercounts.

**Measures of accuracy in the A.C.E.** The Census Bureau estimated standard errors for the A.C.E. estimates by a stratified “jackknife” procedure. This procedure removed the 29,136 original block clusters one at a time and recalculated all weights and estimates in order to replicate the sample design with the slightly smaller sample. The Census Bureau then applied a standard variance formula to these replicated estimates. Staff also estimated a variance-covariance matrix for the coverage correction factors that could be applied to obtain standard error estimates for any aggregated estimate for a geographic area. These variance estimates did not reflect synthetic estimation error or other small area effects.<sup>109</sup>

**Housing unit dual system estimates.** The Census Bureau also calculated dual system estimates for housing units using 98 post-strata defined by occupancy status, race of householder, size of building, and size of MSA/type of enumeration area. P-sample housing unit records were classified as actual housing units or not and then as matched or not. E-sample housing units were classified as correctly enumerated or not. Because data-defined records and movers were not considerations in housing unit estimation, the dual system estimate for each post-stratum was simply the census count—with an adjustment for units temporarily removed—multiplied by the following term: the correct enumeration rate divided by the match rate.

**Initial results and evaluation of the A.C.E.—March 2001 redistricting data adjustment decision.** Census 2000 adjusted block-level data had been prepared in the event the secretary of commerce decided in favor of using adjusted data as the official redistricting data. These data were available for release to states and localities by the deadline stipulated in Public Law 94-171 (within 1 year following the decennial census date). The Executive Steering Committee for Accuracy and Coverage Evaluation Policy (ESCAP), a committee of senior Census Bureau officials, provided a recommendation to the Census Bureau Director regarding whether the official redistricting data should incorporate a statistical adjustment; the committee recommended that the unadjusted census data be released as the official redistricting data.<sup>110</sup> Based on the ESCAP report, the Acting Director of the Census Bureau informed the Secretary that he concurred with and adopted the ESCAP’s recommendation.<sup>111</sup> On March 6, 2001, the Secretary of Commerce announced that he had accepted the recommendation of both the Acting Director and the ESCAP and had decided that the unadjusted data would be released as the official redistricting data.<sup>112</sup>

The ESCAP noted that, given the information available at the time, its recommendation was not based on any clear evidence that the unadjusted census counts were more accurate, but rather on its concern that there was some yet undiscovered error in the A.C.E. estimates. The committee was most concerned about the inconsistency between the A.C.E. estimates and estimates from demographic analysis (DA), especially for particular population groups.<sup>113</sup> It also noted concerns with synthetic and balancing error (these are discussed below) that required further investigation.<sup>114</sup>

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<sup>109</sup> For detailed information on the methodology for computing standard errors for the A.C.E. estimates, see *Accuracy and Coverage Evaluation of Census 2000: Design and Methodology*, Section I, pp. 7-14–7-16.

<sup>110</sup> *Federal Register*, Vol. 66, No. 46 (March 8, 2001), pp. 14004–46.

<sup>111</sup> *Ibid.*, p. 14004.

<sup>112</sup> The Secretary’s decision is documented in *Federal Register*, Vol. 66, No. 49 (March 13, 2001), pp. 14520–21.

<sup>113</sup> *Federal Register*, Vol. 66, No. 46, p. 14005. DA, which is discussed in the next section of this chapter, is a statistical technique that measures coverage trends as well as differences in coverage by age, sex, and race. DA uses records or estimates of births, deaths, immigration, emigration, and Medicare enrollments, and the results of the current and previous censuses, to develop estimates of the population at the national level.

<sup>114</sup> *Ibid.*

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Nineteen analysis reports were produced to inform the ESCAP's recommendation.<sup>115</sup> The ESCAP, in its March 1, 2001, report stating its recommendation, discussed the findings from these analysis reports under the following headings:

- Conduct of Key Operations
  - Census Quality Indicators
  - A.C.E. Quality Indicators
- Comparison with Demographic Analysis
- Measures of Census and A.C.E. Quality
  - Total Error Model
  - Loss Function Analysis
- Other Factors
  - Synthetic Error
  - Balancing Error
  - Late Adds and Whole Person Imputations
  - Misclassification Error

**Conduct of Key Operations.** Careful review of the analysis reports led to the conclusion that census and A.C.E. operations were of high quality. All major census operations and programs were completed on time, design upgrades in these programs produced measurable improvements, and staffing and pay innovations likely contributed to the Census Bureau's ability to hire and retain high-quality temporary employees who produced good work.<sup>116</sup>

A.C.E. operations were also similarly successful. The Census Bureau successfully automated the matching process, implemented improved computer processing, and carried out its quality assurance operations as planned. Listing, interviewing, matching, and follow-up operations were all conducted as designed and in a controlled manner. The ESCAP concluded that the ". . . evidence indicates that the A.C.E. was a clear operational success."<sup>117</sup>

**Comparison With Demographic Analysis.**<sup>118</sup> The inconsistency between the DA and A.C.E. estimates was chief among the ESCAP's concerns. The A.C.E. estimate of a 3.3 million net undercount was very different from the "Base DA" estimate of a 1.8 million net overcount. The Census Bureau also produced Alternative DA (Alt DA) estimates that allowed for a higher level of net undocumented immigration, for use in comparisons with the A.C.E. estimates. These yielded a net undercount estimate of 0.9 million.<sup>119</sup> In developing the DA estimates, the undocumented immigration component was the most troublesome. The Census Bureau noted that it needed to research and address the inconsistencies between the A.C.E. and DA estimates, and much of the later work in reexamining the DA estimates focused on this component.

**Total Error Model and Loss Function Analysis.** The total error model approach identified and attempted to quantify the sources of sampling and nonsampling error in the A.C.E. estimates and of nonsampling error in the census counts. For the A.C.E., these included E-sample processing error, P-sample matching error, E- and P-sample data collection error, missing data imputation error, sampling error, misclassification error, correlation bias, contamination bias, synthetic estimation bias, and balancing error. Some of these errors are discussed below.<sup>120</sup>

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<sup>115</sup> These reports, along with the ESCAP report itself, are available on the Census Bureau Web site at <<http://www.census.gov/dmd/www/EscapRep.html>>.

<sup>116</sup> *Federal Register*, Vol. 66, No. 46, p. 14005.

<sup>117</sup> *Ibid.*, p. 14012.

<sup>118</sup> As noted earlier, the DA program is discussed in detail in the next section.

<sup>119</sup> U.S. Census Bureau, J. Gregory Robinson, "Accuracy and Coverage Evaluation: Demographic Analysis Results," DSSD Census 2000 Procedures and Operations Memorandum Series B-4\*, March 12, 2001, p. 2. As discussed below, revisions to the DA estimates ultimately changed these results to a net undercount estimate of about 340,000. See U.S. Census Bureau, J. Gregory Robinson, "Demographic Analysis Results," ESCAP II Report No. 1, October 13, 2001. All three DA estimates differed substantially from the March 2001 A.C.E. estimate of a 3.3 million net undercount.

<sup>120</sup> Appendix D of *Accuracy and Coverage Evaluation of Census 2000: Design and Methodology* defines the A.C.E. errors in the total error model and identifies their sources.

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The Census Bureau derived the components of the total error model from its evaluation studies. The total error model analysis used estimates of correlation bias and sampling error from the 2000 A.C.E., but estimates of other coverage measurement survey errors from the 1990 post-enumeration survey (PES) evaluations. That was done because estimates of the other types of errors were not yet available for the A.C.E. To add robustness to the assumption that the 1990 PES evaluations data provided appropriate baselines for estimating error in the 2000 A.C.E., a sensitivity analysis considered a large number of total error estimates under alternative assumptions.

The total error model estimates of error are the input for the loss function analyses. The Census Bureau uses loss functions to compare two sets of counts or share distributions—for example, the unadjusted versus the adjusted Census 2000 data—to determine which set is closer to the “true” count or share distribution. That is, loss functions involve comparing the census errors to the coverage measurement survey errors to determine which has the smaller “loss” when compared to the “true” counts or shares. Because the “true” count or share distribution is not known, an estimated truth (a target number or share distribution) is used to perform the loss function analysis. The Census Bureau produced estimates of the “true” population and “true” population shares (or proportions) for states and substate areas. These estimated “truths” have variances and biases associated with them, making the loss function analysis particularly complex.

Census Bureau staff used the range of total error estimates in loss function analyses to compare the Census 2000 unadjusted and adjusted data for population totals and share distributions at various levels of geography. The ESCAP studied the results and found that, using the 1990 PES evaluations data, the loss function analyses did not allow the conclusion that the Census 2000 adjusted data were inferior to the Census 2000 counts. However, this finding did not obviate the need to explore the disparity between the DA and A.C.E. estimates. Thus, the loss function analysis results, by themselves, could not be used to conclude that adjustment would improve the accuracy of the Census 2000 redistricting data. Given that for many of the error components the committee had to use the 1990 PES evaluations data in its initial analyses, much of the subsequent “ESCAP II” work (see below) focused on analyzing the A.C.E. and data from various studies to assess the level of error in the A.C.E. estimates from these other components, for example, E- and P-sample data collection error, P-sample matching error, E-sample processing error, etc. However, while the committee did investigate these and other sources of error in the A.C.E. estimates, it did not produce a second round of total error model analyses based upon updated components of error and therefore also did not produce additional loss function analyses based upon an updated total error model.<sup>121</sup>

**Synthetic Error.** Synthetic error is a factor in understanding coverage estimation results. It is assumed that the net census coverage, estimated by the coverage correction factor, is relatively uniform within the post-strata. Failure of this assumption results in synthetic error. For Census 2000, Census Bureau staff evaluated synthetic error in the A.C.E. estimates to help inform the ESCAP’s March 2001 recommendation.<sup>122</sup> The committee was particularly concerned because synthetic error was not a component of the total error model and the loss function analyses. Most of the results of the evaluation indicated that correcting for synthetic bias would not change the loss function results (these are calculated at higher levels of aggregation where any synthetic errors would balance out). However, some results were mixed, showing that synthetic bias could have a noteworthy effect on the loss function results; this finding indicated that further evaluation was in order.<sup>123</sup>

**Balancing Error.** An indication that geographic balancing error could be present is that the P-sample matching did not agree with the E-sample matching in the surrounding areas, because the targeted extended search had differential effects on the correct enumeration and match rates.

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<sup>121</sup> For more information on this topic, see U.S. Census Bureau, Rita J. Petroni, “Accuracy of the 2000 Census and A.C.E. Estimates Based on Updated Error Components: Total Error Model,” ESCAP II Report No. 8, October 12, 2001.

<sup>122</sup> U.S. Census Bureau, Richard A. Griffin and Donald J. Malec, “Accuracy and Coverage Evaluation: Assessment of Synthetic Assumption,” DSSD Census 2000 Procedures and Operations Memorandum Series B-14\*, February 28, 2001.

<sup>123</sup> See the analysis done as part of ESCAP II: U.S. Census Bureau, Richard A. Griffin and Donald J. Malec, “Sensitivity Analysis for the Assessment of the Synthetic Assumption,” ESCAP II Report No. 23, October 12, 2001.



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The A.C.E. results did exhibit a “. . . much greater increase in the match rate (3.8 percent) than the correct enumeration rate (2.9 percent) . . .” in the blocks surrounding the A.C.E. sample blocks.<sup>124</sup> That is, there was more success finding a P-sample person in the census one block over from the person’s actual residence than in finding an E-sample person counted in the census one block from the person’s actual residence. In theory, these two increases should balance; thus, the ESCAP suspected balancing error and requested further evaluation of the matter (see below).

**Late Adds and Whole Person Imputations.** The absence of complete names or basic demographic data on the census form precluded matching those enumerations to the A.C.E. These cases were covered in the dual system estimate of coverage by treating them as whole person imputations; that is, they were excluded. Likewise “late adds” (those persons temporarily removed from the census) were treated as imputations in dual system estimation (DSE). The number of whole person imputations in Census 2000 was significantly greater than in the 1990 census, and ESCAP was keenly interested in the effect of this circumstance on the estimates. The evaluation indicated, and the committee agreed, that there did appear to be some geographic clustering within post-strata of cases designated as whole person imputations. The committee concluded that this might increase synthetic error, but not appreciably.<sup>125</sup>

**Misclassification Error.** Finally, the ESCAP considered misclassification error, which occurred when a respondent’s census post-stratum differed from his/her P-sample post-stratum. The evaluation found that American Indians not living on reservations, and Native Hawaiians and Pacific Islanders were significantly affected by this type of error. But the extent of misclassification error was small and had negligible effect on the dual system estimates at the national level.<sup>126</sup>

**Further evaluation of the A.C.E. estimates and second decision on adjustment.**

The uneven results of the initial evaluations encouraged the Census Bureau to conduct additional evaluations of the A.C.E. over the following 6 months to examine the reasons for the discrepancies with DA and to determine if the adjusted data should be used for nonredistricting purposes, including their incorporation in sample (long-form) data products, intercensal population estimates, and survey controls. The ESCAP issued a document laying out the areas of research it planned to pursue, and the process under which these additional analyses and studies were carried out was known as “ESCAP II.”<sup>127</sup>

Two planned A.C.E. evaluation programs, the Matching Error Study and the Evaluation Follow-up, provided additional information about some, but not all, of the errors in the A.C.E.<sup>128</sup> The Person Duplication Study used computer matching techniques to identify large numbers of duplicate census enumerations not identified by the A.C.E. evaluation results.<sup>129</sup> The Census Bureau conducted additional evaluations to address other concerns such as balancing error, contamination, and bias due to missing data. Also, with the assistance of external experts, Census Bureau staff conducted further research on the components of the DA estimates, resulting in some significant revisions to the components (particularly the international migration estimates) and thus a new set of DA estimates.<sup>130</sup> The findings from the above-referenced areas of study are summarized below.

The ESCAP II analyses confirmed the committee’s serious concerns regarding the accuracy of the A.C.E. estimates. Analysis of A.C.E. evaluation data and the results of the Person Duplication Study revealed that the A.C.E. failed to measure large numbers of erroneous census enumerations, many

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<sup>124</sup> *Federal Register*, Vol. 66, No. 46, p. 14016.

<sup>125</sup> *Ibid.*, p. 14017.

<sup>126</sup> *Ibid.*

<sup>127</sup> U.S. Census Bureau, “Analysis Plan for Further ESCAP Deliberations Regarding the Adjustment of Census 2000 Data for Future Uses,” Executive Steering Committee for Accuracy and Coverage Evaluation Policy, July 26, 2001.

<sup>128</sup> U.S. Census Bureau, Susanne L. Bean, “ESCAP II: Accuracy and Coverage Evaluation Matching Error,” ESCAP II Report No. 7, October 12, 2001; U.S. Census Bureau, David A. Raglin and Elizabeth A. Krejsa, “ESCAP II: Evaluation Results for Changes in Mover and Residence Status in the A.C.E.,” ESCAP II Report No. 16, October 15, 2001.

<sup>129</sup> U.S. Census Bureau, Robert E. Fay, “Evidence of Additional Erroneous Enumerations from the Person Duplication Study,” ESCAP II Report No. 9, October 26, 2001 (preliminary version); U.S. Census Bureau, Robert E. Fay, “Evidence of Additional Erroneous Enumerations from the Person Duplication Study,” ESCAP II Report No. 9, March 27, 2002 (revised version).

<sup>130</sup> U.S. Census Bureau, J. Gregory Robinson, “Demographic Analysis Results,” ESCAP II Report No. 1, October 13, 2001.

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of which were duplicates, resulting in an overstatement of the net undercount of between 3 and 4 million persons. This error alone was sufficient to call into question the quality of the A.C.E. estimates, and coupled with the revisions to the DA estimates, provided an explanation for the previously observed inconsistency with DA. The earlier concerns with A.C.E. balancing error, contamination, and bias due to missing data had also been resolved. Contamination bias was determined not to be an important source of error and the level of other errors, including synthetic error, was also found to be minimal by comparison and therefore not a major factor in the second ESCAP recommendation.

Given the level of error in the A.C.E. measurement of net coverage, the ESCAP recommended against the use of the adjusted data for nonredistricting purposes.<sup>131</sup> The Acting Director adopted the ESCAP's recommendation. On October 16, 2001, he informed the Commerce Department's under secretary for economic affairs that the Census Bureau would release Census 2000 long form (sample) data products, intercensal estimates, and survey controls using unadjusted data.<sup>132</sup>

**Production of revised demographic analysis estimates.** The Census Bureau determined that the international migration factor in the DA estimates required additional research and analysis, including examination of relevant sample data from Census 2000. The agency also committed to reexamining other component data. This research and analysis resulted in revisions to the component data and thus a revised set of DA estimates (September 2001 DA estimates). The revised component data and detailed estimates by sex, race, and age are presented and discussed in the "Demographic Analysis" section of this chapter; therefore, it is sufficient to note here that the net effect of these revisions was a reduction in the DA estimate of the total population by about 576,000. Thus, the September 2001 DA estimate of Census 2000 net undercount of 0.12 percent was in greater disagreement with the March A.C.E. estimate of 1.15 percent than was the March "alternative" DA estimate of 0.32 percent net undercount.<sup>133</sup>

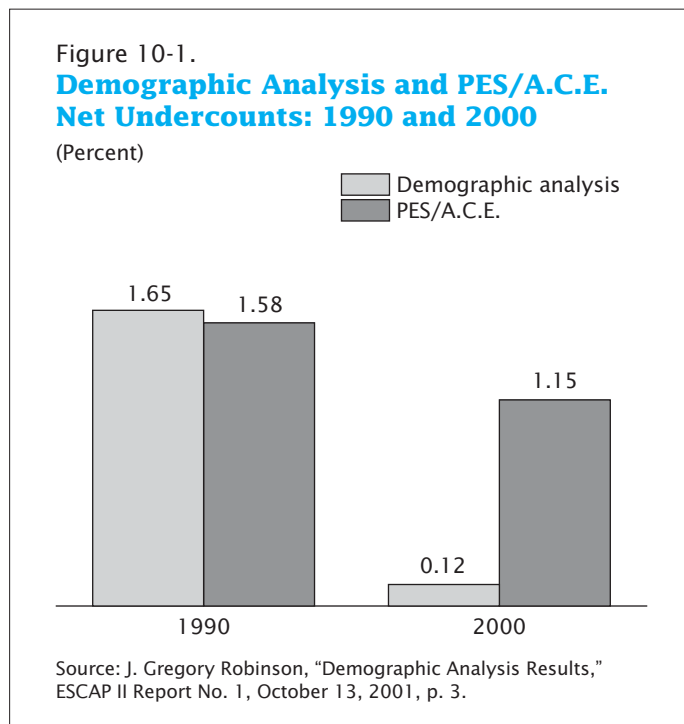
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<sup>131</sup> *Federal Register*, Vol. 66, No. 214 (November 5, 2001), pp. 56006–21. The ESCAP II report (along with the underlying analysis reports) is also available on the Census Bureau's Web site at <<http://www.census.gov/dmd/www/EscapRep2.html>>.

<sup>132</sup> *Federal Register*, Vol. 66, No. 214, p. 56006.

<sup>133</sup> "Demographic Analysis Results," ESCAP II Report No. 1, October 13, 2001, p. 3.

The difference between these two estimates was large; whereas, the 1990 PES and DA estimates were very close. The following graph (Figure 10-1) indicates that consistency and the disparity between the DA and A.C.E. estimates in 2000:



**Balancing error revisited.** The ESCAP expressed concerns about balancing error in the A.C.E. In theory, in a coverage measurement survey, the expected number of correct enumerations in the blocks surrounding the sample blocks should equal the number of matches in surrounding blocks. The A.C.E. found about 3 million more matches in surrounding blocks than correct enumerations.<sup>134</sup>

Immediately after the March 2001 decision, the Census Bureau mounted field follow-up efforts to explore the balancing issue. Field representatives checked the location of a sample of census housing units that had been coded as erroneous enumerations to determine if they were inside or outside of the A.C.E. sample block and surrounding ring of blocks. In addition, they checked units in the A.C.E. sample to see how often they were mistakenly included in the sample blocks, but really existed in a block surrounding the sample block. The Census Bureau determined that this type of error—known as A.C.E. sample geocoding error—was the major cause of the apparent balancing error. Because the surrounding blocks were searched in A.C.E. matching, these A.C.E. geocoding errors had little or no effect on the undercount estimates.<sup>135</sup>

**Missing data.** After staff completed A.C.E. field operations, data on some households continued to be missing or had not been completely collected in the interview(s). The missing data included such items as enumeration status, residency (on Census Day) status, and match status. As part of ESCAP II, the Census Bureau considered ways to deal with these missing data, including seven different missing data treatment methods. Each method resulted in new undercount estimates. The alternatives considered indicated that the choice of missing data model could have a significant effect on the resulting estimates of coverage error. Specifically, the standard deviation of the point estimates of the alternative methods (with some models excluded) was found to be approximately equal to the standard error of the A.C.E. estimates themselves.<sup>136</sup> Thus, there was about as much variation in the estimates due to the choice of a missing data model as there was from DSE sampling error.

<sup>134</sup> *Federal Register*, Vol. 66, No. 214, p. 56014.

<sup>135</sup> *Ibid.*, pp. 56014–15.

<sup>136</sup> *Ibid.*, p. 56014.

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### High level of error in the A.C.E. measurement of net coverage in Census 2000.

Coverage measurement surveys are dependent on good matching of the E- and P-samples. The Census Bureau conducted two evaluations to measure whether the matching for 2000 was done correctly: the Matching Error Study (MES) and the Evaluation Follow-up (EFU).

The MES determined that matching error caused the A.C.E. to overstate the national population by 385,000 people due to errors in the match rate. However, the matching results were more consistent in 2000 than in the 1990 PES. In 1990, the gross PES sample matching error rate (nonmatch to match and match to nonmatch) was 1.55 percent; the net rate was 0.93 percent. In Census 2000, the gross rate was 0.46 percent and the net equal to 0.41 percent.<sup>137</sup>

The EFU P-sample component concentrated on the residence status of sample people (that is, whether they were in fact residing in the sample areas on Census Day) and their mover status (that is, whether they had moved in or out between Census Day and their A.C.E. interview day). The EFU uncovered error that, for the most part, offset the error found in the MES. The EFU showed that misclassification of movers (for example, people who had moved in at the time of the A.C.E. interview being mistakenly classified as Census Day residents) resulted in an underestimate of the DSE by about 450,000 persons.<sup>138</sup> Combined, these two studies established a net difference in the undercount estimates of a mere 65,000 people.

By far the most significant problem the Census Bureau identified in the A.C.E. survey was that the A.C.E. did not measure a significant portion of erroneous enumerations in the census. Evaluations available for the ESCAP II recommendation indicated that the A.C.E. failed to identify approximately 3 million erroneously enumerated people.<sup>139</sup>

The EFU study and the person duplication evaluations played a significant role in this finding. Initially, the EFU E-sample component indicated that a large number of erroneous enumerations were missed by the A.C.E.; the EFU found an additional 1.9 million people who were erroneously enumerated in addition to the 4.2 million found by the A.C.E. Also, the EFU found about 4.5 million cases that could not be resolved. Because of the potentially significant implications of these estimates, the Census Bureau undertook a very careful review of the EFU data and design. It selected a "review sample" for which the matching was repeated. This time, the Census Bureau's most experienced clerks at its National Processing Center (NPC) facility in Jeffersonville, IN, conducted the matching. They detected some changes from the production matching. Their review estimated that Census 2000 erroneously enumerated 1.45 million people in addition to those identified by the A.C.E. Further, the clerks employed a conservative approach in coding difficult cases and concluded that over 15 million cases could not be resolved or had conflicting data.

Coincidental with the NPC review, the Census Bureau conducted person duplication evaluations that applied computer matching to the data for the entire population. This was done to search for duplicates of the A.C.E. sample cases; for example, E-sample cases duplicated elsewhere might be erroneous enumerations. Because the A.C.E. had done a complete (including clerical work) search for duplicates within the sample areas and, for targeted extended search cases, their surrounding blocks, the national computer-only duplicate search results could be compared to the A.C.E. results to provide a measure of A.C.E.'s efficacy in identifying duplicates.

The rough error in the A.C.E. estimates due to the mismeasurement of erroneous enumeration, including duplication, could be approximated by combining the EFU results with the duplication studies' results. The Census Bureau estimated this error, which was not measured in the A.C.E., at about 3 million persons. Additionally, combining the EFU and duplication studies suggested an estimate of about 800,000 additional erroneous enumerations in the large pool of unresolved and conflicting cases for which the status of correct enumeration had been imputed.<sup>140</sup>

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<sup>137</sup> U.S. Census Bureau, Susanne L. Bean, "Accuracy and Coverage Evaluation Matching Error," ESCAP II Report No. 7, October 12, 2001, p. 9.

<sup>138</sup> U.S. Census Bureau, David A. Raglin and Elizabeth A. Krejsa, "ESCAP II: Evaluation Results for Changes in Mover and Residence Status in the A.C.E.," ESCAP II Report No. 16, October 15, 2001, p. 14.

<sup>139</sup> *Federal Register*, Vol. 66, No. 214, p. 56013.

<sup>140</sup> *Ibid.*

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**Release of “revised early approximations” of Census 2000 net undercount.** On October 17, 2001, the Census Bureau Acting Director publicly announced the decision not to adjust the Census 2000 sample data products, intercensal estimates, and survey controls. He had previously informed the Commerce Department’s under secretary for economic affairs that the A.C.E. estimates were so flawed that significant additional review and analyses would be required to revise the data before they could be used for any purposes. The Acting Director noted that such work might result in revised A.C.E. estimates that could be used for programmatic purposes such as improving the accuracy of intercensal estimates in subsequent years.<sup>141</sup>

At the October 17 press conference, in order to fully explain its decision on adjustment for nonredistricting purposes, the agency released “revised early approximations” of net undercount in Census 2000 for three race/ethnicity groupings and the total population. These revised preliminary estimates were not part of the ESCAP’s October 17, 2001, report, but were produced at the request of the Acting Director. They corrected for estimates of erroneous enumerations, including duplicates, identified in the A.C.E. evaluations but not in the full A.C.E. E-sample.<sup>142</sup> The purpose of the “revised early approximations” was to illustrate the effect on the A.C.E. estimates of potential future revisions that accounted for the erroneous enumerations not measured by the A.C.E. The same methodology and data were used later to expand the calculations to all seven major race/Hispanic origin groups.<sup>143</sup> These preliminary estimates showed a very small net undercount; they also indicated that the differential undercount had not been eliminated. These results were limited to the extent that they provided information only at the national level for broad population groups. Furthermore, these preliminary approximations were based on a small subset of A.C.E. data and only partially corrected for errors in measuring erroneous enumerations using a conservative estimate of computer efficiency in finding duplicate links.<sup>144</sup> Additionally, the methodology for making these revisions to the estimates did not take into account potential errors in measuring omissions.

**Census Bureau embarks on A.C.E. Revision II research.** Even though the ESCAP recommended twice against the use of the adjusted data, the committee had concerns about differential coverage in Census 2000. The committee thought it possible that further research might result in revised estimates of coverage that addressed the differential net coverage exhibited in the unadjusted Census 2000 data. These estimates could be used to adjust and thereby improve postcensal estimates. In addition, work on revised estimates would provide a better understanding of Census 2000 coverage error that could be used to improve census operations for 2010 as well as help develop enhanced methodologies for the 2010 Census coverage measurement program. Thus, in the fall of 2001, the Census Bureau began work on revising the A.C.E. estimates to correct for detected errors; this effort became known as A.C.E. Revision II.

The major objective of A.C.E. Revision II was to produce improved estimates of net coverage error in Census 2000. Because the national net undercount, as indicated by both DA and the “revised early approximations” (released on October 17, 2001), was very small, and the census included large numbers of erroneous enumerations in the form of duplicates, it was imperative that the revised methodology thoroughly account for both overcounts and undercounts. This meant obtaining better estimates of erroneous census enumerations from the E-sample and obtaining

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<sup>141</sup> *Federal Register*, Vol. 66, No. 214, p. 56006. Intercensal (or postcensal) population estimates are produced annually for the nation, states, and counties (and biennially for smaller geographic areas) and are generally used in federal funding-allocation formulae in lieu of decennial census figures (except for the year in which the census figures are released) because they reflect ongoing population changes during the decade. The most recent decennial census provides the base for calculating these estimates.

<sup>142</sup> John H. Thompson, Preston J. Waite, and Robert E. Fay, “Basis of ‘Revised Early Approximation’ of Undercounts Released Oct. 17, 2001,” ESCAP II Report No. 9a, October 26, 2001.

<sup>143</sup> U.S. Census Bureau, “Revised Preliminary Estimates of Net Undercounts for Seven Race/Ethnicity Groupings,” DSSD A.C.E. Revision II Memorandum Series PP-2. A PDF version of this memorandum can be accessed from the Census Bureau’s Web site at <<http://www.census.gov/dmd/www/ace2.html>>.

<sup>144</sup> “Evidence of Additional Erroneous Enumerations from the Person Duplication Study,” ESCAP II Report No. 9, March 27, 2002 (revised version).

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better estimates of census omissions from the P-sample. The Census Bureau summarized the major issues it needed to address in conducting this work in the form of the following five challenges:

- (1) Improve estimates of erroneous enumerations.
- (2) Improve estimates of census omissions.
- (3) Develop new models for missing data.
- (4) Enhance the estimation post-stratification.
- (5) Consider adjustment for correlation bias.<sup>145</sup>

The A.C.E. Revision II process called for no new field operations. The late date meant revisiting households for additional data collection was infeasible. Consequently, the revisions the Census Bureau undertook were based on existing data. One aspect of the strategy for revising the coverage estimates involved correcting measurement errors using information from the A.C.E. evaluation data. This was referred to as the Measurement Correction Study. Another facet of these corrections involved conducting a more extensive duplicate study to obtain data for correcting measurement error due to duplication not detected by the A.C.E. evaluations. This study was referred to as the Further Study of Person Duplication.<sup>146</sup> The estimation method, discussed briefly below, was designed to handle the overlap of errors detected by both studies and thus avoid overcorrecting for measurement error.<sup>147</sup>

**Measurement Correction Study.** This study was designed to improve estimates of both erroneous census enumerations and census omissions by correcting for errors in the data collected by the A.C.E. It combined the original A.C.E. person interview (PI) and person follow-up (PFU) data with data from the Evaluation Follow-up (EFU) interview, the Matching Error Study (MES), and the review sample<sup>148</sup> to correct for data collection error in enumeration status, residence status, mover status, and matching status. This effort involved extensive recoding of about 60,000 P-sample cases and more than 70,000 E-sample cases.<sup>149</sup> The Census Bureau used an automated computer algorithm to recode most of the cases, but some cases required a clerical review by experienced analysts at the NPC. These analysts had access to the questionnaire responses as well as to interviewer notes, which put them in a better position to resolve apparent discrepancies in the data collected, though missing or conflicting information made it impossible to recode all of the data.

The Census Bureau developed new missing data models to reflect the following types of missing/conflicting data that could result from the recoding operation:

- (1) P-sample households that were originally considered interviews but that recoding determined had no valid Census Day residents in the household.
- (2) Cases with unresolved match, enumeration, or residency status because of incomplete or ambiguous interview data.
- (3) Cases in which enumeration or residency status could not be determined due to contradictory information collected in the A.C.E., PFU, and EFU interviews.

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<sup>145</sup> U.S. Census Bureau, Howard Hogan, "Five Challenges in Preparing Improved Post-Censal Population Estimates," DSSD A.C.E. Revision II Memorandum Series PP-1, January 25, 2002.

<sup>146</sup> U.S. Census Bureau, Thomas Mule, "Accuracy and Coverage Evaluation Revision II: Further Study of Person Duplication," DSSD A.C.E. Revision II Memorandum Series PP-51, April 4, 2002.

<sup>147</sup> The estimation method is described more fully in *Accuracy and Coverage Evaluation of Census 2000: Design and Methodology*, Section II, Chapters 2–5.

<sup>148</sup> The PFU/EFU review study was not a planned evaluation. It was a special study conducted using a subsample of the evaluation data to resolve discrepancies in enumeration status between the PFU and EFU.

<sup>149</sup> These are probability subsamples of the original A.C.E. P- and E-samples. In the context of A.C.E. Revision II they are called "revision samples," but they are in fact equivalent to the EFU samples. See *Accuracy and Coverage Evaluation of Census 2000: Design and Methodology*, Section II, Chapter 3, for additional information on this issue.

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The Census Bureau implemented a household noninterview weighting adjustment using new cell definitions for cases that fit the situation described in (1). Staff developed imputation cells and donor pools for the second type of missing data based on detailed responses to the questionnaires. Because no applicable donor pools existed for the conflicting cases in (3), the Census Bureau imputed probabilities of 0.5 for correct enumeration status and Census Day residency status. Fortunately, the measurement error corrections resulted in a relatively small number of these cases.

**Further Study of Person Duplication (FSPD).** The FSPD was designed to provide information to improve estimates of both erroneous census enumerations and census omissions. This study used computer matching and modeling techniques to identify E-sample and P-sample cases that linked to (matched) another census enumeration anywhere in the country, including group quarters enumerations, and reinstated and deleted census cases. For the E-sample links, the study could not generally determine which enumeration was correct and which was the duplicate, and for P-sample links, whether the census location or the P-sample location was the correct Census Day residence. Instead, Census Bureau staff used study data to model the probability that an E-sample linked case was a correct enumeration or that a P-sample case was a resident of the sample block cluster on Census Day.

**Estimation methodology.** The revised estimates incorporated separate post-strata for estimating census omissions than for erroneous census enumerations because the causes of each were likely to be different. Though much previous work on developing post-strata focused on census omissions and used the same post-strata to estimate erroneous enumerations, A.C.E. Revision II research efforts focused on determining variables related to explaining variations in rates of erroneous enumerations. The Census Bureau made changes for the E-sample by eliminating some of the original post-stratification variables and adding others. For example, staff replaced variables such as region, metropolitan statistical area/type of enumeration area, and tract return rate with proxy status, type and date of census return, and household relationship and size, and modified age groups to define separate post-strata for children aged 0 to 9 and those 10 to 17. Census Bureau staff made this last modification to the P-sample post-strata as well. The Census Bureau made this modification because the DA estimates suggested different coverage for younger versus older children.

The Census Bureau used estimated correct enumeration and match rates to calculate dual system estimates (DSEs) for the cross-classification of the E-sample and P-sample post-strata. The specific form of the A.C.E. Revision II DSE was the same as for the original A.C.E.—using the census count, the data-defined rate, the correct enumeration rate, and the match rate—but the data that were used needed revisions. These revisions included multiple adjustments in the construction of correct enumeration rates and match rates to account for duplicates, which were treated separately from the remainder of the E- and P-samples, and for the measurement error for the nonduplicates. The measurement error was accounted for by double sampling adjustments to adjust the A.C.E. correct enumeration rates or match rates for the nonduplicates by the change in these rates for the revision sample. This double sampling adjustment was necessary because the revision sample was too small to give reliable correct enumeration and match rates but was adequate to estimate the change in these rates.<sup>150</sup>

**Adjustment for correlation bias.** The A.C.E. Revision II DSEs included an adjustment for correlation bias. Correlation bias exists if (within P-sample post-strata) people missed in the census were more likely (or less likely) to also be missed in the A.C.E. In the “more likely to be missed” scenario, correlation bias has a downward effect on estimates. Although statisticians have long thought that correlation bias exists, previous coverage measurement surveys estimated results as net undercounts, and making corrections would have increased the DSEs and thus the estimated undercount in the census. The conservative approach of not adjusting estimates for correlation bias had the effect of understating the net undercount, which resulted in DSEs that were larger

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<sup>150</sup> For a detailed discussion of the estimator, see *Accuracy and Coverage Evaluation of Census 2000: Design and Methodology*, Section II, Chapter 6.

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than the census counts but not as large as they would be with the bias adjustment. In the presence of overcounts for A.C.E. Revision II, DSEs without correlation bias adjustment might have moved the estimates further away from the true population total, and they could actually have had greater error relative to unadjusted census counts.

The Census Bureau calculated estimates of correlation bias in A.C.E. Revision II using the “two-group model” and sex ratios obtained from DA data.<sup>151</sup> It calculated correlation bias estimates for adult males only under the assumption of no correlation bias for adult females. DA sex ratios provided evidence of correlation bias and permitted the estimation for adult males at the national level for age-race groups.<sup>152</sup> For example, in Census 2000, DA estimated 897.2 Black males ages 18 to 29 for every 1,000 Black females ages 18 to 29 in the housing unit population, while A.C.E. Revision II estimated only 830.3 Black males. The difference in the two sets of estimates was attributed to the correlation bias in the coverage measurement survey DSEs.

The Census Bureau implemented correlation bias adjustments separately for Blacks and non-Blacks within three age categories: 18 to 29, 30 to 49, and 50 and over, with the exception of non-Black males 18 to 29 years of age, a group for which the A.C.E. Revision II sex ratio was already higher than the DA sex ratio. As an example of how the adjustment was implemented, the estimates for all post-strata for Black males 18 to 29 were adjusted upwards by the factor  $897.2/830.3 = 1.0806$ , so that the DA sex ratio would be achieved for that age-race group. The model used to carry out the adjustments assumed that relative correlation bias was constant over male post-strata within the age-race groups.

The Census Bureau used DSEs—adjusted for correlation bias—to produce coverage correction factors for each of the cross-classified post-strata (E-sample post-strata cross-classified with the P-sample post-strata). Analysts applied (carried down) these factors within the post-strata to produce estimates for geographic areas such as places and counties. This process, referred to as synthetic estimation, was summarized earlier (see “Synthetic estimation for small areas”).

The stratified jackknife approach employed to estimate variances for the A.C.E. could not be readily adapted to reflect the effect of the correlation bias adjustment on variance estimates. Because this effect was large for some groups, the Census Bureau decided to employ a simple jackknife procedure that gave similar results for estimates without correlation bias adjustment, but that could be modified to reflect the correlation bias adjustment.<sup>153</sup>

**Summary of the methodology; changes to the March 2001 A.C.E. estimates.** In summary, the A.C.E. Revision II DSE incorporated the following enhancements to a traditional DSE:

- New post-stratification to reflect different factors related to erroneous inclusions and omissions.
- Corrections to the correct enumeration rate from the Further Study of Person Duplication.
- Corrections to the correct enumeration rate from the Measurement Correction Study.
- Corrections to the match rate from the Further Study of Person Duplication.
- Corrections to the match rate from the Measurement Correction Study.
- Adjustment for correlation bias.

The impact of these revisions can best be seen by looking at the numerical effects of incorporating one change at a time to the DSE. Table 10-1 below shows the impact of each change relative to the March 2001 A.C.E. estimate of national net undercount.

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<sup>151</sup> U.S. Census Bureau, Roger Shores, “A.C.E. Revision II: Adjustment for Correlation Bias,” DSSD A.C.E. Revision II Memorandum Series PP-53, March 4, 2003.

<sup>152</sup> The DA methodology permits development of coverage estimates for the Black and non-Black race groupings only.

<sup>153</sup> For more information on the calculation of these variances, see *Accuracy and Coverage Evaluation of Census 2000: Design and Methodology*, Section II, p. 7-1.



Table 10-1.  
**Change in Estimated Net Undercount**  
 (Household population in millions)

Category	Net undercount	Change <sup>1</sup> to undercount	Cumulative undercount
March 2001 A.C.E. estimate .....	3.26		
New post-stratification .....		0.04	3.30
E-Sample: Further Study of Person Duplication .....		2.81	0.49
Measurement Correction Study .....		-2.43	-1.94
P-Sample: Further Study of Person Duplication .....		-1.10	-3.04
Measurement Correction Study .....		0.01	-3.03
Correlation bias .....		1.70	1.33
A.C.E. Revision II estimate .....	-1.33	-4.59	

<sup>1</sup> Shows the effect of adding in one revision at a time. A different ordering of the revisions would result in slightly different intermediate effects, but yield the same overall net undercount estimate. Estimated change in the net undercount is not the same as estimated additional erroneous enumerations or additional census omissions.

Source: U.S. Census Bureau, Donna Kostanich and Dawn E. Haines, "Census 2000 Accuracy and Coverage Evaluation Revision II," undated, pp. 4-5.

This table starts with the March 2001 A.C.E. estimate of a national net undercount of just under 3.3 million persons. Each row shows the effect on the net undercount estimate of making a specified revision. Using only the new post-stratification and making no other correction would increase the estimated net undercount to 3.3 million, an increase of less than 39,000. Though the effect of the new post-stratification is small at the national level, it has considerably more impact on subnational estimates, particularly for small areas. Corrections to the correct enumeration rate, if the first adjustment is to correct for those identified by the Further Study of Person Duplication (FSPD), reduce the estimated net undercount by 2.8 million. The correct enumeration rate corrections from the Measurement Correction Study reduce the estimated net undercount by another 2.4 million, resulting in an estimated net overcount of 1.9 million. Adding corrections to the match rate based on the FSPD reduces the estimated net undercount by another 1.1 million. Then, adding in such corrections from the Measurement Correction Study causes the estimated net undercount to increase slightly, but by only 11,000. Finally, corrections for correlation bias increase the estimated net undercount by 1.7 million, yielding the A.C.E. Revision II estimate of a 1.3 million (0.49 percent) net overcount.<sup>154</sup>

**Summary of A.C.E. Revision II results.** Table 10-2 shows A.C.E. Revision II estimates of percent net undercount in Census 2000 for the total household population and major demographic groups. For comparison, Table 10-2 also shows results from the March 2001 A.C.E. estimates. As just noted, A.C.E. Revision II estimates a negative net undercount, or overcount, of the Census 2000 household population of 0.49 percent. This differs sharply from the March 2001 A.C.E. estimate of a 1.18 percent net undercount, an estimate now known to be flawed due to the effects of (among other things) undetected duplicates and data collection error in establishing Census Day residency status.

Among the A.C.E. Revision II coverage estimates by race/Hispanic origin domains, only those for the non-Hispanic White and non-Hispanic Black domains show estimated net undercounts differing significantly from zero. The non-Hispanic White domain has an estimated net undercount of negative 1.13 percent, thereby reflecting a net overcount, while the non-Hispanic Black domain has an estimated net undercount of 1.84 percent.

Table 10-2 also shows differential coverage estimates with respect to tenure. Nationally, A.C.E. Revision II estimates owners to have a net overcount of 1.25 percent and nonowners a net undercount of 1.14 percent. These estimated net undercount rates differ significantly from zero, and the difference between the two estimates is also statistically significant.

<sup>154</sup> For further information about how these revisions affect race/ethnic groups, see U.S. Census Bureau, Thomas Mule, "A.C.E. Revision II Results: Change in Estimated Net Undercount," DSSD A.C.E. Revision II Memorandum Series PP-58, March 4, 2003, pp. 7-9.

Additionally, the A.C.E. Revision II estimates show coverage differentials by age and sex. In particular, the estimated net overcounts for the following age/sex groups are statistically significant: children ages 10 to 17; adult females 18 to 29, 30 to 49, and 50 and over; and males 50 and over. (The net overcount estimate for children 0 to 9 is not significantly different from zero.) In contrast, the Census Bureau estimates statistically significant net undercounts for males 18 to 29 and 30 to 49. Of course, it should be noted that the coverage differences by sex are affected by the correlation bias adjustments that increased the undercount estimates for adult males.

Table 10-2.  
**Net Undercount for Major Groups**  
(In percent)

Characteristic	A.C.E. Revision II		A.C.E. March 2001	
	Estimate	Standard error	Estimate	Standard error
<b>Total</b> .....	<b>-0.49</b>	<b>0.20</b>	<b>1.18</b>	<b>0.13</b>
<b>Race/Hispanic Origin Domain</b>				
Non-Hispanic White .....	-1.13	0.20	0.67	0.14
Non-Hispanic Black .....	1.84	0.43	2.17	0.35
Hispanic .....	0.71	0.44	2.85	0.38
Non-Hispanic Asian .....	-0.75	0.68	0.96	0.64
Hawaiian or Pacific Islander .....	2.12	2.73	4.60	2.77
American Indians on reservation .....	-0.88	1.53	4.74	1.20
American Indians off reservation .....	0.62	1.35	3.28	1.33
<b>Tenure</b>				
Owner .....	-1.25	0.20	0.44	0.14
Nonowner .....	1.14	0.36	2.75	0.26
<b>Age, Sex</b>				
0 to 9 <sup>1</sup> .....	-0.46	0.33	1.54	0.19
10 to 17 <sup>1</sup> .....	-1.32	0.41	1.54	0.19
18 to 29, male .....	1.12	0.63	3.77	0.32
18 to 29, female .....	-1.39	0.52	2.23	0.29
30 to 49, male .....	2.01	0.25	1.86	0.19
30 to 49, female .....	0.60	0.25	0.96	0.17
50 or older, male .....	-0.80	0.27	-0.25	0.18
50 or older, female .....	-2.53	0.27	-0.79	0.17

<sup>1</sup> For March 2001, the "0 to 17" Age, Sex group was a single group. Therefore, the net undercount and standard error for children "0 to 9" and "10 to 17" are identical.

Note: A negative net undercount denotes a net overcount.

Source: U.S. Census Bureau, Donna Kostanich, "Technical Assessment of A.C.E. Revision II," DSSD A.C.E. Revision II Memorandum Series, PP-61, March 12, 2003, p. 12 (table reproduced in part).

**Decision on intercensal population estimates.** The results from the A.C.E. Revision II methodology represented a dramatic improvement from the March 2001 A.C.E. results. The data provided the Census Bureau's best estimates of coverage error present in Census 2000. Several technical issues remained, however, including uncertainty about the adjustment for correlation bias, concerns about errors from synthetic estimation, and inconsistencies between DA and A.C.E. Revision II estimates of the coverage of children ages 0 to 9. With regard to this last area of concern, DA estimated a relatively large net undercount of 2.56 percent for this group, while the A.C.E. Revision II estimate, as mentioned earlier, was not statistically different from zero.<sup>155</sup> The DA estimate for this group was produced principally from administrative data on births since the previous census and was considered to be quite accurate. This raised questions about this particular A.C.E. Revision II estimate and possibly about the methodology in general. The above-noted concerns and others, taken together, led the Census Bureau to decide that the A.C.E. Revision II estimates would not be used to adjust the base—that is, the Census 2000 data—for producing the intercensal population estimates.<sup>156</sup>

<sup>155</sup> U.S. Census Bureau, "Decision on Intercensal Population Estimates," March 12, 2003, p. 7 (PDF version).

<sup>156</sup> The decision is documented in U.S. Census Bureau, "Decision on Intercensal Population Estimates," March 12, 2003. For an in-depth assessment of the A.C.E. Revision II estimates and the associated technical concerns, see "Technical Assessment of A.C.E. Revision II," March 12, 2003.

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**Implications for the 2010 Census.** The A.C.E. Revision II effort has improved the Census Bureau’s understanding of Census 2000 errors. It will also help the agency develop better methodologies for the conduct of the 2010 Census and the associated coverage measurement program. The A.C.E. Revision II research and analyses suggest several areas of additional research and possible testing for 2010:

- The agency should develop better methods to detect, evaluate or measure, and correct census erroneous enumerations, particularly duplicates. Clearly, the Census Bureau should make efforts to reduce the number of duplicates that occur in the first place, as well as investigate ways to determine which member of a duplicate pair is the correct one.
- The Census Bureau should conduct cognitive research on and testing of simplified, more understandable Census Day residence rules. The agency should focus not only on clarifying the rules, but also on ways to improve questionnaires for both the census enumeration and the coverage measurement interview. The research should pay particular attention to difficult enumeration situations involving college students, children in joint custody, and individuals with more than one residence.
- The Census Bureau should devote significant research and testing to minimizing error caused by proxy data. Clearly, census operations should be designed to limit the introduction of proxy data in the first place, and systems should be developed to improve the quality of the data when proxy data must be used.

### Demographic Analysis (DA)

**Introduction.** The Census Bureau uses DA methodology to:

- Develop population estimates.
- Evaluate census coverage and the demographic “consistency” of gathered data.
- Validate coverage measurement survey estimates of net census coverage.

While DA is used extensively in support of the Census Bureau’s population estimates and projections programs, the discussion here focuses on its use as a benchmark to evaluate Census 2000 results and assess the Accuracy and Coverage Evaluation (A.C.E.) estimates.

DA also uses administrative data on the nation’s housing stock to provide independent housing benchmarks that enable the Census Bureau to assess the completeness of its address lists (the master address file, or MAF) and evaluate housing unit coverage in the census.

**Methodology.**<sup>157</sup> DA uses the basic demographic accounting equation of population components of change to produce estimates of the population under age 65. Estimates are calculated for single-year birth cohorts:

$$\text{Population} = \text{Births} - \text{Deaths} + \text{Immigration} - \text{Emigration}$$

The birth, death, and (legal) immigration components are drawn from administrative data. Emigration and undocumented immigration figures are based on estimates. Because of the lack of comprehensive vital statistics records prior to the mid 1930s and the relative completeness of data on Medicare enrollments, Medicare data are used to produce estimates for the population aged 65 and older.

Using components of change, the estimated population for a birth cohort can be carried forward through time to derive estimates of net undercount in a series of censuses as the cohort ages. Thus, DA is perhaps more useful in providing information about trends and changes in census

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<sup>157</sup> This brief summary of the methodology is based on information from “Demographic Analysis” in *Encyclopedia of the Census*, pp. 164–65. For detailed information on the DA methodology, including the procedures used for calculating the 2000 population estimates, see Appendixes A, B, and C in U.S. Census Bureau, J. Gregory Robinson, “Accuracy and Coverage Evaluation Survey: Demographic Analysis Results,” DSSD Census 2000 Procedures and Operations Memorandum Series B-4\*, March 12, 2001.

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coverage over time than it is in providing precise measures of net coverage in any one census, although the linkage of the estimates over time through the cohorts does provide some basis for judging the validity of the estimates themselves.

**Limitations of the DA methodology.**<sup>158</sup> The Census Bureau has used DA extensively since the 1960 census as a tool for evaluating net census coverage. The methodology has been refined significantly since 1960, but significant known limitations remain. Most notably, DA estimates do not provide measures of population down to the smallest geographic areas (such estimates would require independent estimates of internal migration). Instead, DA focuses on evaluating census counts and coverage measurement survey results for age/sex/race groups at the national level, as was the case for Census 2000.<sup>159</sup>

Further, given its reliance on administrative records and estimates for various components or sub-components of the accounting equation, most data sources for DA estimates do not contain the detailed race and ethnicity (Hispanic or not Hispanic) groupings captured in the census. The end result is that DA produces reliable estimates for only two race categories: Black (or African American) and non-Black (all other races).

The decision to permit Census 2000 respondents to select one *or more* races in responding to the race question complicated the issue. For example, for the segment of the population in Census 2000 that selected Black or African American *and* one or more additional races, it was not clear how these respondents' races would be reflected in the administrative records relied upon by DA. Additionally, concerns existed about the ability to make historical comparisons with DA estimates of net coverage in 1990 and earlier censuses. Thus, for purposes of calculating DA estimates of Census 2000 net undercount by race, the Census Bureau developed two models of tabulating the census data for those selecting Black: Model 1—returns in which only “Black” was selected; and Model 2—returns in which “Black” was selected, irrespective of other race categories selected. The Census Bureau also calculated DA estimates of net undercount based on an average of the estimates under the two models.<sup>160</sup> This complicating factor increased the importance of using sex ratios as a basis for making inferences about net coverage by race. DA sex ratios<sup>161</sup> are compared to A.C.E. sex ratios to determine the presence of correlation bias in the coverage measurement survey estimates. The findings from the sex ratio comparisons, which are discussed below, were minimally affected by the model used.

Because the administrative data that DA uses have been corrected for certain types of errors and the estimated components (or subcomponents) of the demographic equation are not based on a scientific sample survey, it is difficult to determine the level of uncertainty associated with DA estimates. In other words, bias is the major error component affecting the quality of the DA estimates, and the Census Bureau does not have acceptable methods to measure the bias.

**Use of DA to evaluate the census master address file.** In the lead-up to Census 2000, the Census Bureau sought to assess the completeness of its MAF. Beginning in January 2000, the agency used subnational housing unit benchmarks to conduct a systematic demographic assessment of the December 1999 version of the file.<sup>162</sup> This analysis, which extended into early summer of 2000, provided the first empirical evidence of excessive “overcoverage”—that is, duplicate addresses—in the MAF for many areas. For example, the housing unit count for Cook County, IL, in the December 1999 MAF was 20 percent higher than the DA housing unit benchmark.<sup>163</sup>

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<sup>158</sup> The information in this section is summarized from “Accuracy and Coverage Evaluation Survey: Demographic Analysis Results,” pp. 1–2.

<sup>159</sup> The Census Bureau also conducted a formal evaluation to assess the consistency of Census 2000 data with subnational DA benchmarks. It is summarized in the section of this chapter dealing with the Census 2000 Evaluation Program.

<sup>160</sup> The average is the midpoint of the range between the two estimates.

<sup>161</sup> Calculated separately for the “Black” and “non-Black” race categories, the sex ratio is defined as the number of males per 100 females.

<sup>162</sup> The MAF is continuously updated through various operations. See Chapter 8, “Addresses and Questionnaire Printing and Mailing” for information on address list development and updating activities.

<sup>163</sup> U.S. Census Bureau, Kirsten K. West, “Results From the County Level Demographic Benchmark Analysis of the Decennial Master Address File—Part B: Differences in Excess of 10 Percent for Selected Types of Enumeration Areas,” Count Review Memorandum Series 99-02, February 15, 2000.

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This finding and its confirmation by subsequent field work encouraged the Census Bureau to conduct address and person matching operations to remove duplicate addresses from the MAF and the housing unit and person records associated with these addresses from the census file.<sup>164</sup> About 58 percent of the approximately 2.4 million MAF addresses initially identified as potential duplicates in these operations were permanently removed.<sup>165</sup> These actions doubtless resulted in improved census accuracy.

### **The role of DA in assessing the A.C.E. estimates for the adjustment decision.**

As it did in 1990, the Census Bureau planned to use national-level DA estimates to assess the coverage measurement survey (the A.C.E.) results in Census 2000;<sup>166</sup> and it planned to use the A.C.E. results to adjust the Census 2000 counts for nonapportionment purposes, including redistricting.<sup>167</sup> However, the agency noted that it:

. . . [would not] release corrected [statistically adjusted] redistricting data until it had brought its technical judgment to bear in assessing the available data to verify that its expectations . . . [had] been met. [It would] . . . consider operational data to validate the successful conduct of the A.C.E., *assess whether the A.C.E. measurements of undercount are consistent with historical patterns of undercount and independent Demographic Analysis benchmarks* [emphasis added] and review measures of quality. . . . If the Census Bureau determine[d] that incorporating the results of the survey would not improve the accuracy of the initial census counts, then the uncorrected data would be denominated as the P.L. 94-171 [redistricting data] file.<sup>168</sup>

**DA used to assess the housing unit counts from Census 2000.** At a November 22, 2000, meeting of the Executive Steering Committee on Accuracy and Coverage Evaluation Policy (ESCAP),<sup>169</sup> the Census Bureau's Population Division staff presented DA housing unit benchmarks to assess the housing unit counts from a preliminary version of the 100 percent census unedited file (HCUF).<sup>170</sup> This version of the HCUF excluded almost all of the more than 2.4 million potential duplicates flagged for deletion, revealing that the preliminary housing unit count from the census was 0.4 percent below the demographic benchmark estimate.<sup>171</sup>

The final 100 percent census edited file (HCEF),<sup>172</sup> which included housing unit status imputations and the reinstatement of approximately 1 million of the potential address deletions,<sup>173</sup> became available for analysis by the ESCAP in mid-December 2000, revealing that the national DA housing unit benchmark indicated a 0.4 percent housing unit *overcoverage*.<sup>174</sup>

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<sup>164</sup> The Housing Unit unduplication program is discussed in more detail in the "Headquarters Processing" section of Chapter 6, "Data Capture and Processing." In that discussion, it is referred to as the "duplicate delete operation."

<sup>165</sup> *Ibid.*

<sup>166</sup> In his decision against statistical adjustment of the 1990 census counts, Secretary of Commerce Mosbacher cited "important and puzzling differences" between the 1990 DA and post-enumeration survey (PES) estimates as bringing into question the accuracy of the adjusted data. (*Federal Register*, Vol. 56, No. 140 [July 22, 1991], p. 33587.) Census Bureau staff, on the other hand, concluded that these differences were ". . . explainable as within the bounds of DA uncertainty." (*Federal Register*, Vol. 66, No. 46 [March 8, 2001], p. 14013.)

<sup>167</sup> Legal challenges by opponents of sampling resulted in a 1999 Supreme Court decision (*Department of Commerce v. U.S. House of Representatives*) concluding that the use of statistical sampling (and thus statistical adjustment based on sampling) to produce the state population numbers for apportionment of the U.S. House of Representatives was precluded by the Census Act (Title 13, U.S. Code), specifically Section 195. For more information regarding the decision and its effect on the plans for Census 2000, see "The Debate Over the Use of Sampling" section of Chapter 11, "Legal Issues."

<sup>168</sup> *Federal Register*, Vol. 65, No. 119 (June 20, 2000), p. 38393.

<sup>169</sup> A committee of senior career Census Bureau officials charged with making a recommendation to the Director regarding whether the official redistricting data should incorporate a statistical adjustment based on the A.C.E. results.

<sup>170</sup> The processes used to produce the HCUF are described in the "Headquarters Processing" section of Chapter 6, "Data Capture and Processing."

<sup>171</sup> <<http://www.census.gov/dmd/www/escap.htm>>, p. 239 of the PDF "ESCAP Meetings 7-23."

<sup>172</sup> The creation of this file is also described in the "Headquarters Processing" section of Chapter 6.

<sup>173</sup> Approximately 1.39 million of the 2.41 million provisional deletions were permanently removed, leaving about 1 million that were reinstated. (Chapter 6, "Headquarters Processing" section, subsection entitled "Duplicate delete operation.")

<sup>174</sup> <<http://www.census.gov/dmd/www/escap.htm>>, p. 277 of the PDF "ESCAP Meetings 7-23."

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**ESCAP recommendation and decision on adjustment.**<sup>175</sup> The ESCAP concluded its analysis in late February 2001 and issued its report and recommendation on March 1, 2001.<sup>176</sup> The report concluded that “. . . the majority of the evidence indicates . . . the superior accuracy of the adjusted numbers,” but identified a number of concerns and recommended releasing the unadjusted data as the official data for redistricting purposes.<sup>177</sup>

This recommendation was based on careful examination of estimates produced by DA and the A.C.E., against the actual census counts. The ESCAP’s principal concern related to the fundamental differences between DA and A.C.E. estimates that could not be explained. The estimates differed widely, both for the total national population and for important population groups.

The Census 2000 total population count was 281,421,906, while the A.C.E. estimate was 284,683,782, indicating a net undercount of 1.15 percent. The higher of two DA estimates (the “alternative” DA estimate) was 282,335,711, indicating a net undercount of 0.32 percent; while the initial (“base”) DA estimate revealed a net undercount rate of negative 0.65 percent or a *net overcount* of 1.8 million.<sup>178</sup> These data are presented in tabular format in Table 10-3 below.

In addition to the disparity in total population numbers, the two sets of estimates diverged with respect to certain population groups. For example, DA estimates indicated that net undercount rates for non-Black men and women were lower in Census 2000 than they were in previous censuses, whereas A.C.E. estimates implied no change, or even a slight increase, in the net overcount rate for non-Black adults as a whole.<sup>179</sup>

The Census Bureau produced the alternative set of DA estimates because its analysis indicated that the base estimate of the total population underestimated the amount of immigration (specifically, undocumented immigration). Thus, the alternative estimate assumed a near doubling (as compared to the base figure) in the net increase in undocumented immigration over the decade.<sup>180</sup> However, even after this increase, the alternative DA estimate of net undercount for the total population (0.32 percent) remained at odds with the A.C.E. estimate (1.15 percent).

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<sup>175</sup> The establishment of the ESCAP and the decision-making process regarding possible adjustment of the redistricting data are discussed in more detail in “The Debate Over the Use of Sampling” section of Chapter 11.

<sup>176</sup> *Federal Register*, Vol. 66, No. 46 (March 8, 2001), pp. 14004–46.

<sup>177</sup> *Ibid.*, p. 14005.

<sup>178</sup> These numbers are for the total resident population (including group quarters). DA produces estimates for the entire population, including the group quarters (GQ) universe, whereas the A.C.E. only provided estimates for the household population. The DA estimates of the Census 2000 GQ universe were similar to the census counts of this population, so the GQ population counts were simply added to the A.C.E. estimates to provide a consistent basis for comparison between the DA and A.C.E. estimates.

<sup>179</sup> “Accuracy and Coverage Evaluation Survey: Demographic Analysis Results,” p. 3.

<sup>180</sup> The estimate of the net increase in this subcomponent went from 2.8 to 5.5 million. *Ibid.*, p. 2.

Table 10-3.  
**Census Count, Base and Alternative Demographic Analysis (DA) Estimates, and Accuracy and Coverage Evaluation (A.C.E.) Estimate for the U.S. Resident Population: April 1, 2000**

(A minus sign denotes a net overcount)

Category	Count or estimate
1. Census count.....	281,421,906
2. DA estimate	
a. Base set.....	279,598,121
b. Alternative set.....	282,335,711
3. A.C.E. estimate.....	284,683,782
Difference from census count:	
4. DA estimate	
a. Base set (=2a-1).....	-1,823,785
b. Alternative set (=2b-1).....	913,805
5. A.C.E. estimate (=3-1).....	3,261,879
Percent difference	
6. DA estimate	
a. Base set (=4a/2a*100).....	-0.65
b. Alternative set (=4b/2b*100).....	0.32
7. A.C.E. estimate (=5/3*100).....	1.15

Notes: The DA estimates for ages under 65 are based on components of population change (births, deaths, legal immigration, and estimates of emigration and undocumented immigration).

The DA estimates for ages 65 and over are based on 2000 Medicare data, adjusted for underenrollment.

DA base set - DA estimates without alternative assumption.

DA alternative set - DA base estimates with alternative assumption that doubles the estimated net number of undocumented immigrants entering during the 1990s.

Source: U.S. Census Bureau, J. Gregory Robinson, "Accuracy and Coverage Evaluation Survey: Demographic Analysis Results," DSSD Census 2000 Procedures and Operations Memorandum Series B-4,\* March 12, 2001, Table 3, p 22.

The committee investigated the inconsistencies between the DA and A.C.E. estimates extensively, but could not adequately explain them within the available time.<sup>181</sup> It concluded that further investigation was necessary to explain and resolve the discrepancies.

In a March 1, 2001, memorandum to the Secretary of Commerce, the Census Bureau Acting Director noted that he concurred with and adopted the ESCAP's recommendation to not adjust, based on the committee report. He specifically discussed the importance of resolving the inconsistencies between the DA and A.C.E. estimates:

... [t]he June 2000 Feasibility Document contained various references to the importance of demographic analysis and demographic estimates as key components of data and analysis to inform the ESCAP recommendation. This point was reinforced in materials the Census Bureau presented on October 2, 2000, at a public workshop sponsored by the National Academy of Sciences.<sup>182</sup>

On March 6, 2001, the Secretary of Commerce announced his acceptance of the recommendation of both the Acting Director and ESCAP, stating that the unadjusted data would be released as the official redistricting data.<sup>183</sup>

**Continued evaluation of the adjusted data and plans for second decision.** Following the March 2001 redistricting data adjustment decision, the Census Bureau committed itself to addressing unresolved issues regarding the accuracy of the adjusted data. While the timing of the ESCAP's recommendation regarding use of adjusted data for redistricting purposes was constrained by statutory requirements, the Census Bureau determined that additional time to investigate and possibly resolve its concerns with the adjusted data would permit the agency to consider

<sup>181</sup> The Census Bureau determined that the redistricting data adjustment decision had to be made by early March 2001, because of the April 1, 2001, statutory deadline for releasing the Census 2000 redistricting data to the states (13 U.S.C. 141(c)).

<sup>182</sup> *Federal Register*, Vol. 66, No. 46 (March 8, 2001), p. 14004.

<sup>183</sup> The Secretary's decision is documented in *Federal Register*, Vol. 66, No. 49 (March 13, 2001), pp. 14520-21.

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the appropriateness of the use of those data for other purposes, including their possible incorporation in long form (sample) data products, intercensal population estimates, and demographic survey controls. The ESCAP committed itself to a mid-October 2001 deadline for making a recommendation, based on additional research and analyses to be carried out during the summer of 2001, with regard to these other potential uses of the adjusted data.<sup>184</sup>

As mentioned earlier, of foremost concern was the need to resolve the discrepancies between the DA and A.C.E. estimates, given that this circumstance was the principal reason for the ESCAP's recommendation against adjustment. The ESCAP identified four possible scenarios for the discrepancies:

- (1) The estimates of net undercount from the 1990 census (from DA and from the post-enumeration survey [PES]) may have understated the nation's population, while Census 2000 included at least portions of this unmeasured segment of the population.
- (2) The 2000 DA estimates did not capture the full amount of growth between 1990 and 2000, particularly with regard to the components and subcomponents of international migration (legal, undocumented, and temporary immigration, and emigration).
- (3) Census 2000, as adjusted by the A.C.E., might overstate the nation's population. This could occur because the A.C.E. did not measure census coverage accurately and/or Census 2000 had coverage error pertaining to components not measured by the A.C.E.
- (4) Any combination of the above.<sup>185</sup>

The research and analysis conducted during the summer of 2001 required reexamining and reevaluating the Census 2000 counts, the A.C.E. estimates, and the DA estimates. The areas of research with regard to the census counts and A.C.E. estimates are discussed elsewhere, including in the A.C.E. section of this chapter and the ESCAP's Analysis Plan (see footnote 184).

**Plans for reexamining the DA estimates.**<sup>186</sup> International migration data are associated with high levels of uncertainty. Thus, in preparation for the October decision regarding the use of adjusted data, the Census Bureau, assisted by external demographic experts, focused on these component data of the DA estimates.

Some of the data useful in evaluating these component estimates were not available when Census Bureau staff produced the DA estimates used to assess the March 2001 A.C.E. estimates. For example, data from the Census 2000 Supplementary Survey and the Census 2000 long form questions on citizenship, place of birth, and year of entry provided valuable information for evaluating the international migration component data and revising them as needed.

The "robustness" of the DA methodology offered another avenue of DA research pursued during this time. This called for a reexamination of assumptions underlying the DA components. For example, examination of component data, including historical international migration components by cohort and age/sex groups over time (from 1935 to 2000), provided information about their consistency. The Census Bureau also examined assumptions about the completeness of vital statistics (births and deaths) registration and the coverage of Medicare data. The agency embarked on this work with the understanding that it might result in the recalculation of 1990 census DA estimates, as appropriate, based on the findings of its research and analyses.

**Recommendation against adjustment based on high level of A.C.E. error.** The ESCAP issued its report and recommendation regarding the possible use of the adjusted data for non-redistricting purposes on October 17, 2001.<sup>187</sup> Once again, it recommended against the use of the adjusted data.

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<sup>184</sup> U.S. Census Bureau, "Analysis Plan for Further ESCAP Deliberations Regarding the Adjustment of Census 2000 Data for Future Uses," Executive Steering Committee for Accuracy and Coverage Evaluation Policy, July 26, 2001, p. 1.

<sup>185</sup> *Ibid.*, pp. 1–2.

<sup>186</sup> The information in this subsection is summarized from "Analysis Plan for Further ESCAP Deliberations Regarding the Adjustment of Census 2000 Data for Future Uses," pp. 2–4.

<sup>187</sup> *Federal Register*, Vol. 66, No. 214 (November 5, 2001), pp. 56006–21.



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This second round of research and analyses, dubbed “ESCAP II,” confirmed concerns raised earlier regarding the accuracy of the A.C.E. estimates. The studies found that the A.C.E. did not account for a large number of census erroneous enumerations, including many duplicates, leading to an *overstatement of at least 3 million persons* in the initial A.C.E. estimate of Census 2000 net undercount. This finding, in conjunction with revisions made to the DA estimates (resulting in a September 2001 set of DA estimates) that *lowered* the DA-estimated net undercount rate, largely explained the discrepancies between the A.C.E. and DA estimates.<sup>188</sup>

**Revisions to the DA estimates: results and findings.**<sup>189</sup> The revised September 2001 DA estimate for the total population was approximately 576,000 *lower* than the March “alternative” estimate, implying a net undercount estimate of 0.12 percent compared to 0.32 percent for the alternative DA estimate and a net overcount of 0.65 percent for the first March DA figure.

As anticipated, the largest numerical revision to the components of change was an *increase* of approximately 1.38 million for the residual foreign born subcomponent, which primarily reflects undocumented immigration. This increase raised the subcomponent estimate to approximately 10.24 million.<sup>190</sup> However, this revision was more than offset by a decrease of about 880,000 in the estimate of legal immigration and a negative adjustment to the component of birth data of approximately 715,000, based on a revision to assumptions regarding the completeness of birth registrations since 1968.<sup>191</sup> Revisions to the components of change also resulted in a revised DA estimate for 1990 census net undercount—that figure was lowered from 1.85 to 1.65 percent.<sup>192</sup>

Thus, there was relatively little change in the DA estimates from the March 2001 alternative DA net undercount estimate of 0.32 percent to the September 2001 estimate of 0.12 percent (or 0.3 million), neither of which agreed with the March A.C.E. net undercount estimate of 3.3 million, or 1.15 percent.

Furthermore, the revised DA estimates continued to differ from the A.C.E. estimates in terms of net undercount rates for non-Black adults (discussed earlier), but both sets of estimates continued to indicate a reduction in the net undercount rates for Black and non-Black children (ages 0 to 17) when compared to 1990. The relevant estimates by race, sex, and age are presented in Table 10-4. DA estimates also continued to indicate a differential undercount of Blacks in comparison to the rest of the population, although the September DA estimates showed a greater narrowing of that difference vis-a-vis the 1990 census than did the March alternative estimates.<sup>193</sup>

As mentioned earlier, DA and A.C.E. sex ratios were compared to determine the presence of correlation bias in the A.C.E. estimates. Correlation bias exists when the act of being included in the census affects the likelihood of inclusion or omission in the A.C.E. Correlation bias is generally expected to be negative; that is, to the extent that correlation bias exists, when people are omitted from the census, there is a greater probability that they will also be omitted from the A.C.E. Simply put, the presence of correlation bias implies that the coverage measurement survey (in this case, the A.C.E.) has underestimated the net undercount. In previous census evaluations, the presence of correlation bias has been acute for the estimates of Black men.<sup>194</sup>

<sup>188</sup> Ibid., p. 56007.

<sup>189</sup> The information in this subsection is summarized from U.S. Census Bureau, J. Gregory Robinson, “Demographic Analysis Results,” ESCAP II Report No. 1, October 13, 2001, pp. 2–3.

<sup>190</sup> For a detailed discussion of the methodology used to estimate the foreign-born population and the other international migration components of the revised September 2001 DA estimates, see Appendix A of “Demographic Analysis Results,” ESCAP II Report No. 1.

<sup>191</sup> Ibid., p. 8. Table 1 (p. 18) in ESCAP II Report No. 1 shows how the revisions to the March alternative DA component estimates are reflected in the component data for the September revised DA estimate.

<sup>192</sup> Ibid., Table 2, p. 19.

<sup>193</sup> Ibid. The percentage point differences in the net undercount rates are calculated from the data in this table.

<sup>194</sup> “Accuracy and Coverage Evaluation Survey: Demographic Analysis Results,” DSSD Census 2000 Procedures and Operations Memorandum Series B-4\*, p. 15.

Table 10-4.  
**Estimates of Net Undercount by Race, Sex, and Age: 1990 and 2000**  
(In percent. A minus sign denotes a net overcount)

Category	Demographic analysis		Survey-based	
	1990 revised	2000 revised	PES 1990	A.C.E. 2000
<b>BLACK MALE</b>				
Total .....	8.13	5.15	4.90	2.38
0 to 17 .....	5.26	1.06	7.02	2.91
18 to 29 .....	8.22	5.71	3.58	3.85
30 to 49 .....	13.02	9.87	6.29	2.58
50 and over.....	5.30	3.87	-0.38	-0.67
<b>BLACK FEMALE</b>				
Total .....	3.05	0.52	4.01	1.78
0 to 17 .....	5.28	1.54	7.07	2.94
18 to 29 .....	3.38	-0.66	5.49	3.76
30 to 49 .....	2.90	1.28	3.20	1.27
50 and over.....	-0.54	-1.03	-1.22	-0.83
<b>NON-BLACK MALE</b>				
Total .....	1.55	0.21	1.52	1.39
0 to 17 .....	1.03	0.33	2.46	1.27
18 to 29 .....	1.35	-0.63	3.10	3.38
30 to 49 .....	2.17	0.63	1.30	1.70
50 and over.....	1.50	0.14	-0.59	-0.20
<b>NON-BLACK FEMALE</b>				
Total .....	0.62	-0.78	0.85	0.64
0 to 17 .....	1.20	0.77	2.47	1.27
18 to 29 .....	0.16	-1.94	2.36	1.82
30 to 49 .....	0.37	-1.01	0.55	0.90
50 and over.....	0.69	-1.18	-1.19	-0.75

Note: Estimates by race shown for 2000 are based on the "average" of Model 1 and Model 2 estimates described in the text.

Source: U.S. Census Bureau, J. Gregory Robinson, "Demographic Analysis Results," ESCAP II Report No. 1, October 13, 2001, Table 7, p. 25.

The Census Bureau compared DA and A.C.E. sex ratios within age/race categories to develop estimates of correlation bias in the A.C.E. figures. For example, an A.C.E. sex ratio for Blacks ages 18 to 29 substantially lower than the DA ratio for that group implied a failure by the A.C.E. to capture the full extent of the undercount of Black males in that age group relative to their female counterparts. Implicit in this analysis was the assumption of negligible correlation bias for adult females. Because sex ratios were compared for adult age groups only, it also assumes no correlation bias among children.

Comparisons of the sex ratios for the September 2001 DA and A.C.E. estimates revealed significant correlation bias in the A.C.E. estimates for adult Black males (ages 18 to 29, 30 to 49, and 50 and over), and small levels of such bias in the A.C.E. estimates for non-Black males ages 30 to 49 and 50 and over.<sup>195</sup> The Census Bureau also found that the estimates of correlation bias based on the September DA estimates were:

- For the most part, little changed from the bias estimates obtained from the March base and alternative DA figures.
- Generally similar to correlation bias estimates calculated for the 1990 PES, with the two sets of estimates being particularly close for Black males ages 18 to 29 and 30 to 49.<sup>196</sup>

<sup>195</sup> U.S. Census Bureau, William R. Bell, "Estimation of Correlation Bias in 2000 A.C.E. Estimates Using Revised Demographic Analysis Results," ESCAP II Report No. 10, October 16, 2001, p. 1.

<sup>196</sup> *Ibid.*, p. 2. The actual estimates are reported in Table 5, p. 17.

**Adjustment decision and release of limited revised A.C.E. estimates.** Following adoption of ESCAP's October 2001 adjustment recommendation, the Census Bureau's Acting Director informed the Commerce Department's under secretary for economic affairs that the Census Bureau would release Census 2000 sample data products, intercensal estimates, and survey controls using unadjusted data.<sup>197</sup> He said that extensive additional review and analyses were needed to revise the adjusted data to permit their use for any purposes. He also noted that such work might result in revised A.C.E. estimates that could be used for programmatic purposes such as improving the accuracy of intercensal estimates in subsequent years.

At an October 17 press conference, the Census Bureau's Acting Director announced the agency's decision against adjustment. In order to fully explain the decision, he released "revised early approximations" of net undercount in Census 2000 from the A.C.E. for three race/ethnicity groupings and the total population. The Acting Director provided these estimates to illustrate the effect on A.C.E. estimates of potential future revisions that accounted for the erroneous enumerations not measured by the A.C.E. The estimates were not part of the ESCAP's October 17, 2001 report. The revised estimates were calculated by subtracting the percent of erroneous enumerations not detected by the A.C.E. survey from the original A.C.E. percent net undercount estimates contained in the March 1, 2001 ESCAP report.<sup>198</sup> These preliminary revised estimates are provided in Table 10-5 below. The reduction in the measured net undercount as measured by the revised estimates is quite large (from 1.18 to 0.06 percent). The Acting Director assured stakeholders that the Census Bureau would continue to evaluate the A.C.E. program and attempt to finalize revised estimates for programmatic uses.

Table 10-5.  
**Revised Preliminary Estimates of Net Undercount: October 17, 2001**

(In percent. A minus sign denotes a net overcount)

Category	A.C.E. <sup>1</sup>		Revised early approximation	
	Percent	Standard error	Percent	Standard error
Total .....	1.18	0.13	0.06	0.18
Non-Hispanic Black .....	2.17	0.35	0.78	0.45
Hispanic .....	2.85	0.38	1.25	0.54
All others .....	0.73	0.14	-0.28	0.20

<sup>1</sup> These March 2001 A.C.E. estimates of percent net undercount pertain to the household population.

Source: Table reproduced in part from press kit materials for the following news release: U.S. Department of Commerce, "Statement of Acting Census Bureau Director William Barron Regarding the Adjustment Decision," *U.S. Census Bureau News*, October 17, 2001, CB01-CS.08.

**A.C.E. Revision II work conducted; revised estimates produced.** To determine if revised A.C.E. estimates could be improved enough to be used for programmatic purposes, the Census Bureau embarked on a comprehensive research effort dubbed "A.C.E. Revision II." Specifically, the agency planned to investigate producing revised estimates and to determine if utilizing those estimates to adjust the base (that is, the Census 2000 counts) used to produce intercensal population estimates<sup>199</sup> would improve the accuracy of the annual and biennial estimates, in particular, by reducing the differential coverage error in the Census 2000 data.

The A.C.E. Revision II work that the Census Bureau completed in March 2003 resulted in a set of revised estimates of net coverage error in Census 2000 and evaluations of the accuracy of those estimates. The A.C.E. Revision II estimate of percent net undercount for the total household population in Census 2000 was a negative 0.49, or a national net overcount of approximately one-half

<sup>197</sup> *Federal Register*, Vol. 66, No. 214, p. 56006.

<sup>198</sup> John H. Thompson, Preston J. Waite, and Robert E. Fay, "Basis of 'Revised Early Approximation' of Undercounts Released Oct. 17, 2001," ESCAP II Report No. 9a, October 26, 2001.

<sup>199</sup> Intercensal population estimates are produced annually for the nation, states, and counties (and biennially for smaller geographic areas), and they are generally used in federal funding-allocation formulae in lieu of decennial census figures (except for the year in which the census figures are released) because they reflect ongoing population changes during the decade.

of one percent.<sup>200</sup> The estimated net undercount rates for non-Hispanic Whites and non-Hispanic Blacks were -1.13 percent and 1.84 percent, respectively, while the net undercount estimates for all other major race/ethnicity groups were not statistically different from zero.<sup>201</sup> Table 10-6 contains the A.C.E. Revision II estimates for the major race/ethnicity groups. In addition to national-level revised estimates of percent net undercount for major race/ethnicity, tenure, and age/sex groupings, the Census Bureau produced and released revised estimates for states, counties, and places.

Table 10-6.  
**A.C.E. Revision II Estimates of Percent Net Undercount: March 12, 2003**  
(In percent)

Estimation grouping	Net undercount	Standard error
Total.....	-0.49	0.20
<b>RACE AND HISPANIC ORIGIN</b>		
American Indian and Alaska Native (on reservation) .....	-0.88	1.53
American Indian and Alaska Native (off reservation) .....	0.63	1.35
Hispanic Origin (of any race) .....	0.71	0.44
Black or African American (not Hispanic) .....	1.84	0.43
Native Hawaiian and Other Pacific Islander .....	2.12	2.73
Asian (not Hispanic) .....	-0.75	0.68
White or Some Other Race (not Hispanic) .....	-1.13	0.20

Notes: All net undercounts are for the household population.  
A negative net undercount denotes a net overcount.  
The A.C.E. Revision II estimates of percent net undercount incorporate an adjustment for correlation bias using the "Two-Group" model.  
Source: U.S. Census Bureau, "Decision on Intercensal Population Estimates," March 12, 2003, Table 3 (table reproduced in part), p. 10.

**A.C.E. Revision II estimates incorporate adjustment for correlation bias.** For the first time, the Census Bureau incorporated an adjustment for correlation bias into estimates produced by dual system estimation. With the revised preliminary estimates (from October 2001) indicating a net undercount close to zero, the Census Bureau realized that considering a correlation bias adjustment would be important because, depending on the level of correlation bias, dual system estimates without the correlation bias adjustment might move the estimates further from the true population total, and therefore they could actually have greater error relative to unadjusted census counts. The A.C.E. Revision II estimate of percent net undercount for the total household population without the adjustment for correlation bias was a negative 1.12 percent, as compared to negative 0.49 percent when the adjustment was incorporated.<sup>202</sup> That is, the estimate of net overcount was adjusted downward (brought closer to zero) to account for the bias. The effect of the correlation bias adjustment on the A.C.E. Revision II estimates of net undercount for the major race/ethnicity groups can be seen in Table 10-7.

<sup>200</sup> U.S. Census Bureau, "Decision on Intercensal Population Estimates," March 12, 2003, p. 2 (PDF version).

<sup>201</sup> Ibid.

<sup>202</sup> "Decision on Intercensal Population Estimates," Table 3, p. 10.

Table 10-7.  
**Net Undercount Rates for Major Groups by Model Used to Correct for Correlation Bias: March 12, 2003**

(In percent)

Estimation grouping	Estimate without correlation bias adjustment (standard error)	A.C.E. Revision II estimate using two-group model (standard error)
Total .....	-1.12 (0.20)	-0.49 (0.20)
<b>RACE AND HISPANIC ORIGIN</b>		
American Indian and Alaska Native (on reservation) .....	-1.16 (1.53)	-0.88 (1.53)
American Indian and Alaska Native (off reservation) .....	0.30 (1.35)	0.62 (1.35)
Hispanic origin (of any race) .....	0.42 (0.44)	0.71 (0.44)
Black or African American (not Hispanic) .....	-0.53 (0.41)	1.84 (0.43)
Native Hawaiian and Other Pacific Islander .....	1.81 (2.73)	2.12 (2.73)
Asian (not Hispanic) .....	-1.12 (0.68)	-0.75 (0.68)
White or Some Other Race (not Hispanic) .....	-1.53 (0.20)	-1.13 (0.20)

Notes: All net undercounts are for the household population. A negative net undercount denotes a net overcount.

Source: "Decision on Intercensal Population Estimates," Table 3 (table reproduced in part), p. 10. Results from the other models appear in the referenced Table 3, but are not shown here.

The A.C.E. Revision II estimate of net undercount for the total resident population—adjusted for correlation bias—was negative 0.48 and was considered within the range of uncertainty surrounding the September 2001 DA estimate of 0.12 percent.<sup>203</sup> However, the Census Bureau had concerns about whether the model chosen for allocating the correlation bias for adult males to specific post-strata within the age/race groups was the most appropriate model for doing so. The Census Bureau noted that the different models it considered produced different subnational results. Additionally, given the relatively low net undercount rate for Hispanics—even with the adjustment for correlation bias—the Census Bureau was uncertain about the level of error associated with the estimate of correlation bias for this population group.

A comparison of the A.C.E. Revision II estimates with and without the correlation bias adjustment to the September 2001 ("revised") DA estimates show that the male/female and Black/non-Black net undercount differentials for the estimates with the adjustment were increased and brought closer to the differentials calculated from the DA estimates, as compared to the A.C.E. Revision II estimates without the adjustment. This outcome was expected, given that the correlation bias adjustment was based on the "expected" DA sex ratios for the Black and non-Black populations.<sup>204</sup>

However, the A.C.E. Revision II estimates and the revised DA estimates of net undercount were quite different with regard to children ages 0 to 9. DA estimated a relatively large net undercount of 2.56 percent for this group, while the A.C.E. Revision II estimate was not statistically different from zero.<sup>205</sup> The DA estimate for this group was produced principally from administrative data on births since the previous census and was considered to be quite accurate. This raised questions about this particular A.C.E. Revision II estimate and possibly about the methodology in general.

<sup>203</sup> Ibid., p. 6. Note that this A.C.E. Revision II estimate is different than that given in Tables 10-6 and 10-7 because it is for the resident population (that is, it includes people in group quarters).

<sup>204</sup> U.S. Census Bureau, J. Gregory Robinson and Arjun Adlakha, "Comparison of A.C.E. Revision II Results with Demographic Analysis," DSSD A.C.E. Revision II Memorandum Series PP-41, December 31, 2002, pp. 4-5.

<sup>205</sup> "Decision on Intercensal Population Estimates," p. 7.

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**Census Bureau decides against use of A.C.E. Revision II estimates.** While the Census Bureau noted that A.C.E. Revision II estimates represented the most accurate assessment available of Census 2000 coverage, it also noted technical concerns regarding the limitations of the methodology and the quality of the data. In addition to the issues discussed above, the Census Bureau identified other areas of uncertainty with regard to the accuracy of the estimates.<sup>206</sup> All of these concerns led the Census Bureau to conclude that the official Census 2000 results would remain the base for producing the intercensal estimates.<sup>207</sup>

**Implications for the 2010 Census.** The A.C.E. Revision II research reaffirmed the Census Bureau's confidence in the decisions made in March and October of 2001 to release only the unadjusted data and confirmed that releasing the adjusted data would have been a grave error. As with the earlier ESCAP processes—in particular the March 2001 redistricting data adjustment recommendation—DA played a key role in assessing the coverage measurement survey-based estimates and in doing so underscored its importance as a valuable, essentially independent measure of net census coverage. The Census Bureau will build upon the successes of the use of DA in Census 2000 to ensure a continued reliance upon its strengths as a tool for evaluating, as well as assisting in the planning and development of, the decennial census.

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<sup>206</sup> For an in-depth assessment of the A.C.E. Revision II estimates and the associated technical concerns, see U.S. Census Bureau, Donna Kostanich, "Technical Assessment of A.C.E. Revision II," DSSD A.C.E. Revision II Memorandum Series, PP-61 March 12, 2003.

<sup>207</sup> "Decision on Intercensal Population Estimates," p. 1. The Census Bureau has made publicly available a vast amount of documentation related to its decision and the A.C.E. Revision II research. The following Web page provides access to this documentation: <[www.census.gov/dmd/www/ace2.html](http://www.census.gov/dmd/www/ace2.html)>.

## Chapter 11.

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# Chapter 11: Legal Issues

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## INTRODUCTION

This chapter is divided into four sections. The first is a summary of key legislative activities, including laws enacted that affected the planning and/or conduct of Census 2000. The section on legislation is followed by a chronology of events in the national debate over the use of sampling. The third section is a discussion of noteworthy Freedom of Information Act requests pertaining to various aspects of the census. Finally, the chapter concludes with summaries of lawsuits challenging the planning, conduct, or results of Census 2000.

## LEGISLATION

The U.S. Constitution empowers the Congress to carry out the census in “such manner as they shall by Law direct” (Article I, Section 2). Congress passed special acts for the first 14 censuses (1790 to 1920), with detailed provisions about how to take the census and the questions to include. In 1929 Congress passed an act under which the 1930 decennial census was taken. This act limited the categories of inquiries to population, agriculture, irrigation, drainage, distribution, unemployment, and mines, but gave the Director of the U.S. Census Bureau—with approval of the U.S. Secretary of Commerce—discretion in determining the specific questions and procedures. The 1940 and 1950 censuses were governed by modifications to the 1929 act and by later legislation that provided for the census of housing and the periodic census of governments. In 1954, Congress codified these and all other statutes authorizing the decennial census and other censuses and surveys conducted by the Census Bureau as Title 13, U.S. Code.<sup>1</sup> Title 13 was amended several times over the ensuing years, and it governed Census 2000.

This section reviews key provisions of Title 13, other public laws concerning Census 2000, proposed census legislation that did not become law, and congressional oversight and appropriations activities.

### Title 13, U.S. Code

Title 13, U.S. Code, does not specify which subjects or questions are to be included in the decennial census. However, it does require the Census Bureau to notify Congress of general census subjects to be addressed 3 years before the decennial census and the actual questions to be asked 2 years before the decennial census. The law also directs that state population counts for apportionment purposes be delivered to the President of the United States within 9 months of Census Day (April 1 of the year in which the census is taken). Counts must be delivered to the states for use in redistricting within 12 months of Census Day.

Title 13 requires individuals to complete (or provide information for) the census questionnaire and participate in other phases of the census as the Census Bureau deems necessary. These other activities could include providing information about a housing unit’s address and number of living quarters, participating in test and dress rehearsal censuses, answering decennial census–related research surveys, or responding to postcensus questionnaires used to evaluate decennial census coverage. Section 221, Title 13, U.S. Code, provides that anyone 18 years of age or older who willfully neglects or refuses to answer the census may be fined up to \$100. Anyone who knowingly gives false answers is subject to a fine of \$500. The maximum amount of these fines was increased to \$5,000 by the Sentencing Reform Act of 1984.<sup>2</sup>

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<sup>1</sup> To access the U.S. Code online, go to <<http://uscode.house.gov/>>.

<sup>2</sup> Title 18, U.S. Code, Section 3571 (18 U.S.C. § 3571) (2005).

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Title 13 also mandates strict confidentiality of the information gathered.<sup>3</sup> Section 9(a) states in part:

Neither the Secretary, nor any other officer or employee of the Department of Commerce or bureau or agency thereof, or local government census liaison, may . . . (1) use the information furnished under the provisions of this title for any purpose other than the statistical purposes for which it is supplied; or (2) make any publication whereby the data furnished by any particular establishment or individual under this title can be identified; or (3) permit anyone other than the sworn officers and employees of the Department or bureau or agency thereof to examine the individual reports.

Every permanent and temporary employee of the Census Bureau takes an oath to protect the confidentiality of census information. Title 13 states that employees are subject to a fine of up to \$5,000 and/or 5 years of imprisonment for wrongful disclosure; however, the Sentencing Reform Act increased the maximum fine for unlawful disclosure to \$250,000.<sup>4</sup>

Individual census records are preserved by the National Archives and Records Administration (NARA) pursuant to law—Title 44, U.S. Code, Section 2108—and made confidential under that same law for 72 years after collection. After that period, NARA may open them to the general public for genealogical and other uses.<sup>5</sup> However, many people have to rely on later records (that is, 1940 on) of their ancestors' or their own census answers to prove age, residency, and/or identity. The Census Bureau (under the authority of Title 13, U.S. Code, Section 8(a)) may, upon written request, release information from these records, but only to the persons named in the record. The records of deceased persons may be made available, upon proof of their death, only to their heirs, legal beneficiaries, or authorized representatives.<sup>6</sup>

### **Congressional Oversight and Appropriations Activities**

At the beginning of the decade prior to Census 2000 (1991–92, the 102nd Congress), the Census Bureau came under the jurisdiction, for oversight purposes, of the House Committee on Post Office and Civil Service's Subcommittee on Census and Population. On the Senate side, the Governmental Affairs Subcommittee on Government Information and Regulation oversaw the Census Bureau. For the 103rd Congress (1993–94), the House Subcommittee was renamed the Subcommittee on Census, Statistics, and Postal Personnel, and the Senate Subcommittee was renamed the Subcommittee on Regulation and Government Information.

In the 104th Congress (1995–96), there was a reorganization affecting many committees, including those that previously had oversight responsibility for the Census Bureau. As a result of these changes, the Census Bureau was placed under the jurisdiction of the Subcommittee on National Security, International Affairs, and Criminal Justice of the Committee on Government Reform and Oversight in the House. It remained under the purview of the Committee on Governmental Affairs in the Senate; however, there was no longer an oversight subcommittee on census issues (this applied throughout the remainder of the 2000 Census cycle). During the first session of the 105th Congress (1997–98), the House removed Census Bureau oversight responsibility from the Subcommittee on National Security, International Affairs, and Criminal Justice, and through a resolution, created a new "Census Subcommittee" under the Committee on Government Reform and Oversight to assume jurisdiction solely over the decennial census and other Census Bureau programs. With the start of the 106th Congress in 1999, the name of the House oversight committee

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<sup>3</sup> 13 U.S. Code § 9 (1990 & Supp. 2006); in 1994, the Congress amended Title 13 to permit the Census Bureau to share address information with state and local governments for the sole purpose of updating address lists to be used in carrying out censuses and surveys authorized therein. State and local officials are legally banned from using this address information for noncensus purposes, such as taxation or law enforcement. Section 9(a) of Title 13 was further amended in 1997 by provisions of the Department of Commerce's fiscal year (FY) 1998 appropriations act creating a Census Monitoring Board to observe and monitor all aspects of the preparation and implementation of the 2000 decennial census. These provisions specifically grant members of this board access to confidential census information in the course of their official duties. For a more detailed discussion of these statutes, see the section entitled "Public Laws Concerning Census 2000."

<sup>4</sup> 13 U.S.C. § 214 (1990 & Supp. 2006), as amended by 18 U.S.C. § 3571 (b)(3) (2005).

<sup>5</sup> 44 U.S.C. § 2108 (2006).

<sup>6</sup> Title 15, Code of Federal Regulations, Section 80.3 (2006).

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was shortened to Committee on Government Reform. The House Subcommittee on the Census was in operation from 1998 through 2001. During 2002, the second session of the 107th Congress, the Subcommittee on the Census was abolished and jurisdiction was given to the Subcommittee on Civil Service, Census, and Agency Organization.

The Government Accountability Office (GAO)<sup>7</sup>, an investigative arm of the Congress, observed and evaluated Census Bureau activities throughout the entire Census 2000 cycle. Often, GAO's reports to the relevant committees were presented at oversight hearings. From 1991 to 2003, the GAO issued more than 60 reports and testimonies relating to various aspects of the planning, conduct, and results of Census 2000.<sup>8</sup>

In the House of Representatives, the Census Bureau's appropriations were handled by the Subcommittee on Commerce, Justice, State, the Judiciary, and Related Agencies. This subcommittee was a component of the House Committee on Appropriations. In the Senate, the agency's appropriations came before the Subcommittee on Commerce, Justice, State, and the Judiciary of the Committee on Appropriations. Money to operate federal agencies must be appropriated annually, so, generally, for each year in the Census 2000 cycle, a new law appropriated funds for the Census Bureau's operations.

One of the most important functions of any congressional oversight committee is to hold open congressional hearings to get progress reports from the agencies under its jurisdiction, as well as obtain input from other interested parties. During the period from 1991 to 2001, oversight committees or subcommittees held 57 hearings related to Census 2000. Nearly three-quarters of these were before the subcommittee of the House of Representatives with specific oversight of Census Bureau programs. Topics of the congressional hearings included issues related to the planning (including research and testing), implementation, and evaluation of Census 2000. (See Appendix F for a list of these hearings.)

### Public Laws Concerning Census 2000

**Public Law (P.L.) 102-135, Decennial Census Improvement Act of 1991 (October 24, 1991).** Largely as a response to controversy and criticism pertaining to the 1990 census, Rep. Thomas Sawyer (D-OH), chairman of the oversight subcommittee of the House of Representatives, introduced a bill during the first session of the 102nd Congress to study ways to improve the decennial census.<sup>9</sup> As enacted into law, the legislation required the Secretary of Commerce to contract with the National Academy of Sciences (NAS) to study ways for the government to (1) achieve the most accurate population count possible and (2) collect other demographic and housing data.

Specifically, the law required the NAS to study population data to consider: (1) ways to improve the government's enumeration methods; (2) alternative methods for collecting the data needed for a basic population count, including the use of administrative records; and (3) the appropriateness of using sampling methods, together with basic data collection techniques or otherwise, in obtaining or refining population data.

The law further required the NAS to study demographic and housing data to consider (1) the degree to which a continuing need is anticipated for the types of data (other than the bare minimum necessary to conduct a basic head count) collected in the previous decennial census and (2) if such a need were determined, whether more effective ways to collect the information using traditional methods were available, and whether alternative sources or methodologies existed or could be implemented to obtain the information in a timely manner.

Finally, it mandated that the NAS issue a final report, within 36 months, that would include (1) an evaluation of the relative advantages and disadvantages, as well as an analysis of the cost effectiveness, of each alternative and (2) an analysis of the potential effects on privacy and public confidence in, and the integrity of, a census derived from an alternative not involving the direct collection of data from individuals.

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<sup>7</sup> In July 2004, Public Law 108-271 formally changed the name from General Accounting Office.

<sup>8</sup> Included in this tally are GAO reports and testimonies where Census 2000 issues were examined as part of a Commerce Department-wide or federal agency-wide evaluation.

<sup>9</sup> H.R. 3280, Decennial Census Improvement Act of 1991, became P.L. 102-135 on October 24, 1991. *Congressional Record*, October 25, 1991, p. D1314.

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A separate bill that provided FY 1992 appropriations for the Department of Commerce included \$1.4 million in the Periodic Censuses and Programs account to fund the NAS study.<sup>10</sup>

Earlier that same year, Rep. Harold Rogers (R-KY), the ranking minority member of the House appropriations subcommittee pertaining to the Department of Commerce, introduced a bill similar to Rep. Sawyer's that would have required the department to enter into a contract with the NAS to study the decennial census.<sup>11</sup> Rep. Rogers' bill included a \$1.4 million appropriation to pay for the study. No action was taken on this bill.

In December 1994, the Panel on Census Requirements in the Year 2000 and Beyond, an entity of the NAS's National Research Council, issued its final report. The panel was convened pursuant to P.L. 102-135.<sup>12</sup>

**P.L. 103-430, Census Address List Improvement Act of 1994 (October 31, 1994).** During the second session of the 103rd Congress, Rep. Sawyer, still chairman of the House oversight subcommittee, sponsored legislation that amended Title 13 to permit the sharing of census address information with state and local governments in order to develop complete and accurate address lists to be used in carrying out censuses and surveys.<sup>13</sup>

The law required the Secretary of Commerce to publish standards for the address information that local governments might submit for use in the development of census address lists and to develop and publish a timetable for the Census Bureau to receive, review, and respond to submissions. It required the Secretary to provide locally appointed census liaisons who would have access to census information with an explanation of their duties and obligations, including upholding the confidentiality of the data, and the penalties they would incur for wrongful disclosure under Title 13, U.S. Code (the Census Act). In addition, this law amended Sections 9 and 214 of the Census Act, specifically subjecting census liaisons to confidentiality requirements and wrongful disclosure penalties except in performance of their official duties as authorized in Section 16 of Title 13, U.S. Code. The law also mandated that the Office of Information and Regulatory Affairs at the U.S. Office of Management and Budget develop an appeals process for state and local governments desiring to appeal Census Bureau address determinations.

Additionally, P.L. 103-430 amended Section 412 of Title 39, U.S. Code, and required the U.S. Postal Service to provide any address and address-related information to the Census Bureau that was deemed appropriate by both entities for use in any census or survey conducted by the agency.

**P.L. 104-193, Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (including Grandparents as Caregivers, August 22, 1996).** Legislation to reform the nation's welfare system that became law during the second session of the 104th Congress contained a provision requiring the Census Bureau to collect decennial and mid-decade data concerning grandparents who are the primary caregivers for their grandchildren.<sup>14</sup> The law specifies that data are to be collected to distinguish between (1) a household in which a grandparent temporarily provides a home for a grandchild for a period of weeks or months during periods of parental distress and (2) a household in which a grandparent provides a home for a grandchild and serves as the primary caregiver for the grandchild.

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<sup>10</sup> H.R. 2608, Departments of Commerce, Justice, and State, the Judiciary, and Related Agencies Appropriations Act, 1992, became P.L. 102-140 on October 28, 1991. *Congressional Record*, October 29, 1991, p. D1331.

<sup>11</sup> H.R. 2469 (1991).

<sup>12</sup> The report's publication was the immediate impetus for the Census 2000 "reengineered census" document issued in May 1995. The NAS panel recommended the increased use of sampling in Census 2000 and that the Census Bureau redesign the census by reexamining all facets of the census and providing information to budget and policy decision makers about the consequences of a reengineered census on both the operations and quality of the census. See Chapter 2, "Planning the Census," for further discussion of this and the other NAS panels convened to study and make recommendations regarding the planning, research, and testing for Census 2000.

<sup>13</sup> H.R. 5084, Census Address List Improvement Act of 1994, became P.L. 103-430 on October 31, 1994. "Acts Approved by the President," *Weekly Compilation of Presidential Documents*, Vol. 30, No. 44, November 7, 1994, p. 2273.

<sup>14</sup> H.R. 3734, Personal Responsibility and Work Opportunity Reconciliation Act of 1996, became P.L. 104-193 on August 22, 1996. *Congressional Record*, September 3, 1996, p. D879.

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**P.L. 105-119, Departments of Commerce, Justice, and State, the Judiciary, and Related Agencies Appropriations Act, 1998 (including provisions related to the Census Monitoring Board, November 26, 1997).** Soon after the February 1996 official “roll-out” of “The Plan for Census 2000,” a significant number of members of Congress criticized the Census Bureau’s planned uses of sampling in nonresponse follow-up operations and in the Integrated Coverage Measurement program. Debate over the sampling issue postponed passage of the Commerce Department’s FY 1998 appropriations bill until the end of November 1997, 2 months into the new fiscal year. With the threat of a stalemate between the congressional leadership and the Clinton administration in the debate over the use of statistical sampling in Census 2000, the two sides reached a compromise in the enacted legislation.<sup>15</sup>

Among other things, the appropriations act provides for a civil remedy (declaratory, injunctive, or any other appropriate relief) to any person adversely affected by the use of an unlawful or unconstitutional “statistical method” in producing the Census 2000, or any later decennial census, apportionment or redistricting data.<sup>16</sup> The act defines an “aggrieved person” as “(1) any resident of a State whose congressional representation or district could be changed as a result of the use of a statistical method challenged in the civil action; (2) any Representative or Senator in Congress; and (3) either House of Congress.”<sup>17</sup> The statute authorizes the Speaker of the House (or his designee) to bring a civil action on behalf of the House of Representatives to prevent use of any statistical method for determining the apportionment or redistricting of members in Congress.

Further, to any entity within the executive branch authorized to conduct a decennial census, the act conferred standing to seek and obtain a declaratory judgment on the legality and constitutionality of the use of statistical sampling in determining the population for purposes of the apportionment or redistricting of members in Congress.

Challenges brought under the provisions of Section 209 were to be heard by a three-judge district court. Decisions by a district court could be appealed directly to the U.S. Supreme Court, and all courts were to expedite review of all challenges.

The legislation guaranteed that sufficient funding would be available for the Census Bureau to “. . . plan, test, and become prepared to implement a 2000 decennial census, without using statistical methods . . .” as an alternative to the original plan, establishing a “dual track” planning process.<sup>18</sup> It further required the Census Bureau to make publicly available “the number of persons enumerated without using statistical methods” for all dress rehearsal data releases and, with regard to Census 2000 itself, for

. . . (2) the data contained in the 2000 decennial census Public Law 94-171 data file released for use in redistricting, (3) the Summary Tabulation File One (STF-1) for the 2000 decennial census, and (4) the official populations of the States transmitted from the Secretary of Commerce through the President to the Clerk of the House used to reapportion the districts of the House among the States as a result of the 2000 decennial census.<sup>19</sup>

The law also set up an eight-member Census Monitoring Board (CMB) to observe and monitor all aspects of the planning and implementation of Census 2000. Four members were to be appointed by the majority leadership in Congress and four by the administration. P.L. 105-119 required the

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<sup>15</sup> H.R. 2267, Departments of Commerce, Justice, and State, the Judiciary, and Related Agencies Appropriations Act, 1998, became P.L. 105-119 on November 26, 1997. “Statement on Signing the Departments of Commerce, Justice, and State, the Judiciary, and Related Agencies Appropriations Act, 1998,” *Weekly Compilation of Presidential Documents*, Vol. 33, No. 48, December 1, 1997, p. 1926. The relevant provisions of P.L. 105-119 are contained in Title II, Sections 209 and 210.

<sup>16</sup> P.L. 105-119, Title II, Section 209(h)(1) defines the term “statistical method” as follows: “. . . [A]n activity related to the design, planning, testing, or implementation of the use of representative sampling, or any other statistical procedure, including statistical adjustment, to add or subtract counts to or from the enumeration of the population as a result of statistical inference. . . .”

<sup>17</sup> *Ibid.*, Section 209(d).

<sup>18</sup> *Ibid.*, Section 209(j).

<sup>19</sup> *Ibid.*

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CMB to send periodic reports to Congress beginning April 1, 1998, and to issue a final report—containing a detailed statement of its findings and conclusions—by September 1, 2001. These reports were to address, among other things, the Census Bureau’s efforts to conduct the 2000 census:

- To achieve maximum possible accuracy at every level of geography.
- By means of an enumeration process designed to count every individual possible.
- To be free from political bias and arbitrary decisions.<sup>20</sup>

As mentioned earlier in this section, provisions of the appropriations statute amended Title 13, U.S. Code, to grant members of the CMB access to confidential census information in the course of their official duties.<sup>21</sup>

The President’s statement upon signing H.R. 2267 into law included the following remarks with regard to the provisions concerning judicial review of the use of sampling in the decennial census:

It is my strong conviction, and it is the opinion of the Department of Justice, that sampling complies with both the Constitution and the Census Act . . . [I]n providing for a right of action to challenge the use of sampling before completion of the 2000 Census, the Act does not, nor could it, modify the “immutable requirements” of Article III of the Constitution regarding ripeness and standing to sue. Representatives of my Administration informed the Congress while it was considering the census provisions of their doubts whether the right to sue in the Act satisfies Article III requirements. Opponents of sampling in the 2000 Census will have the opportunity to attempt to persuade the courts that it does, but the Department of Justice is obligated to challenge any suits that fail to meet applicable justiciability requirements.<sup>22</sup>

During House consideration of H.R. 2267, Rep. Carolyn Maloney (D-NY) asked the Congressional Research Service (CRS)<sup>23</sup> to analyze the implications of an amendment introduced by Rep. Dennis Hastert (R-IL) and adopted by the House that automatically enjoined the use of appropriated funds for any statistical method upon commencement of a civil action under this law until final adjudication of the legality and constitutionality of such method.<sup>24</sup> A day before the House passed H.R. 2267 with the Hastert amendment, the CRS noted that the Congress cannot confer standing (where it otherwise does not exist) on a party to bring suit, and the CRS concluded that it was unlikely any plaintiff could demonstrate any actualized or imminent injury prior to the taking of the census.<sup>25</sup>

Similarly, language in the Hastert amendment that was later included in the enacted legislation (as noted earlier) authorized the Commerce Department and Census Bureau to obtain a declaratory judgment on the legality and constitutionality of the use of sampling in the decennial census to produce the apportionment and redistricting data. The CRS concluded that the language in question attempted to confer an authority when “[i]t seems doubtful that this authority could be exercised.”<sup>26</sup>

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<sup>20</sup> P.L. 105-119, Title II, Section 209(f)(2)(A).

<sup>21</sup> 13 U.S.C. § 9 (Supp. 2006).

<sup>22</sup> “Statement on Signing the Departments of Commerce, Justice, and State, the Judiciary, and Related Agencies Appropriations Act, 1998,” pp. 1926–27.

<sup>23</sup> The CRS is the public policy research arm of the Congress. Throughout the legislative process, the CRS works exclusively and directly for all members and committees of the Congress to provide them with comprehensive and reliable analysis, research, and information services.

<sup>24</sup> The enacted version of H.R. 2267 did not contain this provision. H. Res. 239 (relating to the consideration of H.R. 2267), agreed to by the House on September 24, 1997, provided for the automatic adoption of the amendment offered by Rep. Hastert—contained in the accompanying report (H. Rept. 105-264)—upon agreement to the resolution.

<sup>25</sup> Johnny H. Killian, senior specialist, American Constitutional Law, American Law Division, Congressional Research Service, letter-report to Rep. Carolyn Maloney, U.S. House of Representatives, September 29, 1997, p. 7.

<sup>26</sup> *Ibid.*



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## Census Legislative Initiatives That Did Not Result in Public Laws

*Note: Unless otherwise stated, no action was taken on these bills after introduction.*

**Amending Title 13 with regard to the use of sampling.** In March 1997, two bills were introduced in the House to “clarify” the language of Title 13, U.S. Code (the Census Act), with regard to the use of sampling to produce the population data used for apportionment. Rep. Maloney introduced a bill that would have amended Section 195<sup>27</sup> of Title 13 to provide “unambiguous” language permitting the use of sampling in the decennial census for the purpose of reapportioning the U.S. House of Representatives.<sup>28</sup> Meanwhile, Rep. Thomas Petri (R-WI) introduced a bill to amend Section 141 of Title 13 to provide “clear” language prohibiting the use of sampling or other statistical procedure in the census for determining the apportionment counts.<sup>29</sup>

In response to the January 25, 1999, Supreme Court decision<sup>30</sup> that Section 195 of Title 13 prohibits the use of sampling to determine the population data used for apportionment, legislation was introduced in February 1999 to amend Section 195 to permit its use for apportionment purposes. Rep. Maloney introduced her bill on February 3, the same day that Senators Daniel P. Moynihan (D-NY) and Jeff Bingaman (D-NM) introduced a companion bill to amend Title 13 in an identical fashion.<sup>31</sup>

**Sampling for nonresponse follow-up.** “The Plan for Census 2000” originally called for controlling nonresponse follow-up sampling at the county level, that is, instituting sampling when 90 percent of the households in a county had been enumerated.<sup>32</sup> However some members of the Census Bureau’s Race and Ethnic Advisory Committees, most notably those on the African American Advisory Committee, suggested that setting the 90 percent completion requirement at the county level would not be an effective solution. They stressed that, because minority groups composed a significant proportion of the hard-to-enumerate population, some predominantly minority jurisdictions with response rates substantially below the mandatory 90 percent level would still be enumerated at the 1-in-10 sample rate if the county as a whole met this criterion, thus resulting in more minority persons being estimated from the sample than in the nonminority population.<sup>33</sup>

In May 1996, Rep. Carrie Meek (D-FL) introduced a bill that would have required the Census Bureau to attempt to contact every household directly (either by mail or in person) but would have allowed the use of sampling as a substitute for direct contact in a particular census tract after direct contact had been made with at least 90 percent of the households in the tract.<sup>34</sup>

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<sup>27</sup> 13 U.S.C. § 195, reads as follows: “Except for the determination of population for purposes of apportionment of Representatives in Congress among the several States, the Secretary shall, if he considers it feasible, authorize the use of the statistical method known as ‘sampling’ in carrying out the provisions of this title.”

<sup>28</sup> H.R. 1178, Census Accuracy Act of 1997.

<sup>29</sup> H.R. 1220, Census, Title 13, U.S.C., Amendment (1997). H.R. 1220 is identical to the bill (H.R. 3589) Rep. Petri introduced in June 1996 (104th Congress) on which no action was taken.

<sup>30</sup> *Department of Commerce v. U.S. House of Representatives*, 119 S.Ct. 765 (1999). A detailed summary of this case is presented in the “Litigation” section of this chapter. In addition, the impact of the decision on the Census Bureau’s plans for conducting Census 2000 is described in the section entitled “The Debate Over the Use of Sampling.”

<sup>31</sup> H.R. 548 and S. 355, respectively (1999).

<sup>32</sup> See Chapter 2, “Planning the Census,” for a detailed discussion of the development of “The Plan for Census 2000.”

<sup>33</sup> U.S. Census Bureau, “Minutes and Report of Committee Recommendations,” meetings of the Census Advisory Committees on the African American, American Indian and Alaska Native, Asian and Pacific Islander, and Hispanic Populations, December 11–13, 1995, pp. 13, 16, 63, and 67.

<sup>34</sup> H.R. 3558, Decennial Census Improvement Act of 1996. The bill also would have required the Census Bureau to seek greater involvement of state and local government offices, as well as appropriate local community action groups, in order to reduce the undercount and would have provided legislative exemptions to permit federal annuitants, military retirees, and recipients of federal assistance programs such as Food Stamps and Aid to Families with Dependent Children to earn income from working on Census 2000 without impacting their eligibility for, or amount of, benefits. Identical language on legislative exemptions was included in a bill, H.R. 683, Rep. Meek introduced in February 1999 (106th Congress). An amended version of that bill was approved by the Committee on Government Reform.

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As a result of continued discussions with its advisory committees, the Census Bureau decided that it would target 90 percent completion at the census-tract level and estimated that this would increase the projected cost of the census to about \$4 billion.<sup>35</sup>

**Racial and ethnic classifications.** In February 1997, in the first session of the 105th Congress, Rep. Petri introduced an amendment to the Paperwork Reduction Act, requiring that respondents be given the opportunity to specify “multiracial” or “multiethnic” in responses to federal data collection instruments containing questions regarding racial or ethnic classification, respectively.<sup>36</sup> In October 1997, the Office of Management and Budget announced changes to Statistical Policy Directive No. 15, which governs the federal government collection and reporting of data on race and ethnicity. These changes included allowing the reporting of *more than one* race when self-identification is used, but not the use of a separate “multiracial” category. The revised standards were in effect for both the 1998 Dress Rehearsal and Census 2000. See Chapter 2, “Planning the Census,” for a detailed discussion of the new standards and their implications for the collection of data on race and ethnicity in Census 2000.

**Questionnaire content items.** In September 1996 and again in June 1997, Rep. Charles Canady (R-FL) introduced bills that would have required the Census Bureau to collect information relating to family caregivers in the 2000 decennial census.<sup>37</sup> Rep. Constance Morella (R-MD) and Sen. Robert Torricelli (D-NJ) introduced resolutions in March 1997 expressing the sense of the Congress that an ancestry question be included in Census 2000,<sup>38</sup> and in March and April of 1998, they introduced resolutions calling for the inclusion of a long form in Census 2000.<sup>39</sup> In July 1998, Rep. Dan Miller (R-FL) introduced a bill calling for Census 2000 to ask questions about the availability of personal computers in the home and access to the Internet.<sup>40</sup> In October 1999, Congress passed a law that included a nonbinding “Sense of the Senate” that the Census Bureau put the marital status question on the Census 2000 short form.<sup>41</sup> The Census Bureau, which had previously informed Congress of its plans, collected marital status only on the long form in Census 2000.

In reaction to public complaints about the census long form, seven members of the House introduced bills between March and May 2000 to limit census question content and curtail penalties for failure to answer questions beyond those required on the short form. In most of the bills, the basic questions required were limited to names and number of individuals at an address, but in some of the bills, answers to most short-form questions would have been required.<sup>42</sup> The members who introduced the bills were Representatives Ron Paul (R-TX), Duncan Hunter (R-CA), Nick Smith (R-MI), Mac Collins (R-GA), Helen Chenoweth-Hage (R-ID), Tom Campbell (R-CA), and Lee Terry (R-NE).<sup>43</sup>

**English as official language.** Throughout the early- to mid-1990s, several bills were introduced to make English the official language of the United States and require government agencies

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<sup>35</sup> U.S. Census Bureau, “Minutes and Report of Committee Recommendations,” meetings of the Census Advisory Committees on the African American, American Indian and Alaska Native, Asian and Pacific Islander, and Hispanic Populations, December 5-6, 1996, pp. 1 and 8. In February 1997, Rep. Meek introduced a bill almost identical to the one (H.R. 3558) she had introduced in the 104th Congress. No action was taken on this bill either. On March 11, 1997, the Census Bureau, in testimony before the Senate Governmental Affairs Committee, announced refinements to its plans for nonresponse sampling that entailed utilizing direct sampling to obtain responses from at least 90 percent of all households in each census tract and then sampling 1 in 10 to account for the remaining 10 percent (or less) of households in the tract.

<sup>36</sup> H.R. 830, Paperwork Reduction Act, Amendment (1997). Rep. Petri had introduced an identical bill (H.R. 3920) in July 1996 (104th Congress) on which no action was taken.

<sup>37</sup> H.R. 4146 (1996) and H.R. 2081 (1997), Family Caregiver Information Act. These bills would have required the collection of more extensive data than that required in the grandparents as caregivers provision of P.L. 104-193 discussed earlier.

<sup>38</sup> H.R. Con. Res. 38 (1997) and S. Con. Res. 12 (1997).

<sup>39</sup> H.R. Con. Res. 246 (1998) and S. Con. Res. 92 (1998).

<sup>40</sup> H.R. 4270 (1998).

<sup>41</sup> H.R. 2084, Department of Transportation and Related Agencies Appropriations Act, 2000, became P.L. 106-69 on October 9, 1999.

<sup>42</sup> The short form requested the following information: name, relationship to householder (a person who rents or owns the unit), sex, age/date of birth, Hispanic origin, and race. The questionnaire also requested the number of residents of the housing unit and whether it was rented or owned. Additionally, the householder was asked to provide his or her telephone number.

<sup>43</sup> H.R. 4085, H.R. 4154, H.R. 4158, H.R. 4188, H.R. 4198, H.R. 4291, and H.R. 4458 (2000).

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to communicate with the public only in English. Bills introduced in 1996 (H.R. 123) and 1997 (H.R. 123) would have exempted the decennial census from this requirement. In other words, these bills would have allowed the Census Bureau to print decennial questionnaires and promotional materials and conduct other census activities in other languages, but surveys conducted by the Census Bureau would not have been exempted. The House passed H.R. 123 on August 1, 1996.<sup>44</sup> In the first session of the 105th Congress, H.R. 123 was introduced on January 7, 1997, but no action was taken on this bill.

**Postcensus local review.** In February 1999, Rep. Dan Miller introduced a bill, H.R. 472, calling for each decennial census to include an opportunity for postcensus local review (PCLR), similar to that afforded as part of the 1990 census, so that local and tribal governmental units could review household counts, jurisdictional boundaries, and other data to identify discrepancies or other potential problems before the tabulation of state population totals was completed.<sup>45</sup> The bill established a timetable and guidelines for conducting the reviews, challenging census data, and correcting identified miscounts.<sup>46</sup>

The administration and the Census Bureau strongly opposed H.R. 472. In his analysis of the legislation, Census Bureau Director Kenneth Prewitt wrote that the legislation would “. . . mandate an operational change to the Census 2000 Plan which is neither timely, effective, nor cost-efficient and would return us to inadequate 1990 operations that have now been substantially improved upon.”<sup>47</sup> The Director cited the Census Bureau’s new Local Update of Census Addresses (LUCA) and New Construction programs as improvements to the 1990 PCLR program that obviated the need for a similar program in 2000.<sup>48</sup> These new collaborative efforts with local and tribal governments were made possible by the passage of the address list-sharing legislation (P.L. 103-430, the Census Address List Improvement Act of 1994) described earlier in this section.

In April 1999, the U.S. House of Representatives approved H.R. 472 along mostly party lines.<sup>49</sup> After House passage, the bill was received in the Senate, which referred it to the Committee on Governmental Affairs and took no further action.

**Census Monitoring Board (CMB).** In June 1999, Rep. Maloney introduced legislation that would have changed the requirements for those serving on or working for the CMB (as provided for in P.L. 105-119, Title II, Section 210, and discussed earlier). Specifically, it would have barred members, staff, or contract employees of the CMB from holding senior-level management positions for a presidential or vice presidential campaign or a national committee of a political party. The bill language states that “. . . acceptance of a senior-level position in a Presidential or a Vice Presidential campaign creates a significant possibility of a conflict of interest and is incompatible with the objective, unbiased oversight required of members of the Board.”<sup>50</sup>

**Promotion and outreach.** In March 1999, Rep. Miller introduced a series of bills that would have required (1) printing short-form questionnaires in at least 34 languages; (2) a second mailing of questionnaires; (3) a competitive grant program for Census 2000 outreach and promotion funds; (4) a \$300 million increase in the funding authorization for the Census 2000 advertising budget in FY 2000; and (5) expanding the Census Bureau’s Census in Schools program.<sup>51</sup>

The Census Bureau Director’s analysis referenced above (see footnote 47) also noted the agency’s strong concerns about the first two of these bills. In his analysis, the Director stated that requiring the printing of short-form questionnaires in 34 languages would force the agency to modify the

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<sup>44</sup> *Congressional Record*, August 1, 1996, p. D860.

<sup>45</sup> H.R. 472, Local Census Quality Check Act (1999).

<sup>46</sup> The bill proposed a 9-week review of the relevant information by local and tribal government liaisons. In the 1990 PCLR program, local government liaisons had 3 weeks to review the listings for their jurisdictions. See U.S. Census Bureau, *1990 Census of Population and Housing, History, Part A*, 1990 CPH-R-2A (Washington, DC: Government Printing Office, October 1993), p. 6-45.

<sup>47</sup> “Census Bureau Position on Bills Concerning 2000 Census,” memorandum for the Secretary, from Kenneth Prewitt, Director, U.S. Census Bureau, March 16, 1999, p. 1.

<sup>48</sup> *Ibid.*, pp. 1–2. The LUCA and New Construction programs are described in Chapter 8, “Addresses and Questionnaire Printing and Mailing.” At the time, the Census Bureau had not finalized its plans for the New Construction program.

<sup>49</sup> *Congressional Record*, April 14, 1999, p. H2030–31.

<sup>50</sup> H.R. 2306, Section 1(4) (1999).

<sup>51</sup> H.R. 929, H.R. 928, H.R. 1009, H.R. 1010, and H.R. 1058, respectively (1999).

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entire workflow for questionnaire receipt, image capture, transcription and key-from-paper activities and, as a result, would require it to renegotiate its largest contracts, including those for data capture and related services and Telephone Questionnaire Assistance.<sup>52</sup>

With regard to a second mailing, Director Prewitt noted that the Census Bureau's analyses and an evaluation of the dress rehearsal experience led the agency to conclude that “. . . the value of a second mailing is substantially outweighed by the risks that it introduces in other census operations.”<sup>53</sup>

The analyses indicated that a second mailing targeted to nonresponding households would require delaying the start of nonresponse follow-up by 1 month and diminish the accuracy of the data. The Census Bureau tested a blanket (sent to all households) second mailing in the dress rehearsal and found that approximately 40 percent of households that mailed back the second questionnaire had mailed in the initial questionnaire. Dr. Prewitt noted that this level of duplication during the census itself “. . . would significantly delay data processing operations and potentially introduce significant errors into the data.”<sup>54</sup>

All five of the bills introduced by Rep. Miller were approved by the House Committee on Government Reform, but no additional action was taken.<sup>55</sup>

Sen. Ben Nighthorse Campbell (R-CO) introduced a bill (S. 1588) in September 1999 that would have authorized the Secretary of Commerce to provide matching grants to American Indian tribes and tribal organizations to improve Native American participation in Census 2000.

**Overseas Americans.** Rep. Maloney in July 1999 introduced a bill expressing the sense of Congress that the Census Bureau should undertake a census of all Americans residing abroad in a special census and then review the means by which Americans living abroad could be included in the 2010 Census.<sup>56</sup> The previous month, the House Subcommittee on the Census held a hearing on this and other issues relating to the Census Bureau's residence rules governing the decennial census (see Appendix F). In October 1999, Sen. John D. Rockefeller IV (D-WV) introduced a bill identical to Rep. Maloney's.<sup>57</sup> Then, in 2000, Rep. Maloney introduced similar bills.<sup>58</sup>

**Stateside and overseas military.**<sup>59</sup> In June 1999, Rep. Paul Ryan (R-WI) introduced a bill allocating active duty military (in the United States or abroad) to their home of record, legal residence, or last permanent duty station in the United States, in that order of priority for the 2000 decennial census.<sup>60</sup> The bill called for resident dependents of active duty military assigned to a permanent duty station outside of the United States to be allocated to their last state or U.S. territory of residence. However, dependents who had never lived in the United States, but were citizens, would be allocated in the same manner as their family member in the Armed Forces. This bill was discussed at the June 9, 1999, hearing referenced above, but no further action was taken.

**Counting prisoners.** Rep. Mark Green (R-WI) introduced a bill that would have provided that if an individual was incarcerated in a state and the state could recover from another state or states over half the costs for incarcerating the individual, then the Secretary of Commerce would count the person in the state from which the costs were recoverable.<sup>61</sup> In Census 2000, as in past censuses, the Census Bureau counted prisoners as residents of the state in which the institution or facility was located.<sup>62</sup> This bill was also discussed at the June 9, 1999, hearing, but no further action was taken.

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<sup>52</sup> “Census Bureau Position on Bills Concerning 2000 Census,” p. 2.

<sup>53</sup> *Ibid.*, p. 3.

<sup>54</sup> *Ibid.*

<sup>55</sup> *Congressional Record*, March 17, 1999, pp. D294–95.

<sup>56</sup> H.R. 2444 (1999).

<sup>57</sup> S. 1715 (1999).

<sup>58</sup> H.R. 3649 and H.R. 4568 (2000).

<sup>59</sup> The Census 2000 Overseas Counts Program and the enumeration of military installations and vessels are discussed in Chapter 5, “Data Collection.”

<sup>60</sup> H.R. 2067 (1999).

<sup>61</sup> H.R. 1632 (1999).

<sup>62</sup> The District of Columbia challenged this practice in *District of Columbia v. U.S. Department of Commerce*, claiming that because of its “complete and exclusive control and management” of the Lorton prison facility located in Virginia, the inmates at that facility should have been counted as residents of the

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## THE DEBATE OVER THE USE OF SAMPLING

### 1995 to 1997

#### May 1995: Census Bureau Produces Reengineered Census Plan

Following the costly litigation generated by the 1980 and 1990 censuses—particularly the litigation that sought statistical adjustment of the census counts to correct for persons estimated to have been missed or duplicated—the Census Bureau designed a plan for the 2000 census that it believed would eliminate the possibility of litigation. The Census Bureau’s May 1995 plan for a “reengineered census” was the culmination of a 4-year process of discussion and review of census plans by a broad spectrum of experts, advisors, and stakeholders.<sup>63</sup> These groups included the Task Force for Designing the Year 2000 Census, two panels of the National Academy of Sciences (NAS), census professional and race and ethnic advisory committees, as well as the Congress, the Government Accountability Office (GAO),<sup>64</sup> the U.S. Office of Management and Budget, and the Office of the Inspector General of the Department of Commerce.

The immediate impetus for the “reengineered census” document was the publication in December 1994 of the final report of the NAS Panel on Census Requirements in the Year 2000 and Beyond.<sup>65</sup> The panel added its voice to those recommending the increased use of sampling in Census 2000 and also recommended that the Census Bureau redesign the census by reexamining all facets of the census and providing information to budget and policy decision makers about the consequences of a reengineered census on both the operations and the quality of the census.<sup>66</sup> This is essentially the effort the Census Bureau undertook that led first to the May 1995 plan and then evolved into the plan “rolled out” in February 1996.

#### October 1995: Four Strategies Unveiled at Congressional Hearing

At a congressional hearing in October 1995, the Census Bureau Director outlined four strategies to meet the objectives of making every effort to include everyone in the census and eliminating the “differential undercount”—the lower-than-average coverage of minorities, young adult males, and renters.<sup>67</sup> These strategies were (1) building partnerships with governmental units, community groups, and the private sector; (2) simplifying the census process by, among other things, using user-friendly forms; (3) using technology intelligently to scan, check, and disseminate the data; and (4) using statistical methods to produce the data.

The plan called for using statistical sampling techniques in two principal ways.<sup>68</sup> The first was to alter the traditional personal visit to every housing unit that did not return a completed form (non-response follow-up). Instead of personally visiting every address that did not respond, the Census

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District of Columbia in the 1990 census. The U.S. District Court for the District of Columbia upheld the Census Bureau’s residence rule for prisoners, stating that it was neither arbitrary nor capricious, nor did it violate the Census Clause of the Constitution (Article I, Section 2, Clause 3). For additional information regarding this lawsuit, see U.S. Census Bureau, *1990 Census of Population and Housing, History, Part D*, 1990 CPH-R-2D (Washington, DC: Government Printing Office, March 1996), p. 12-7.

<sup>63</sup> U.S. Census Bureau, “The Reengineered 2000 Census,” May 19, 1995.

<sup>64</sup> In July 2004, Public Law (P.L.) 108-271 formally changed the name from General Accounting Office.

<sup>65</sup> Barry Edmonston and Charles Schultze (eds.), *Modernizing the U.S. Census* (Washington, DC: The National Academies Press, 1995).

<sup>66</sup> *Ibid.*, pp. 3 and 6–7.

<sup>67</sup> Martha Farnsworth Riche, Director, U.S. Census Bureau, “Plans for the 2000 Census,” written statement submitted to the Subcommittee on National Security, International Affairs, and Criminal Justice of the House Committee on Government Reform and Oversight, hearing of October 25, 1995.

<sup>68</sup> The Census Bureau had also planned to conduct—during the nonresponse follow-up operation—a follow-up on a 30 percent sample of housing units identified as vacant by the U.S. Postal Service (USPS). The agency sought to verify that these units were indeed vacant on Census Day and thereby ensure the integrity of the vacancy information provided by the USPS. After the January 1999 Supreme Court ruling in *Department of Commerce v. U.S. House of Representatives* (119 S.Ct. 765 (1999)), the Census Bureau’s revised plan included a 100 percent follow-up of such units.

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Bureau plan was to visit addresses until 90 percent of the housing units in a county <sup>69</sup> had responded (either by mail, telephone, or personal interview). Then it would use statistical sampling to visit 1 out of 10 of the remaining addresses, and the results from this 1 percent would be weighted to represent the entire 10 percent. This had the potential for saving time and money by reducing the number of personal visits.

The second involved taking a sample of 750,000 housing units to be matched to housing unit questionnaires obtained from mail and telephone responses as well as personal visits. The goal of this quality-check survey was to develop adjustment factors for persons estimated to have been missed or duplicated in the census and to then correct the census counts to produce one set of numbers. This was to be a “one-number census,” corrected for net coverage errors, thus called, Integrated Coverage Measurement (ICM).<sup>70</sup>

### **February 1996: Official “Roll-Out” of the Reengineered Census Plan; Congressional Hearing to Review the Plan**

On February 28, 1996, Commerce Department and Census Bureau officials made public “The Plan for Census 2000” and presented each of the four main strategies underlying the plan.<sup>71</sup> Over the next several months, ten such “roll-out” presentations were made in Census Bureau regional office cities. The purpose of the initial ceremony and additional presentations was to generate interest in, knowledge about, and discussion of the plans for Census 2000.

At a hearing held February 29, 1996, before the House Government Reform and Oversight Committee, several witnesses expressed reservations about the use of sampling. Concerns were expressed about:

- The constitutionality of the use of sampling to effect a statistical adjustment.
- The effect of statistical adjustment on accurately capturing the distribution of the population among the states.
- The use of sampling—both in the nonresponse follow-up operation and the ICM program—undermining public confidence in the census.
- The accuracy of statistically adjusted counts at lower levels of geography.
- The use of statistical adjustment resulting in increased litigation, as opposed to reducing or ending it.
- Reduced participation in future censuses as a result of statistical adjustment.<sup>72</sup>

The planned uses of sampling were strongly defended by two members of the NAS Panel on Census Requirements in the Year 2000 and Beyond.<sup>73</sup>

### **September 1996 to February 1997: House Report Airs Views on Sampling; Census Bureau Response**

On September 18, 1996, the House Committee on Government Reform and Oversight adopted a freestanding (not associated with any piece of legislation) report that opposed the Census

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<sup>69</sup> This was changed to census tract in September 1996. See U.S. Census Bureau, “Commerce Revises Sampling Procedures for Census 2000,” *Census CounterParts*, Vol. 6, No. 7, October 1996. On March 11, 1997, the Census Bureau, in testimony before the Senate Governmental Affairs Committee, announced refinements to its plans for nonresponse sampling that entailed utilizing direct sampling to obtain responses from at least 90 percent of all households in each census tract and then sampling 1 in 10 to account for the remaining 10 percent (or less) of households in the tract.

<sup>70</sup> ICM (see the “1995 Census Test” and “Census 2000 Dress Rehearsal” sections of Chapter 2, “Planning the Census,” for more information about this program), in which the coverage measurement survey results would be “integrated” into the census itself, was a significant departure from 1990, when the results of the post-enumeration survey (PES) were used to produce a separate set of statistically adjusted counts after the delivery of the apportionment counts and redistricting data. This resulted in two competing sets of population numbers.

<sup>71</sup> U.S. Census Bureau, “The Plan for Census 2000,” February 28, 1996.

<sup>72</sup> U.S. House of Representatives, Committee on Government Reform and Oversight, “Census 2000: Putting Our Money Where It Counts,” 104th Cong., 2nd sess., February 29, 1996, pp. 9–10 and 50–51.

<sup>73</sup> *Ibid.*, pp. 105–106.

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Bureau's plans to use sampling in the 2000 Census for purposes of determining the apportionment counts.<sup>74</sup> Among the concerns about sampling raised in the report were the subjectivity of decisions about the methodology; undermining of public confidence in the census results; accuracy of small-area data; the complexity of sampling techniques; and legal uncertainties.<sup>75</sup> With regard to this last aspect, the report noted that the constitutionality of sampling/statistical adjustment for apportionment purposes remained undecided and that interpretations varied as to whether Section 195 of Title 13, U.S. Code, permitted the use of sampling to produce the apportionment data.<sup>76</sup> Finally, it pointed out that the issue of using sampling in the nonresponse follow-up operation to complete the enumeration had not been adjudicated by any court.<sup>77</sup>

The report also included dissenting views of minority members that expressed strong support for the use of sampling.<sup>78</sup> They stated that statistical adjustment could correct for the inevitable differential undercount of minorities and thereby would produce a more accurate census.<sup>79</sup> There was no further action on the report.

In February 1997, the Census Bureau responded to each of the six findings and five recommendations in the report. The agency responded to the "finding" that sampling methods are subjective by pointing out that its proposed sampling plan ". . . is in keeping with a long tradition of applying proven scientific methods and modern techniques to achieve less costly and more accurate censuses." It also noted that "[t]he procedures for implementing the plan are being formulated in an open process, subject to review and scrutiny by experts from the appropriate professions."<sup>80</sup>

The Census Bureau response also addressed the concerns raised in the House Committee on Government Reform and Oversight report about the legality and constitutionality of using sampling techniques for apportionment purposes. The agency cited the March 1996 Supreme Court opinion in *Wisconsin v. City of New York* that acknowledged that the Secretary of Commerce enjoys a substantial degree of discretion in the methods used to take the census.<sup>81</sup> However, that decision did not address either the constitutionality or the legality of sampling for apportionment purposes.

### March 1997: Bills Introduced to Amend Title 13 With Regard to the Use of Sampling

Two bills were introduced in the House to "clarify" the language of Title 13 (the Census Act) with regard to the permissibility of using sampling to determine the population data used for apportionment. One bill would have, among other things, amended Section 195 of Title 13 to provide "unambiguous" language permitting the use of sampling in the decennial census for the purpose of reapportioning the U.S. House of Representatives.<sup>82</sup> The other bill sought to amend Section 141 of Title 13 to provide "clear" language prohibiting the use of sampling or other statistical procedure in the census for determining the apportionment counts.<sup>83</sup> There was no action taken on either bill.

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<sup>74</sup> U.S. House of Representatives, Committee on Government Reform and Oversight, "Sampling and Statistical Adjustment in the Decennial Census: Fundamental Flaws," 104th Cong., 2nd sess., 1996, H. Rept. 104-821.

<sup>75</sup> *Ibid.*, p. 2.

<sup>76</sup> *Ibid.*, p. 6. Title 13, U.S. Code, (the Census Act), provides the statutory authority for the Census Bureau's conduct of censuses and surveys, including the decennial census. Section 195 of Title 13, U.S. Code, reads as follows: "Except for the determination of population for purposes of apportionment of Representatives in Congress among the several States, the Secretary shall, if he considers it feasible, authorize the use of the statistical method known as 'sampling' in carrying out the provisions of this title."

<sup>77</sup> *Ibid.*

<sup>78</sup> *Ibid.*, pp. 23–32 and pp. 35–37.

<sup>79</sup> *Ibid.*, p. 23.

<sup>80</sup> Martha Farnsworth Riche, Director, U.S. Census Bureau, to Rep. Dan Burton et al., U.S. House of Representatives, February 21, 1997, enclosure entitled "Responses to the Findings and Recommendations Contained in the September 24, 1996, Report Prepared by the Committee on Government Reform and Oversight," p. 1.

<sup>81</sup> *Ibid.*, p. 2. In *Wisconsin v. City of New York* (517 U.S. 1 (1996)), the Supreme Court unanimously upheld Secretary of Commerce Robert Mosbacher's decision not to statistically adjust the 1990 census. See the "Litigation" (specifically, "1990 Census Litigation") section of this chapter for a detailed summary of the case.

<sup>82</sup> H.R. 1178, Census Accuracy Act of 1997.

<sup>83</sup> H.R. 1220, "Census, Title 13, U.S.C., Amendment" (1997).

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## Summer 1997: Fiscal Year 1997 Appropriations Legislation Relating to Census 2000

Beginning with the fiscal year (FY) 1997 appropriations process, the congressional majority included language in appropriations legislation that would prohibit the use of sampling in Census 2000 or the expenditure of funds for Census 2000 sampling-related planning activities. On June 9, 1997, President Clinton vetoed the Supplemental Appropriations and Rescissions Act (H.R. 1469), citing language prohibiting the use of sampling in the census for apportionment purposes as one of the reasons for his action.<sup>84</sup>

Less than a week later, the President signed an amended version of the bill.<sup>85</sup> That law required the Department of Commerce to produce and send to Congress within 30 days “. . . a comprehensive and detailed plan outlining its proposed methodologies for conducting the 2000 decennial Census and available methods to conduct an actual enumeration of the population.”<sup>86</sup>

The Census Bureau, through the Department of Commerce, delivered to Congress the report in the summer of 1997. The 60-page report discussed the importance of an accurate census; the Census 2000 plan; estimated costs for 2000 and improvements over 1990; improvements in traditional methods; the use of scientific sampling to increase accuracy; options for improving coverage in areas with high undercount rates in the absence of scientific sampling; expected error rates; procedures to ensure unbiased statistical decisions; and legal considerations.<sup>87</sup>

## November 1997: Compromise Reached in Enacted FY 1998 Appropriations Bill

The enacted FY 1998 appropriations legislation for the Departments of Justice, State, and Commerce, the Judiciary, and related agencies (Public Law [P.L.] 105-119) included language adopted in the conference committee representing a compromise between the administration and congressional leaders over the use of sampling in Census 2000.<sup>88</sup> The law permitted the Census Bureau to continue to plan for sampling, while directing the agency to plan for a census without statistical sampling. This was later referred to as “dual-track” planning. The statute established an eight-member Census Monitoring Board (CMB) to observe and monitor all aspects of the planning and implementation of Census 2000. Four members were to be named by the congressional leadership and four by the administration. The CMB would be terminated on September 30, 2001.

The law also purported to confer standing to bring legal action on “[a]ny person aggrieved by the use of any statistical method in violation of the Constitution or any provision of law . . . , in connection with the 2000 or any later decennial census, to determine the population for purposes of the apportionment or redistricting of Members in Congress. . . .”<sup>89</sup> It defined an “aggrieved person” as “(1) any resident of a State whose congressional representation or district could be changed as a result of the use of a statistical method challenged in the civil action; (2) any Representative or Senator in Congress; and (3) either House of Congress.”<sup>90</sup>

The “Legislation” section of this chapter provides a more detailed summary and analysis of the provisions of P.L. 105-119 relating to the compromise over the use of sampling in the 2000 decennial census.

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<sup>84</sup> “Message to the U.S. House of Representatives Returning Without Approval Emergency Supplemental Appropriations Legislation,” *Weekly Compilation of Presidential Documents*, Vol. 33, No. 24, June 16, 1997, . 847.

<sup>85</sup> H.R. 1871, 1997 Emergency Supplemental Appropriations Act for Recovery from National Disasters, and for Overseas Peacekeeping Efforts, Including Those in Bosnia, became P.L. 105-18 on June 12, 1997.

<sup>86</sup> P.L. 105-18, Title VIII (2000 Decennial Census).

<sup>87</sup> U.S. Census Bureau, “Report to Congress—The Plan for Census 2000,” July 1997, revised and reissued August 1997.

<sup>88</sup> H.R. 2267, Departments of Commerce, Justice, and State, the Judiciary, and Related Agencies Appropriations Act, 1998, became P.L. 105-119 on November 26, 1997.

<sup>89</sup> P.L. 105-119, Title II, Section 209(b).

<sup>90</sup> *Ibid.*, Section 209(d).



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In addition to the legislative compromise, administration and congressional leaders agreed that statistical sampling would not be tested in the South Carolina dress rehearsal site.<sup>91</sup> Proponents and opponents of sampling generally agreed that a decision would have to be made by early 1999 to pursue one plan (either one with sampling or without) for Census 2000—to do otherwise would put the census at high risk of not meeting its mandated deadlines.

## 1998

### February 1998: Lawsuits Filed to Prevent the Use of Sampling to Produce the Census 2000 Apportionment Counts

On January 12, 1998, the Census Bureau Director, after serving since November 1995, announced her resignation effective January 30.<sup>92</sup> Shortly after her resignation, two lawsuits were filed in February 1998 that challenged the legality and constitutionality of the use of sampling to produce the apportionment counts. The plaintiffs in both suits cited the provisions of P.L. 105-119 as providing a “right of action.” *Glavin v. Clinton* and *U.S. House of Representatives v. Department of Commerce* (as filed) challenged the proposed uses of sampling to produce the apportionment counts, seeking a declaration stating that their use would violate the Census Act and the Census Clause of the Constitution and an injunction barring their implementation in Census 2000.<sup>93</sup>

On August 24, 1998, the U.S. District Court for the District of Columbia in the *U.S. House of Representatives* case held that Section 195 of Title 13 prohibited the use of sampling to produce the apportionment counts, and enjoined the Census Bureau from implementing its planned uses of statistical sampling to produce the Census 2000 apportionment counts.<sup>94</sup> On September 24, the U.S. District Court for the Eastern District of Virginia in the *Glavin* case also held that Section 195 barred the use of sampling for apportionment purposes and enjoined both proposed uses in the production of the apportionment counts.<sup>95</sup>

The Department of Commerce sought review of the district court decisions by the U.S. Supreme Court. The Supreme Court agreed to hear the cases and consolidated them for purposes of oral argument, which took place on November 30, 1998. On January 25, 1999, the Court held that the Census Bureau’s proposed plan to use statistical sampling in the decennial census for purposes of determining congressional apportionment violated the Census Act.<sup>96</sup>

### Fall 1998: FY 1999 Appropriations for Census 2000 Preparatory Activities

Passage of FY 1999 appropriations for the Departments of Commerce, Justice, and State, and the Judiciary was delayed by disagreement over language seeking restrictions on the use of funds to continue to plan to implement sampling in Census 2000. By late September, Congress approved a continuing resolution to fund government activities past September 30—the end of the fiscal year—for those departments and agencies, including the Commerce Department, whose regular appropriations bills had not been enacted. Additional continuing resolutions were enacted through the first 3 weeks of October.

By mid-October, an agreement was reached regarding FY 1999 funding for Census 2000 activities. The Census Bureau was appropriated \$1.027 billion in FY 1999 for preparing for Census 2000, \$75 million more than the amount in the House-passed appropriations bill. Of the \$75 million,

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<sup>91</sup> The Census Bureau had selected the following three sites in which to conduct the Census 2000 Dress Rehearsal in April 1998: Sacramento, CA; Menominee County, WI; and Columbia, SC, and its 11 surrounding counties. U.S. Department of Commerce, “CA, WI, SC Selected for Census 2000 Dress Rehearsal,” *Commerce News*, July 29, 1996, CB96-O.15. In the South Carolina site, estimates of net over- or undercoverage would be produced, but not integrated into the census numbers.

<sup>92</sup> U.S. Census Bureau, *Census 2000 Bulletin*, (12 January 1998) Vol. 2, No. 2; U.S. Census Bureau, *Census 2000 Bulletin*, (30 January 1998) Vol. 2, No. 5.

<sup>93</sup> Summary information about the district court cases is taken from *Department of Commerce v. U.S. House of Representatives*, 525 U.S. 316, 327 (1999).

<sup>94</sup> *Ibid.*

<sup>95</sup> *Ibid.*

<sup>96</sup> *Department of Commerce v. U.S. House of Representatives*, 119 S.Ct. 765 (1999). The Supreme Court decision is discussed in more detail below.

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\$40 million was to be used for activities associated with a nonsampling census.<sup>97</sup> Under the terms of the agreement, the flow of funding to the entire Commerce, Justice, State, and the Judiciary account would stop on June 15, 1999, unless a new measure granting spending authority had been enacted by that time.<sup>98</sup>

Because the Commerce, Justice, State, and the Judiciary appropriations bill was one of a number of major appropriations bills not passed by the Congress prior to the start of the new fiscal year, the funding for that account was included in an omnibus spending package. Congress approved the \$487 billion omnibus spending package, and the Omnibus Consolidated and Emergency Supplemental Appropriations Act, 1999, H.R. 4328, was signed into law (P.L. 105-277) on October 21, 1998.<sup>99</sup>

## 1999

This year saw the first substantive meetings of the Census Monitoring Board and the issuance of its first statutorily mandated reports. More importantly, the Supreme Court issued a decision in the *U.S. House of Representatives* case prohibiting the use of sampling to produce the apportionment counts. Thus, the Census Bureau could no longer pursue the plan it had issued in November 1998 that included the Integrated Coverage Measurement (ICM) program and sampling for nonresponse follow-up. However, the debate over the use of sampling in Census 2000 continued, as a result of the administration's interpretation of the decision in the *U.S. House of Representatives* case as permitting adjustment of the census for purposes of redistricting and federal funding.

### January 1999: Supreme Court Decision and Administration Interpretation

As mentioned earlier, on January 25, 1999—less than 2 weeks after the Census Bureau delivered to Congress the *Census 2000 Operational Plan Using Traditional Census-Taking Methods*<sup>100</sup>—the Supreme Court issued its decision in *Department of Commerce v. U.S. House of Representatives*, concluding that Section 195 of the Census Act (Title 13, U.S. Code) precluded the use of sampling to produce the congressional apportionment counts.<sup>101</sup>

When the Congress amended Title 13, U.S. Code, in 1976, one of the revisions involved Section 195. The phrase “the Secretary may, where he deems it appropriate” was changed to “the Secretary shall, if he considers it feasible.”<sup>102</sup> The administration interpreted the revised except/shall language to mean that Congress made (through the 1976 amendments) sampling permissible for apportionment purposes, but obligatory (*shall*) for all other purposes (upon a determination of feasibility). The Court did not accept that interpretation and found that the legislative history did not support the administration's interpretation of Section 195. Thus, the Court, in a 5 to 4 majority opinion, concluded that if Congress had intended to permit such a dramatic change (with the 1976 amendments) to the way in which the apportionment counts were produced, it would have been abundantly clear in both the plain text and the legislative history.<sup>103</sup>

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<sup>97</sup> Omnibus Consolidated and Emergency Supplemental Appropriations Act, 1999, P.L. 105-277, 112 Stat. 2681-80.

<sup>98</sup> 112 Stat. 2681-117.

<sup>99</sup> *Congressional Record*, November 12, 1998, p. D1202.

<sup>100</sup> This plan—created in order to comply with the requirements of P.L. 105-119, Title II, Section 209(j) that the Census Bureau be prepared to implement a “nonsampling” census—included new (for example, coverage improvement follow-up) or enhanced (for example, coverage edit and telephone follow-up) operations to improve coverage. Unlike the agency's original plan, it included neither the ICM program, which was designed to measure and correct for net over- and undercoverage errors, nor sampling for nonresponse follow-up. In further refining its plans for utilizing traditional census-taking methods to produce the apportionment counts, the Census Bureau subsequently expanded its partnerships program and expanded and enhanced its paid advertising and promotion program to improve public response and cooperation. (For more information on these programs, see Chapter 4, “The Partnership and Marketing Program.”) Additionally, for particular field operations, the agency implemented enhanced training of field workers and added or enhanced quality assurance programs. (For more information on field training and quality assurance programs for data collection operations, see the relevant sections of Chapter 5, “Data Collection.”)

<sup>101</sup> *Department of Commerce v. U.S. House of Representatives*, 119 S.Ct. 765 (1999). See footnote 76 for the text of 13 U.S.C. § 195.

<sup>102</sup> Mid-decade Census of Population, P.L. 94-521, 90 Stat. 2464.

<sup>103</sup> *Department of Commerce v. U.S. House of Representatives*, 119 S.Ct. 765, 779 (1999).

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Having determined the use of sampling to produce the congressional apportionment counts violated Section 195 of Title 13, U.S. Code, the Court did not address the constitutionality of sampling.<sup>104</sup> However, the Court's decision was interpreted by the administration as affirming the legality of statistical sampling for purposes other than apportionment, including redistricting, if doing so were determined to be "feasible" (the language used in Section 195 of the Census Act). Consequently, the Census Bureau proceeded with its plans to produce a statistically adjusted census count for purposes of redistricting and federal funding. It should be noted that, as discussed in the "Legislation" section of this chapter, provisions of P.L. 105-119 (the FY 1998 Commerce Department appropriations act) required that the data produced for redistricting (P.L. 94-171 files) and used for federal funding ("STF-1" files<sup>105</sup>) be released indicating "the number of persons enumerated without using statistical methods."<sup>106</sup> This requirement in combination with the administration's interpretation of the *U.S. House of Representatives* decision, meant that two sets of numbers might be produced for redistricting and other nonapportionment purposes—one adjusted and one not adjusted.

The administration's interpretation of the *U.S. House of Representatives* decision was not universally shared. The Congressional Research Service (CRS), the public policy research arm of Congress, issued a report examining this interpretation and concluded that ". . . technically, the position of sampling proponents, that sampling in intrastate redistricting is required, is not inconsistent with the Court's holdings on the merits, but is arguably inconsistent with the apparent assumptions and larger scheme underlying the holdings."<sup>107</sup>

### Late February 1999: Release of "Updated Summary: Census 2000 Operational Plan"

On February 23, the Department of Commerce released "Updated Summary: Census 2000 Operational Plan," summarizing the programs and operations discussed in the previous congressional report entitled *Census 2000 Operational Plan Using Traditional Census-Taking Methods*. The "Updated Summary" also included a section on the Accuracy and Coverage Evaluation (A.C.E.) survey, a coverage measurement survey ". . . corresponding to the Post Enumeration Survey (PES) in past censuses and the Integrated Coverage Measurement [(ICM) survey] in the original Census 2000 plan. . . ."<sup>108</sup> These coverage measurement programs were designed to estimate and statistically adjust for overall and differential net coverage errors in the census.

The document noted important developments since the release of the nonsampling operational plan in mid-January, especially the recent Supreme Court decision. The "Updated Summary" reported that it would be feasible ". . . to conduct and complete the statistical procedures necessary to provide corrected [statistically adjusted] data for all purposes other than apportionment within the legally mandated schedule. . . . [and] that such corrected data will be substantially more accurate than the raw data."<sup>109</sup> The document explained that the results from the A.C.E. would not be used to adjust the census figures for apportionment purposes, but would ". . . be made available to federal agencies and state and local governments for other purposes."<sup>110</sup>

### April 1999: Census Bureau Releases Dress Rehearsal Data on Net Coverage Error by Race and Ethnicity

On April 20, the Census Bureau issued a news release reporting results from the dress rehearsal conducted the previous year. Specifically, it contained unadjusted and adjusted data by race and ethnicity for the Sacramento, CA, and Menominee County, WI, sites. As mentioned earlier, the

<sup>104</sup> The Supreme Court's decision is discussed in greater detail in the "Litigation" section of this chapter.

<sup>105</sup> "STF-1" is a reference to Census 2000 Summary File 1 (SF 1), which contains data derived from a number of basic questions asked of the entire population and every housing unit. It contains data for race groups and for the Hispanic or Latino population, including population counts for detailed race and Hispanic categories.

<sup>106</sup> P.L. 105-119, Title II, Section 209(j).

<sup>107</sup> Margaret Mikyung Lee, legislative attorney, American Law Division, Congressional Research Service, The Library of Congress, "Sampling for Census 2000: *Department of Commerce v. United States House of Representatives* and Its Ramifications," CRS Report for Congress, February 3, 1999, p. 5.

<sup>108</sup> Department of Commerce, "Updated Summary: Census 2000 Operational Plan," February 23, 1999, p. 13.

<sup>109</sup> *Ibid.*, p. 1.

<sup>110</sup> *Ibid.*, p. 13.

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Census Bureau did not use the ICM to correct for net coverage error in the South Carolina site, in keeping with the fall 1997 agreement between the administration and the congressional leadership on the issue of sampling. However, estimates of net over- and undercoverage were produced for that site.

The Census Bureau concluded from these results that “[t]he data showed across-the-board that the undercount, which has been measured in every census since 1940, persists today, but that scientific methods used at two of the three sites corrected for it.”<sup>111</sup>

### **Early May 1999: National Academy of Science (NAS) Panel Commends Census Bureau Methodological Work on the A.C.E.**

On May 3, the NAS Panel to Review the 2000 Census issued a report on the Census Bureau’s work to finalize the design of the A.C.E. This NAS panel—the last of four that were convened in connection with Census 2000—had been constituted in 1998 to review the plans, procedures, and operations for both the dress rehearsal and Census 2000. Specifically, experts from this panel were charged with examining, among other things, “. . . the statistical methods of the 2000 census, particularly the use of the Accuracy and Coverage Evaluation Program and dual-systems estimation. . . .”<sup>112</sup>

In the wake of the Supreme Court decision that the use of statistical sampling for apportionment purposes is in violation of the Census Act, the Census Bureau determined that the coverage measurement survey originally to be conducted as part of the ICM program should be redesigned, given the remaining potential uses of the adjusted data—redistricting and federal funding, among others. For example, the Census Bureau reduced the sample size of the A.C.E. survey to approximately 300,000 households, down from the 750,000 households planned for the ICM program. Also, given that the survey-based numbers were not going to be used for apportionment purposes, the Census Bureau concluded that it now had greater flexibility in the post-stratification design.<sup>113</sup> The NAS Panel said that the Census Bureau’s A.C.E. design work “. . . represents good, current practice in both sample design and post-stratification design, as well as in the interrelationships between the two” and offered a number of suggestions in connection with outstanding design issues.<sup>114</sup>

### **May 1999: Budget Agreement Reached**

On May 20, the Congress approved an emergency funding bill that lifted the threat of a June 15 funding cut-off to the FY 1999 Commerce, Justice, State, and the Judiciary account.<sup>115</sup> (See earlier discussion under “Fall 1998: FY 1999 Appropriations for Census 2000 Preparatory Activities.”) The 1999 Emergency Supplemental Appropriations Act (H.R. 1141), which became P.L. 106-31 on May 21, 1999, contained a provision repealing the June 15 funding cut-off language in P.L. 105-277.<sup>116</sup> The bill included an additional \$44.9 million in FY 1999 funding for Census 2000. (Congress had already appropriated \$1.027 billion in P.L. 105-277.) The supplemental funding was needed to cover preparations for expanded field operations and for additional advertising and promotion activities.<sup>117</sup> Specifically, much of the added funds was required to prepare for the additional field

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<sup>111</sup> U.S. Department of Commerce, “Census 2000 Dress Rehearsal Shows Undercount Persists; Scientific Methods Correct Race and Ethnic Differential,” *Commerce News*, April 20, 1999, CB99-CN.16 (revised), p. 1.

<sup>112</sup> Constance F. Citro, Daniel L. Cork, and Janet L. Norwood (eds.), *The 2000 Census: Counting Under Adversity* (Washington, DC: The National Academies Press, 2004), p. 1.

<sup>113</sup> See the A.C.E. section of Chapter 10, “Testing, Experimentation, Evaluation, and Coverage Measurement Programs,” for more information regarding this point and about post-stratification in the A.C.E., generally. In post-stratification, the sample is divided into separate estimation cells according to race, Hispanic origin, tenure (refers to whether a person owns or rents the housing unit in which he/she resides), age, sex, and other variables.

<sup>114</sup> Janet Norwood, chair, NAS Panel to Review the 2000 Census, letter-report to Dr. Kenneth Prewitt, Director, U.S. Census Bureau, May 3, 1999, as reprinted in *The 2000 Census: Counting Under Adversity*, pp. 360–61.

<sup>115</sup> *Congressional Record*, May 20, 1999, p. D562 (passed the Senate); May 18, 1999, p. D545 (passed the House).

<sup>116</sup> 1999 Emergency Supplemental Appropriations Act, P.L. 106-31, 113 Stat. 100.

<sup>117</sup> 113 Stat. 86-87.

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work necessitated by the Supreme Court ruling in *Department of Commerce v. U.S. House of Representatives*. That is, field follow-up would be conducted for all nonresponding households—not a sample of the last 10 percent (or more) as previously planned.

The statute also required the administration to submit a revised FY 2000 funding request for Census 2000 by June 1.<sup>118</sup> The administration's original FY 2000 budget request of \$2.8 billion—submitted in early February—had been prepared prior to the Supreme Court's decision in *Department of Commerce v. U.S. House of Representatives*.

### **Early June 1999: Administration Sends Congress Revised FY 2000 Budget Request for Census 2000**

The administration's revised FY 2000 budget request for Census 2000, submitted on June 8, called for an increase of \$1.7 billion from the original \$2.8 billion, for a total of \$4.5 billion.<sup>119</sup> The revised figure assumed an estimated 50 percent increase in the field follow-up workload (for a total of approximately 45 million households), requiring a 10-week instead of a 6-week operation. The additional costs associated with the expanded nonresponse follow-up operation were due to the following factors, among others: hiring of additional local office staff, particularly enumerators; increasing the amount of office space and equipment; and adding greater data processing and data transmission capacity. The Census Bureau also planned to expand its outreach and promotion activities, including significantly enlarging the scope of its paid advertising campaign to achieve a higher level of responsiveness from traditionally difficult-to-enumerate segments of the population.<sup>120</sup>

### **August 1999: House Approves Nearly \$4.5 Billion for Census 2000 in FY 2000; Designates the Full Amount as Emergency Spending**

On August 5, the House passed H.R. 2670, a bill making FY 2000 appropriations for the Departments of Commerce, Justice, and State, the Judiciary, and related agencies.<sup>121</sup> The legislation included \$4.476 billion for Census 2000 activities, the same amount as that approved earlier by the Appropriations Committee. It retained the committee's emergency spending designation for the full amount of those funds.<sup>122</sup> By designating the FY 2000 Census 2000 expenditures as emergency spending, the funds were exempted from preset discretionary spending ceilings.

### **October to Late November 1999: Census Bureau Must Operate Under Series of Continuing Resolutions Until Omnibus Spending Measure Is Enacted Into Law**

With the start of the 2000 fiscal year on October 1, 1999, the Departments of Commerce, Justice, and State, and the Judiciary appropriations bill had not been enacted into law, and the Census Bureau had to operate under a series of continuing resolutions. The preparations for Census 2000 were proceeding and inadequate funding would significantly jeopardize the planned schedule as well as the accuracy of the census results. While other departments and agencies operating under the first and subsequent continuing resolutions during the fall of 1999 were obligated to function at FY 1999 funding levels, the Census Bureau had worked with Congress to ensure that it would receive adequate Census 2000 funding with the start of FY 2000.

A revised version of the Departments of Commerce, Justice, and State, and the Judiciary appropriations bill was reintroduced as H.R. 3421 on November 17, and it retained the \$4.476 billion in

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<sup>118</sup> 113 Stat. 87.

<sup>119</sup> U.S. House of Representatives, Committee on Appropriations, report to accompany H.R. 2670, Departments of Commerce, Justice, and State, the Judiciary, and Related Agencies Appropriations Bill, Fiscal Year 2000. 106th Cong., 1st sess., 1999, H. Rept. 106-283, p. 67.

<sup>120</sup> U. S. Senate, Subcommittee on Commerce, Justice, and State, the Judiciary, and Related Agencies of the Committee on Appropriations. Departments of Commerce, Justice, and State, the Judiciary, and Related Agencies Fiscal Year 2000 President's Budget Amendment. 106th Cong., 1st sess. (Washington, DC: Government Printing Office, 1999), July 29, 1999, pp. 4–5.

<sup>121</sup> *Congressional Record*, August 5, 1999, p. H7383-84.

<sup>122</sup> H.R. 2670, Departments of Commerce, Justice, and State, the Judiciary, and Related Agencies Appropriations Act, 2000, Title II, Bureau of the Census, "Periodic Censuses and Programs" section, as approved by the House.

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funding for Census 2000 activities as emergency spending.<sup>123</sup> H.R. 3421 was incorporated into the conference report for H.R. 3194, Consolidated Appropriations Act, 2000. This omnibus package was approved by the House on November 18 and by the Senate the following day.<sup>124</sup> On November 29, the president signed it into law (P.L. 106-113).<sup>125</sup>

### December 1999: Census Bureau's Executive Steering Committee for Accuracy and Coverage Evaluation Policy Holds First Meetings

The Executive Steering Committee for Accuracy and Coverage Evaluation Policy (ESCAP), which was created the previous month, held its first meetings in December 1999. As explained in its charter, it was “. . . established to advise the Director in determining policy for the Accuracy and Coverage Evaluation (A.C.E.) and the integration of A.C.E. results into the census for all purposes except Congressional reapportionment.”<sup>126</sup> The charter listed the membership of the ESCAP, with the associate director for decennial census serving as the chair, and the Census Bureau Director serving as an *ex-officio* member of the committee.

The role of the ESCAP in recommending to the Census Bureau Director whether or not to release as the official redistricting data (P.L. 94-171 data files) census data that incorporated a statistical adjustment was later promulgated into regulation (see below).

### 2000

Census Day was April 1, 2000, and with the enumeration underway, the sampling debate continued to focus on the possible use of the adjusted data for redistricting and federal funding allocation. In June, the Department of Commerce proposed a rule on the possible incorporation of the A.C.E. results in the official redistricting data to be released by April 1, 2001. In the fall, the department finalized the rule. Additionally, at an October 2 public meeting before the NAS Panel to Review the 2000 Census, the Census Bureau presented prototype reports of the analyses and evaluations it planned to conduct of the census and A.C.E. operations and data to support the justification for or against a statistical adjustment of the redistricting data.

### June 2000: Department of Commerce Issues Proposed Rule

On June 20, the Department of Commerce issued a notice of proposed rule-making on the procedure for determining whether the official redistricting data would incorporate a statistical adjustment.<sup>127</sup> Specifically, the proposed rule delegated to the Census Bureau Director the authority for determining whether to incorporate A.C.E. results in the official redistricting data and provided that “the determination of the Director of the Census shall not be subject to review, reconsideration, or reversal by the Secretary of Commerce.”<sup>128</sup>

The Director's decision would follow receipt of the ESCAP's recommendation as to whether or not the official redistricting data should incorporate a statistical adjustment based on the results of the A.C.E. The ESCAP's recommendation and report would be made public at the same time it was delivered to the Director. The proposed rule also formalized, by position, the membership of the ESCAP.<sup>129</sup>

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<sup>123</sup> *Congressional Record*, November 17, 1999, p. H12225.

<sup>124</sup> *Congressional Record*, November 18, 1999, p. D1315 (passed the House); November 19, 1999, p. D1321 (passed the Senate).

<sup>125</sup> *Congressional Record*, December 3, 1999, p. D1335.

<sup>126</sup> U.S. Census Bureau, “Charter for the Executive Steering Committee for A.C.E. Policy,” November 26, 1999.

<sup>127</sup> For additional information regarding the proposed rule, see *Federal Register*, Vol. 65, No. 119 (June 20, 2000) (Proposed Rule), pp. 38370–71 and 38374–98.

<sup>128</sup> *Ibid.*, p. 38371.

<sup>129</sup> *Ibid.* The membership of the ESCAP was defined as follows: deputy director and chief operating officer; principal associate director and chief financial officer; principal associate director for programs; associate director for decennial census (chair); assistant director for decennial census; associate director for demographic programs; associate director for methodology and standards; chief, Planning, Research, and Evaluation Division; chief, Decennial Management Division; chief, Decennial Statistical Studies Division; chief, Population Division; and senior mathematical statistician.

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Finally, the rule also stipulated that, if the Census Bureau Director decided to release unadjusted data as the official redistricting data, notwithstanding a recommendation to the contrary from the ESCAP, the statistically adjusted data would still be made available to the public.<sup>130</sup>

### October 2000: Department of Commerce Issues Rule in Final Form

On October 6, the rule, only slightly modified, was published in final form in the *Federal Register*.<sup>131</sup> In the final version of the rule, language was added to clarify that the delegation of authority could be amended or revoked by the Secretary of Commerce pursuant to the rule-making process. The rule was to become effective on November 6, 2000. The *Federal Register* notice also included a summary of and responses to comments received as a result of the publication of the proposed rule.

The Census Bureau received comments in support of the proposed rule from several former directors of the Census Bureau; survey research and social science organizations; individuals affiliated with universities or university-based research institutions; 69 members of Congress; national associations and organizations; and state and local government officials.<sup>132</sup>

Common to the comments in support of the rule were the following two points: (1) the decision on whether to statistically adjust data from Census 2000 to be used for redistricting and other nonapportionment purposes was a technical/scientific decision that should be made by the Census Bureau Director upon the recommendation of his professional staff and (2) the rule ensured that other, irrelevant considerations did not affect the decision-making process.<sup>133</sup>

Comments in opposition to the rule were received from individuals affiliated with universities or university-based research institutions; six members of Congress; state government officials; and others. Among these comments were several letters contending that the proposed rule was unlawful. Common to these letters was the argument that the delegation of authority constituted an unlawful divestiture of authority and responsibility vested in the Secretary of Commerce by Congress under relevant sections in Title 13.<sup>134</sup>

### November 2000: NAS Panel Provides Feedback on Proposed Analyses to Inform the ESCAP Recommendation

On November 9, the NAS Panel to Review the 2000 Census sent the Director comments on the proposed analyses that the Census Bureau planned to conduct for the redistricting data adjustment decision. The NAS Panel recognized the difficult task the Census Bureau faced in analyzing the census and A.C.E. data within the deadline for releasing redistricting data to the states.

It concluded that:

[t]he planned analyses appear to cover all of the evaluations that can reasonably be expected to be completed within the time available. Furthermore, they appear to be sufficiently comprehensive that they will likely provide support for a reasonably confident decision on adjustment in March.<sup>135</sup>

## 2001

By the start of the new year, the apportionment counts had been delivered to the President. The Director acknowledged that the national population count was higher than expected, based on comparisons with independently derived population estimates. However, he cautioned that until

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<sup>130</sup> Ibid.

<sup>131</sup> *Federal Register*, Vol. 65, No. 195 (October 6, 2000) (Final Rule), pp. 59713–16.

<sup>132</sup> Comments received on the proposed rule can be found on the Census Bureau's Web site at <<http://www.census.gov/dmd/www/Feascom.htm>>.

<sup>133</sup> *Federal Register*, Vol. 65, No. 195 (October 6, 2000), p. 59714.

<sup>134</sup> Ibid., p. 59715.

<sup>135</sup> Janet Norwood, chair, NAS Panel to Review the 2000 Census, letter-report to Kenneth Prewitt, Director, U.S. Census Bureau, November 9, 2000, as reprinted in Constance F. Citro, Daniel L. Cork, and Janet L. Norwood (eds.), *The 2000 Census: Counting Under Adversity* (Washington, DC: The National Academies Press, 2004), pp. 370-71.

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the Census Bureau conducted additional analyses, it lacked knowledge of the accuracy of the count.<sup>136</sup> In an early initiative, the incoming administration changed the decision-making process for determining whether to adjust the redistricting data, reinstating the Secretary of Commerce's prerogative, prompting litigation.<sup>137</sup> Also, the subsequent decision not to adjust for redistricting and to withhold the adjusted data spawned a number of Freedom of Information Act requests and additional litigation.

In the fall of 2001, a separate decision was made regarding adjustment of the data for nonapportionment, nonredistricting uses, again concluding that adjustment would not improve the accuracy of the census counts. Following the second decision, the Census Bureau committed itself to continued evaluation of the A.C.E. data and investigation of possible programmatic uses of subsequently revised A.C.E. estimates.

### **February 2001: Census Bureau Releases Preliminary A.C.E. Estimated Ranges of Net Coverage Error in Census 2000**

On February 14, the Census Bureau reported preliminary national-level estimated ranges of net coverage error—based on the results of the A.C.E.—for the total population and for selected population, tenure, and age groups. These data were produced as part of the ESCAP's ongoing assessments of the census counts and A.C.E. data. Among other things, the data indicated lower net undercount rates for the total population and for non-Hispanic Blacks and Hispanics than in 1990.<sup>138</sup>

### **February 2001: Commerce Secretary Rescinds Census Bureau Director's Authority to Make Adjustment Decision and Issues New Rule Governing Process**

As the statutory deadline for providing the redistricting data approached<sup>139</sup> and, of necessity, the decision whether to adjust those data, the Secretary signed a rule on February 16 rescinding the delegation of authority to the Census Bureau Director to determine whether to release adjusted redistricting data. On February 23, the Department of Commerce published the new rule in the *Federal Register*, effective immediately.<sup>140</sup>

Under the terms of the new rule, the Secretary would not make his determination until after he received the ESCAP's report and the Director's recommendation (if any) regarding the methodology (that is, incorporating or excluding a statistical adjustment) to be used in producing the tabulations of redistricting counts reported to states and localities under Title 13, U.S. Code, Section 141(c). The ESCAP report and Director's recommendation would be released to the public simultaneously with their delivery to the Secretary. The new rule also removed the section of the previous rule that discussed the release of the adjusted data under alternative decision scenarios, citing the need for additional study of the issue.

### **Late February 2001: City of Los Angeles and Others File Lawsuit Challenging Secretary's Revocation of the Delegation of Authority**

After the final rule was signed and prior to its publication in the *Federal Register*, the city of Los Angeles and other plaintiffs filed suit on February 21 in the U.S. District Court for the Central District of California, claiming that the Secretary's revocation of the delegation of authority was in violation of the Administrative Procedure Act's notice and comment requirements for making other than minor amendments to a substantive rule. The plaintiffs contended that the revocation constituted a substantive change to the rule, given that the purpose of the October 2000 final rule

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<sup>136</sup> Steven A. Holmes, "Americans Number 281,421,906 in Census," *New York Times*, December 29, 2000.

<sup>137</sup> *City of Los Angeles v. Evans*, 307 F.3d 859 (9th Cir. 2002). This lawsuit is discussed below.

<sup>138</sup> "Preliminary Estimates Show Improvement in Census 2000 Coverage," *U.S. Census Bureau News*, February 14, 2001, CB01-CN.03, p. 1. The press release can be accessed on the Census Bureau's Web site at <<http://www.census.gov/Press-Release/www/releases/archives/census2000/000641.html>>. This page provides a link to the preliminary estimates. The estimated ranges of percent net undercount for the total (household) population and for major race/ethnicity groups are presented in Table 11-1.

<sup>139</sup> April 1, 2001; see 13 U.S.C. 141(c).

<sup>140</sup> *Federal Register*, Vol. 66, No. 37 (February 23, 2001) (Final Rule), pp. 11231–33.



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was to “. . . insulate from partisan politics the final determination of which census data should be released. . . .”<sup>141</sup> Plaintiffs requested a temporary restraining order and preliminary and permanent injunctions prohibiting the new rule from taking effect.

Following the Secretary’s decision not to adjust the redistricting data, discussed below, plaintiffs amended their complaint to compel the Secretary to release the adjusted data as the official redistricting data. The U.S. District Court for the Central District of California upheld the Secretary’s decision not to adjust the redistricting data.<sup>142</sup> The case was ultimately decided by the U.S. Court of Appeals for the Ninth Circuit, which affirmed the district court’s decision upholding the Secretary’s determination.<sup>143</sup>

### **Early March 2001: ESCAP Recommends Against Statistical Adjustment; Acting Director and Secretary Concur With and Adopt Committee Recommendation**

The ESCAP concluded its analysis and issued its report and recommendation on March 1.<sup>144</sup> In evaluating the relative accuracy of the unadjusted data versus the adjusted data for use in redistricting, the ESCAP concluded that both Census 2000 and the A.C.E. were of high quality and that design improvements in both Census 2000 and A.C.E. operations produced measurably better results than previous censuses and coverage measurement surveys, respectively. While stating that “. . . the majority of the evidence indicates . . . the superior accuracy of the adjusted numbers . . .”<sup>145</sup> the committee identified a number of concerns. Because of these concerns, the ESCAP recommended releasing the unadjusted data as the official data for redistricting purposes, but noted that further investigation might likely reveal that adjustment based on the A.C.E. data would improve overall accuracy of the census.<sup>146</sup>

This recommendation was based on a careful examination of estimates produced by demographic analysis (DA)<sup>147</sup> and the A.C.E., against the actual census counts.<sup>148</sup> The ESCAP’s principal concern related to the fundamental differences between the DA and A.C.E. estimates that could not be explained. The estimates differed widely, both for the total national population and for important population groups. The committee investigated this inconsistency extensively, but could not adequately explain it within the time frame for issuing its recommendation, which was determined by the statutory deadline for releasing the redistricting data to the states (April 1, 2001). The ESCAP concluded that further investigation was necessary to explain and resolve the discrepancies.

Based on the ESCAP report, the Acting Director of the Census Bureau informed the Secretary that he concurred with and adopted the ESCAP’s recommendation. On March 6, the Secretary of Commerce announced that he had accepted the recommendation of both the Acting Director and the

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<sup>141</sup> *City of Los Angeles v. Evans*, No. CV 01-1671, in the U.S.D.C. for the Central District of California, Complaint for Declaratory and Injunctive Relief, ¶ 27.

<sup>142</sup> *City of Los Angeles v. Evans*, 2001 WL 34125617 (C.D.Cal. April 25, 2001). This case was not selected for publication in the *Federal Supplement*.

<sup>143</sup> *City of Los Angeles v. Evans*, 307 F.3d 859 (9th Cir. 2002). The Ninth Circuit Court of Appeals decision is discussed below.

<sup>144</sup> *Federal Register*, Vol. 66, No. 46 (March 8, 2001), pp. 14004–46. In addition to the ESCAP report itself, the Census Bureau made material relating to the ESCAP process and the A.C.E. in general available on the Web: <<http://www.census.gov/dmd/www/EscapRep.html>>. Among the documents accessible from this Web page are the prototype (presented at the fall 2000 NAS Panel workshop) and final “B-series” analysis reports and the minutes of the ESCAP meetings.

<sup>145</sup> *Ibid.*, p. 14005.

<sup>146</sup> *Ibid.*

<sup>147</sup> DA is a statistical technique that measures coverage trends as well as differences in coverage by age, sex, and race. DA uses records or estimates of births, deaths, immigration, emigration, and Medicare enrollments, and the results of the current and previous censuses, to develop estimates of the population at the national level.

<sup>148</sup> The Census 2000 count of the total population was 281,421,906; the A.C.E. estimate was 284,683,782 (indicating a net undercount of 1.15 percent); and the higher of the two DA estimates (the “alternative” DA estimate) was 282,335,711 (indicating a net undercount of .32 percent). These numbers are for the total resident population (including group quarters). See J. Gregory Robinson, “Accuracy and Coverage Evaluation: Demographic Analysis Results,” DSSD Census 2000 Procedures and Operations Memorandum Series B-4\*, March 12, 2001, Table 3, p. 22. Table 11-2 contains the A.C.E. estimates of percent net undercount for the total (household) population and for major race/ethnicity groups, as presented in the ESCAP’s March 1, 2001 report.

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ESCAP and had determined that the unadjusted data would be released as the Census Bureau's official redistricting data.<sup>149</sup> The release of the adjusted data would be considered at a later time following the ESCAP's further investigation.<sup>150</sup>

### **March to April 2001: Following the Adjustment Decision, Numerous Calls for the Release of the Adjusted Data**

In the wake of the adjustment decision, there were numerous calls from members of Congress, presidential members of the Census Monitoring Board (CMB), and others for release of the adjusted block-level data, in part to allow external scientific scrutiny of the data.<sup>151</sup> The Department of Commerce denied such requests, stating that it would be inappropriate and irresponsible to release the data given the continuing uncertainties regarding their quality and accuracy.<sup>152</sup> The Census Bureau Acting Director reiterated that the released unadjusted data were the most accurate data available. The Census Bureau noted that the ESCAP would continue its research and analyses of the data over the summer in order to make a recommendation in the fall regarding possible nonredistricting uses of the adjusted data. Further, the agency revealed that it had already made available a substantial amount of detailed information on the A.C.E. and other aspects of Census 2000 that would enable external examination of the adjustment methodology.

### **April 2001: Members of Congress Request Adjusted Block-Level Data Under the "Seven Member Rule"**

On April 6, a number of members of the House Committee on Government Reform, of which the Census Subcommittee was part, requested from the Secretary of Commerce the adjusted block-level data for all states by April 20, 2001.<sup>153</sup> Noting that the Government Reform Committee had legislative and oversight responsibilities for matters relating to population and demography, including the census, they requested the adjusted block-level data under the "Seven Member Rule." Under the provisions of the Seven Member Rule,

[a]n Executive agency, on request of the Committee on Government Operations [renamed the Committee on Government Reform in the 106th Congress] of the U.S. House of Representatives, or any seven members thereof, . . . shall submit any information requested of it relating to any matter within the jurisdiction of the committee.<sup>154</sup>

When the Department of Commerce failed to respond by the deadline set forth in the request, the requesting committee members filed suit on May 21 in the U.S. District Court for the Central District of California to compel the release of the Census 2000 adjusted block-level data under the Seven Member Rule.<sup>155</sup>

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<sup>149</sup> The Secretary's decision is documented in *Federal Register*, Vol. 66, No. 49 (March 13, 2001), pp. 14520–21.

<sup>150</sup> Transcript of press conference on Census 2000 redistricting data, held at the U.S. Department of Commerce, March 6, 2001, Federal News Service, Washington, DC, p. 4.

<sup>151</sup> Following the Secretary's decision, no A.C.E. results below the national level were publicly released. The Census Bureau and the Department of Commerce received numerous requests for the adjusted data (in most cases, at the block-level) under the Freedom of Information Act (FOIA). The department denied all such requests, citing Exemption 5 (deliberative process privilege) of the FOIA. In connection with one such request, the ensuing FOIA lawsuit reached the U.S. Court of Appeals for the Ninth Circuit. That case (*U.S. Department of Commerce v. Carter*) is discussed below. The numerous FOIA requests for the adjusted data and the associated litigation are discussed in the relevant sections of this chapter.

<sup>152</sup> As an example of one such response, see William G. Barron, Jr., Acting Director, U.S. Census Bureau, to Rep. Carolyn B. Maloney et al., U.S. House of Representatives, April 9, 2001.

<sup>153</sup> Rep. Henry A. Waxman et al., Committee on Government Reform, U.S. House of Representatives, to Donald L. Evans, Secretary, U.S. Department of Commerce, April 6, 2001.

<sup>154</sup> Title 5, U.S. Code, Section 2954 (2006).

<sup>155</sup> *Waxman v. Evans*, No. CV014530LGB (AJWX), 2002 WL 32377615 (C.D.Cal. Jan. 18, 2002). This case was not selected for publication in the *Federal Supplement*. The resolution of this lawsuit is discussed below.

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On June 5, Secretary of Commerce Donald L. Evans responded to the initial request, declining to provide the adjusted data under the Seven Member Rule, stating that “[c]onsistent with the long-standing Executive Branch interpretation of this statute, in which the Congressional Research Service has concurred, we do not believe the statute applies in this circumstance.”<sup>156</sup>

### Late April 2001: Utah Files Suit Challenging the Use of Count Imputation

On April 25, the State of Utah and other plaintiffs filed a lawsuit alleging that, had the Census Bureau not employed the use of “hot-deck” count imputation in producing the Census 2000 apportionment counts, Utah would have received one additional seat, for a total of four seats in the U.S. House of Representatives.<sup>157</sup>

The Census Bureau used count imputation in Census 2000—as it had in prior censuses—to address the problem of missing, incomplete, or contradictory data. Through the processes of status imputation, occupancy imputation, and household-size imputation, the Census Bureau added a total of 1.17 million persons to the Census 2000 apportionment counts.<sup>158</sup> These processes are discussed in detail in the summary of this lawsuit that appears in the “Litigation” section of this chapter.

Utah claimed that count imputation was a form of statistical sampling, which the Supreme Court held earlier in *Department of Commerce v. U.S. House of Representatives* (discussed above) could not be used in producing the apportionment counts.<sup>159</sup> Additionally, Utah claimed that the use of count imputation was in violation of the Apportionment Clause of the Constitution as amended by Section 2 of the Fourteenth Amendment.<sup>160</sup> This case was ultimately decided by the Supreme Court, which issued a June 20, 2002, decision concluding that the use of hot-deck count imputation is neither contrary to the Constitution nor Title 13, U.S. Code, Section 195.<sup>161</sup>

### September 2001: Census Monitoring Board Issues Two Separate Final Reports to Congress

Before its authority expired on September 30, 2001, the CMB concluded its reporting requirements by issuing two reports to Congress, reflecting the differing perspectives of the members appointed by the President and those appointed by Congress.<sup>162</sup> The report authored by the

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<sup>156</sup> Donald L. Evans, Secretary, U.S. Department of Commerce, to Rep. Henry A. Waxman, Ranking Minority Member, Committee on Government Reform, U.S. House of Representatives, June 5, 2001.

<sup>157</sup> *Utah v. Evans*, No. 2:01CV00292G, in the U.S.D.C. for the District of Utah, Central Division (*Evans II*), Complaint for Declaratory and Injunctive Relief, ¶ 41. The use of hot-deck count imputation was challenged in connection with the 1980 census in *Orr v. Baldrige*. The district court in that case upheld its use. *Orr v. Baldrige*, No. IP 81604C, slip. op. (S.D.Ind. July 1, 1985). For a summary of the lawsuit, see U.S. Census Bureau, *1980 Census of Population and Housing History, Part E*, PHC80-R-2E (Washington, DC: Government Printing Office, August 1989), pp. 10-8–10-9. Earlier in 2001, the State of Utah and other plaintiffs filed a lawsuit challenging the failure to include Mormon missionaries temporarily residing overseas in the Census 2000 apportionment counts. *Utah v. Evans*, 143 F.Supp.2d 1290, (D.Utah 2001), *affd*, 534 U.S. 1038 (2001) (*Evans I*). Both of these lawsuits filed by the State of Utah are discussed in detail in the “Litigation” section of this chapter.

<sup>158</sup> U.S. Census Bureau, “Initial Research on Count Imputation in Census 2000,” Census 2000 Informational Memorandum No. 110, August 10, 2001, p.1.

<sup>159</sup> Complaint for Declaratory and Injunctive Relief, ¶ 36; *Department of Commerce v. U.S. House of Representatives*, 525 U.S. 316 (1999).

<sup>160</sup> Complaint for Declaratory and Injunctive Relief, ¶ 44. The Apportionment Clause of the Constitution (Article I, Section 2, Clause 3) refers to an “actual Enumeration” to be conducted every 10 years “. . . in such Manner as . . . [Congress] shall by Law direct.”

<sup>161</sup> *Utah v. Evans*, 536 U.S. 452 (2002).

<sup>162</sup> In addition to the final letter-report (discussed in the text) they issued to meet their statutory requirement, the congressional members also issued a separate report in September that used Census 2000 data in analyzing the statistical adjustment methodology: “Changing an Assumption: Measuring the Undercount in Census 2000 with an Alternative Post-Strata Creates Different Results; Statistical Adjustment Fails to Correct the Census for Severely Undercounted Neighborhoods: An Analysis of Synthetic Estimation in Blockclusters,” report to Congress, U.S. Census Monitoring Board, congressional members, September 29, 2001, CMBC 76-290.

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presidential members of the CMB included 18 general recommendations for improving future censuses. Among these recommendations were the following:

- Every effort should be made to remove partisan politics from the census process.
- Congress and other oversight bodies should have a greater awareness of the consequences of redundant or overlapping oversight.
- The Census Bureau should strive to maintain transparency in its census activities.<sup>163</sup>

In submitting their report to Congress, the presidential members noted that the expert consultants they retained concluded that “. . . a more accurate census would have been achieved by adjusting.”<sup>164</sup>

The congressional members’ final report included five lessons learned from Census 2000 and six recommendations for improving future censuses. Among these recommendations were the following:

- The use of “indigenous” enumerators and facilitators should be continued and expanded in the future.
- Administrative records should be used to account for those in hard-to-enumerate population groups who might otherwise be missed.
- The postcensus local review program should be reinstated for 2010.<sup>165</sup>

With regard to the issue of statistical adjustment, the congressional members stated that their research indicated that “. . . severely undercounted neighborhoods remain severely undercounted—even after statistical adjustment. Severely undercounted congressional districts will also remain severely undercounted.”<sup>166</sup> Thus, they concluded, “. . . the Census Bureau must make an effort to reach every person and to create every opportunity for people to participate in the census.”<sup>167</sup>

### **September 2001: Acting Director Discusses Plans to Make a Decision Regarding Possible Nonredistricting Uses of the Adjusted Data**

During the summer of 2001, minority members of the House Census Subcommittee requested information on the plans for a decision in the fall on possible nonredistricting uses of the adjusted data and for the release of the adjusted data at that time.<sup>168</sup> The Census Bureau responded that it still intended to meet its self-imposed October 15 deadline for completing its research and analyses to determine the relative accuracy of the adjusted versus the unadjusted data for non-redistricting uses, but refused to consider releasing the data prior to a determination of their accuracy.<sup>169</sup>

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<sup>163</sup> Final report to Congress, U.S. Census Monitoring Board, presidential members, September 1, 2001, pp. 9–10.

<sup>164</sup> Letter accompanying presidential members’ final report to Congress, p. 2.

<sup>165</sup> Final letter-report to Congress, U.S. Census Monitoring Board, congressional members, September 1, 2001, CMBC 74-275, pp. 8–12. The postcensus local review program was a 1990 census operation in which local and tribal governments were given an opportunity to review census maps and block-level counts after most data collection operations had been completed to identify possible discrepancies. For more information about the program, see U.S. Census Bureau, *1990 Census of Population and Housing, History, Part A*, 1990 CPH-R-2A (Washington, DC: Government Printing Office, October 1993), p. 6-45. Additionally, it should be noted that in February 1999, legislation was introduced to mandate such a program for Census 2000. The bill was approved by the House, but the Senate took no action on it. See the “Legislation” section of this chapter for more information about the bill.

<sup>166</sup> *Ibid.*, p. 13.

<sup>167</sup> *Ibid.*, p. 6.

<sup>168</sup> Reps. William Lacy Clay and Carolyn B. Maloney, U.S. House of Representatives, to William Barron, Jr., Acting Director, U.S. Census Bureau, July 27, 2001.

<sup>169</sup> William G. Barron, Jr., Acting Director, U.S. Census Bureau, letter to Rep. William Lacy Clay, U.S. House of Representatives, September 21, 2001, pp. 2 and 6. (Identical letter sent to Rep. Maloney.)

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Earlier, on August 7, the Census Bureau released the ESCAP's research plan.<sup>170</sup> The plan specified the research and analyses the ESCAP would conduct to further assess the accuracy of the adjusted data and to inform the decision regarding nonredistricting uses of the data, including their possible incorporation in Census 2000 sample (long-form) data products, intercensal estimates, and survey controls.<sup>171</sup>

### **Mid-October 2001: Further Research Confirms Errors in Adjusted Data Results**

The agency conducted extensive analyses throughout the summer of 2001 to inform the October 2001 decision. Much of this work focused on the accuracy of the A.C.E. and Census 2000 data. In addition, the Census Bureau reexamined and revised the DA estimates.

These studies confirmed the serious concerns the ESCAP had identified earlier regarding the accuracy of the A.C.E. estimates. This new research found that the A.C.E. did not account for a large number of census erroneous enumerations, many of which were duplicates, leading to an overstatement of the Census 2000 net undercount by at least 3 million persons. This finding, in conjunction with revisions made to the DA estimates, explained to a large degree the discrepancies between the A.C.E. and DA estimates.<sup>172</sup>

The large numbers of census duplicate enumerations and the A.C.E.'s failure to detect them appeared to be due—at least in part—to response error in obtaining respondents' usual residence. The evaluations of the A.C.E. revealed, for example, that children of divorced or separated parents may have been reported by respondents as members of two different households in the census, the A.C.E., and, to a certain extent, in the studies themselves. Thus, consistent, albeit incorrect, reporting by respondents may have led to errors in the census that were virtually undetectable by the A.C.E.<sup>173</sup>

Given the level of error in the A.C.E. measurement of net coverage, the ESCAP recommended against the use of the adjusted data for nonredistricting purposes. The committee noted that because of this substantial error, revisions to the adjusted data, based on extensive additional review and analyses, would be necessary before any potential uses of the data could be considered.<sup>174</sup>

### **Mid-October 2001: Census Bureau Adopts ESCAP Recommendation Against Adjustment; Releases Limited Revised Estimates of Census 2000 Net Undercount**

The Census Bureau adopted the ESCAP's recommendation. Consequently, on October 16, the Acting Director informed the Under Secretary for Economic Affairs of the Department of Commerce that the Census Bureau would release Census 2000 sample data products, intercensal estimates, and survey controls using unadjusted data. However, the Acting Director noted that it was possible further research and analysis could yield revised A.C.E. estimates that could be used for programmatic and other purposes—for example, to improve the accuracy of intercensal estimates in subsequent years.<sup>175</sup>

On October 17, the Census Bureau publicly announced the decision not to adjust the Census 2000 sample data products, intercensal estimates, and survey controls. In order to fully explain its decision, the agency released “revised early approximations” of net undercount in Census 2000 for

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<sup>170</sup> U.S. Census Bureau, “The Executive Steering Committee for A.C.E. Policy (ESCAP) Research Plan,” memorandum from John H. Thompson, chair, Executive Steering Committee for A.C.E. Policy, to William G. Barron, Jr., Acting Director, August 7, 2001.

<sup>171</sup> Intercensal population estimates are produced annually for the nation, states, and counties (and biennially for smaller geographic areas) and are generally used in federal funding allocation formulae in lieu of decennial census figures (except for the year in which the census figures are released) because they reflect ongoing population changes during the decade.

<sup>172</sup> *Federal Register*, Vol. 66, No. 214 (November 5, 2001), p. 56007.

<sup>173</sup> The discussion in this paragraph is taken from U.S. Census Bureau, Robert E. Fay, “Evidence of Additional Erroneous Enumerations from the Person Duplication Study,” ESCAP II Report No. 9, March 27, 2002, p. 30. A preliminary version of this paper was also released publicly; that version is dated October 26, 2001. Both of these documents (PDF versions) can be accessed from the Census Bureau's Web site at the following page: <<http://www.census.gov/dmd/www/ReportRec2.htm>>

<sup>174</sup> *Federal Register*, Vol. 66, No. 214, p. 56007.

<sup>175</sup> *Ibid.*, p. 56006.

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three race/ethnicity groupings and the total population. These revised preliminary estimates were not part of the ESCAP's October 17, 2001, report, but were produced at the request of the Acting Director to illustrate the effect on the A.C.E. estimates of potential future revisions that accounted for the erroneous enumerations not measured by the A.C.E. That is, these revised net undercount estimates were calculated by subtracting the percent of erroneous enumerations not detected by the A.C.E. survey from the original (March 2001) A.C.E. percent net undercount estimates.<sup>176</sup> The Acting Director noted that the revised preliminary estimates demonstrated “. . . a very significant and a very important further reduction in the differential undercount.”<sup>177</sup> He also noted that had the adjusted data been designated as the official redistricting file, the new research results made it apparent that such a decision would have been clearly erroneous.<sup>178</sup>

With regard to further work to revise the A.C.E. estimates, the Acting Director provided assurances that the Census Bureau would continue its evaluation of the A.C.E. program and attempt to finalize revised estimates. He also indicated that such research could lead to the use of revised estimates in producing intercensal population estimates later in the decade.<sup>179</sup>

Following this second decision against adjustment and given the identified level of error in the adjusted data, the Department of Commerce and the Census Bureau continued to withhold them.<sup>180</sup>

## 2002

### January to May 2002: District Court Orders Release of Adjusted Data Pursuant to the “Seven Member Rule” and Denies Reconsideration Motion; Commerce Department Appeals Decision

On January 18, the U.S. District Court for the Central District of California found that the plain language of Section 2954 of Title 5, U.S. Code, the “Seven Member Rule,” required the Secretary to release the adjusted data to the members of the House Committee on Government Reform, and the court ordered him to release the data.<sup>181</sup> The Commerce Department filed a motion for reconsideration, which the court denied on March 25.<sup>182</sup> The defendant appealed the decision to the Ninth Circuit Court of Appeals on May 10.<sup>183</sup> The resolution of this case is discussed below.

### Early April 2002: Census Bureau Releases Revised Preliminary Estimates of Net Undercount for Seven Race/Ethnicity Groupings

In April 2002, the Census Bureau released revised preliminary estimates for the total population and seven race/ethnicity groupings; three of these estimates were included in the October 17 release.<sup>184</sup> The methodology used for the October 2001 figures was expanded to produce estimates for additional, specific race/ethnicity groupings. The Census Bureau noted that these data provided support for the agency's expectation that revised A.C.E. estimates would continue to show a differential undercount.

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<sup>176</sup> U.S. Census Bureau, John H. Thompson, Preston J. Waite, and Robert E. Fay, “Basis of ‘Revised Early Approximation’ of Undercounts Released Oct. 17, 2001,” ESCAP II Report No. 9a, October 26, 2001. A PDF version of this document is available at <<http://www.census.gov/dmd/www/ReportRec2.htm>>. The “revised early approximations” for the three race/ethnicity groupings and the total population are shown in Table 11-3 alongside estimates for the same groupings from the original (March 2001) A.C.E. data.

<sup>177</sup> Transcript of ESCAP press conference, held at the U.S. Census Bureau, October 17, 2001, Federal News Service, Washington, DC, pp. 3–4.

<sup>178</sup> *Ibid.*, p. 5.

<sup>179</sup> *Ibid.*, pp. 4–5.

<sup>180</sup> See, for example, William G. Barron, Jr., Acting Director, U.S. Census Bureau, to The Honorable Jody Richards, Speaker of the House, Kentucky General Assembly, December 14, 2001, p. 2.

<sup>181</sup> *Waxman v. Evans*, No. CV014530LGB (AJWX), 2002 WL 32377615 (C.D.Cal. Jan. 18, 2002). This case was not selected for publication in the *Federal Supplement*.

<sup>182</sup> Brief for Appellant, Statement of Jurisdiction, *Waxman v. Evans*, 2002 WL 32115555, at \*1 (9th Cir. May 21, 2002) (No. 02-55825). This case was not selected for publication in the *Federal Reporter*.

<sup>183</sup> *Ibid.*

<sup>184</sup> U.S. Census Bureau, “Revised Preliminary Estimates of Net Undercounts for Seven Race/Ethnicity Groupings,” DSSD A.C.E. Revision II Memorandum Series PP-2. A PDF version of this memorandum can be accessed from the A.C.E. Revision II page on the Census Bureau's Web site at <<http://www.census.gov/dmd/www/ace2.html>>. The April 2002 estimates of percent net undercount are presented in Table 11-4.

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Based on this initial work, the Census Bureau embarked on a comprehensive research effort to develop a methodology for revising the A.C.E. estimates. Through this research, dubbed “A.C.E. Revision II,” which concluded the following spring, the Census Bureau sought to determine if the additional research and analysis would result in improved estimates that could be used for programmatic purposes. Specifically, the agency planned to investigate producing revised estimates and to determine if utilizing those estimates to adjust the base used to produce annual and biennial intercensal population estimates would improve the accuracy of those data.

### **September 2002: Ninth Circuit Court of Appeals Upholds District Court Decision in City of Los Angeles Suit**

On September 27, the U.S. Court of Appeals for the Ninth Circuit upheld the district court’s decision in the *City of Los Angeles* lawsuit challenging the Secretary’s redistricting data adjustment decision. The Ninth Circuit Court ruled that:

[b]ecause Congress conditioned the use of sampling on the Secretary’s consideration of its feasibility, Section 195 does not create a presumption in favor of statistical adjustment of the census, nor does it require the Secretary to consider the adjusted data as the default data for Census 2000. Instead, Section 195 grants broad discretion upon the Secretary to “consider” as an initial matter what uses of sampling are ‘feasible.’<sup>185</sup>

The court concluded that “. . . Secretary Evan’s interpretation of the statute, as permitting him to consider accuracy as a component of feasibility, was a permissible construction of the statute.”<sup>186</sup>

### **October to December 2002: Ninth Circuit Court Upholds District Court FOIA Ruling; Census Bureau Makes Adjusted Data Available to Any Requester**

On October 8, the U.S. Court of Appeals for the Ninth Circuit, in *U.S. Department of Commerce v. Carter*, upheld an order releasing Census 2000 adjusted block-level data under the Freedom of Information Act (FOIA).<sup>187</sup> The lower court had ruled that the adjusted block-level data were not protected under Exemption 5 of the FOIA as predecisional nor deliberative.<sup>188</sup> The department subsequently released the data to the plaintiffs.<sup>189</sup> Accordingly, the Ninth Circuit Court of Appeals vacated the district court judgment in *Waxman v. Evans* and remanded the case to the district court with instructions to dismiss the appeal as moot.<sup>190</sup>

The Census Bureau anticipated additional requests for the Census 2000 adjusted block-level data, given the Ninth Circuit decision in *Carter*. Consequently, the agency developed a process for providing the data to requesters. Requesters were required to acknowledge receipt of a caveat that stated, in part:

. . . the adjusted estimates were determined to be so severely flawed that all potential uses of these data would be inappropriate. Accordingly, the Department of Commerce deems that these estimates should not be used for any purpose that legally requires use of data from the decennial census and assumes no responsibility for the accuracy of the data for any purpose whatsoever. The Department, including the Census Bureau, will provide no assistance in the interpretation or use of these numbers.<sup>191</sup>

<sup>185</sup> *City of Los Angeles v. U.S. Department of Commerce*, 307 F.3d 859, 871 (9th Cir. 2002).

<sup>186</sup> *Ibid.*, p. 877. The “Litigation” section of this chapter contains a more detailed discussion of this case.

<sup>187</sup> *U.S. Department of Commerce v. Carter*, 307 F.3d 1084 (9th Cir. 2002). The plaintiffs/FOIA requesters were Oregon state senators. This case is also discussed in the “Freedom of Information Act Requests” and “Litigation” sections of this chapter.

<sup>188</sup> *Carter v. U.S. Department of Commerce*, 186 F.Supp.2d 1147 (D.Or. Nov. 20, 2001).

<sup>189</sup> U.S. Census Bureau, “Requests for Adjusted Data from Census 2000,” memorandum for executive staff and all divisions, from Preston Jay Waite, Associate Director for Decennial Census, December 6, 2002.

<sup>190</sup> *Waxman v. Evans*, Fed.Appx. 84, 2002 WL 31748590, at \*1 (9th Cir. Dec. 6, 2002). This case was not selected for publication in the *Federal Reporter*. It is discussed in more detail in the “Litigation” section.

<sup>191</sup> “Requests for Adjusted Data from Census 2000,” December 6, 2002 (attachment).

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2003

### March 2003: Census Bureau Produces Revised A.C.E. Estimates, But Decides That Intercensal Estimates Will Continue to Use Unadjusted Census 2000 Base

By March 2003, the Census Bureau completed the research work on A.C.E. Revision II. This work resulted in the production of revised estimates of net coverage error in Census 2000.<sup>192</sup> The A.C.E. Revision II estimate of percent net undercount for the total household population in Census 2000 was  $-0.49$ , or a national net overcount of approximately one-half of 1 percent. In addition to national-level revised estimates of percent net undercount for major race/ethnicity, tenure, and age/sex groupings, the agency produced and released revised estimates for states, counties, and places.

For the first time, the Census Bureau incorporated an adjustment for correlation bias in the estimates produced by the dual system estimation methodology. Explained briefly, correlation bias is the bias in the dual system estimates because of the tendency for people who are missed in the census to be more likely to be missed by the coverage measurement survey as well, thus generally resulting in understated estimates of net undercount. By way of example, the A.C.E. Revision II estimate of percent net undercount for the total population without the adjustment for correlation bias was  $-1.12$  percent, as compared to  $-0.49$  percent, which incorporated the adjustment. That is, the estimate of net overcount was adjusted downward (brought closer to zero) by including an adjustment for correlation bias.

While the Census Bureau noted that the A.C.E. Revision II estimates represent the most accurate assessment of Census 2000 coverage available, the agency also noted technical concerns regarding the limitations of the methodology and the quality of the data. These included uncertainty about the adjustment for correlation bias; concerns about errors from synthetic estimation;<sup>193</sup> and inconsistencies between DA estimates and A.C.E. Revision II estimates of the coverage of children. Consequently, the Census Bureau determined that the official Census 2000 results would continue to be used as the base for producing the intercensal estimates.<sup>194</sup>

The A.C.E. Revision II research reaffirmed the Census Bureau's confidence in the decisions made in March and October of 2001 to release only the unadjusted data and confirmed that releasing the adjusted data would have been a grave error. Additionally, this work also provided valuable information in understanding census coverage that has enabled the Census Bureau to make improvements in census programs and operations and to improve its methods for estimating coverage in developing an appropriate coverage measurement program for the 2010 Census.

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<sup>192</sup> The A.C.E. Revision II estimates of percent net undercount for the total population and major race/ethnicity groups are presented in Table 11-5.

<sup>193</sup> Synthetic estimation error, explained briefly, is the error introduced at lower geographic levels when the assumption that the net undercount being geographically uniform within post-strata is not correct. See the A.C.E. section of Chapter 10 ("Testing, Experimentation, Evaluation, and Coverage Measurement Programs") for additional discussion.

<sup>194</sup> U.S. Census Bureau, "Decision on Intercensal Population Estimates," March 12, 2003, p. 1. The Census Bureau has made publicly available a vast amount of documentation related to its decision and the A.C.E. Revision II research. The following Web page provides access to this documentation: <<http://www.census.gov/dmd/www/ace2.html>>.



Table 11-1.

**Preliminary Estimated Coverage of Census 2000 Based on the Accuracy and Coverage Evaluation (A.C.E.) Survey: February 14, 2001**

Estimation grouping	Net undercount (percent)	
	Low estimate	High estimate
<b>Total population in households</b> .....	<b>0.96</b>	<b>1.40</b>
<b>Race and Hispanic Origin</b>		
American Indian and Alaska Native		
On reservation .....	2.77	6.71
Off reservation .....	1.08	5.47
Hispanic origin (of any race) .....	2.22	3.48
Black or African American (not Hispanic) .....	1.60	2.73
Native Hawaiian and Other Pacific Islander (not Hispanic) .....	0.05	9.16
Asian (not Hispanic) .....	-0.09	2.01
White or Some Other Race (not Hispanic) .....	0.44	0.90

Notes that accompanied table at its release: The race and Hispanic categories shown in this table represent estimation groupings used in developing estimates based on the A.C.E. survey and do not conform with race and Hispanic categories that will appear in the redistricting (P.L. 94-171) files and other Census 2000 data products. In developing the estimation groupings used to evaluate the coverage of Census 2000, the principal consideration was to combine people who were expected to have the same probability of being counted in Census 2000. Consequently, the race and Hispanic origin groupings used to create the A.C.E. estimates of coverage are exceedingly complex. For a complete description of the estimation groups, see DSSD Memorandum Q-37, which will be provided on request.

In general, American Indians and Alaska Natives (AIAN) are included in that category, regardless of whether they marked another race or are Hispanic. A few exceptions apply, especially for those who do not live on a reservation, on trust lands, or in an AIAN statistical area.

Similarly, Native Hawaiians and Other Pacific Islanders (NHPI) generally are included in that category, unless they lived outside of Hawaii and marked more than one race or marked Hispanic.

Hispanics are mostly in that category, unless they marked AIAN and lived on a reservation, on trust lands, or in an AIAN statistical area, or marked NHPI and lived in Hawaii.

People who marked Black or African American are generally in that category unless they fell in the categories described above; similarly those who marked Asian are generally in that category, unless they fell in the categories described above.

The final category includes most people who marked only White or only Some Other Race or marked three or more races but did not fall into the categories described above.

The data in this table contain sampling and nonsampling error.

Source: U.S. Department of Commerce, "Preliminary Estimates Show Improvement in Census 2000 Coverage," *U.S. Census Bureau News*, February 14, 2001, CB01-CN.03 (table reproduced in part).

Table 11-2.

### Percent Net Undercount for Major Groups Based on the Accuracy and Coverage Evaluation (A.C.E.) Survey: March 1, 2001

Estimation grouping	Net undercount (percent)	Standard error (percent)
<b>Total population in households</b> .....	<b>1.18</b>	<b>0.13</b>
<b>Race and Hispanic Origin</b>		
American Indian and Alaska Native		
On reservation .....	4.74	1.20
Off reservation .....	3.28	1.33
Hispanic origin (of any race) .....	2.85	0.38
Black or African American (not Hispanic) .....	2.17	0.35
Native Hawaiian and Other Pacific Islander (not Hispanic) .....	4.60	2.77
Asian (not Hispanic) .....	0.96	0.64
White or Some Other Race (not Hispanic) .....	0.67	0.14

Notes that accompanied table at its release: The race and Hispanic categories shown in this table represent estimation groupings used in developing estimates based on the A.C.E. Survey and do not conform with race and Hispanic categories that will appear in the redistricting (P.L. 94-171) files and other Census 2000 data products. In developing the estimation groupings used to evaluate the coverage of Census 2000, the principal consideration was to combine people who were expected to have the same probability of being counted in Census 2000. Consequently, the race and Hispanic origin groupings used to create the A.C.E. estimates of coverage are exceedingly complex. For a complete description of the estimation groups, see DSSD Memorandum Q-37, which will be provided on request.

In general, American Indians and Alaska Natives (AIAN) are included in that category, regardless of whether they marked another race or are Hispanic. A few exceptions apply, especially for those who do not live on a reservation, on trust lands, or in an AIAN statistical area.

Similarly, Native Hawaiians and Other Pacific Islanders (NHPI) generally are included in that category, unless they lived outside of Hawaii and marked more than one race or marked Hispanic.

Hispanics are mostly in that category, unless they marked AIAN and lived on a reservation, on trust lands, or in an AIAN statistical area, or marked NHPI and lived in Hawaii.

People who marked Black or African American are generally in that category unless they fell in the categories described above; similarly those who marked Asian are generally in that category, unless they fell in the categories described above.

The final category includes most people who marked only White or only Some Other Race or marked three or more races but did not fall into the categories described above.

The data in this table contain sampling and nonsampling error.

Source: *Federal Register*, Vol. 66, No. 46 (March 8, 2001), pp. 14007-08 (table reproduced in part).

Table 11-3.

### Revised Preliminary Estimates of Percent Net Undercount: October 17, 2001

Estimation grouping	Accuracy and Coverage Evaluation		Revised early approximation	
	Percent	Standard error	Percent	Standard error
<b>Total</b> .....	<b>1.18</b>	<b>(0.13)</b>	<b>0.06</b>	<b>(0.18)</b>
Non-Hispanic Black .....	2.17	(0.35)	0.78	(0.45)
Hispanic .....	2.85	(0.38)	1.25	(0.54)
All others .....	0.73	(0.14)	-0.28	(0.20)

Note that accompanied table at its release: The standard errors of our early approximations are quite high, but further research will reduce them. These early approximations are preliminary. We believe our final estimates will be very similar to these early approximations and will show smaller sampling errors.

Source: Table reproduced from press kit materials for the following news release: U.S. Department of Commerce, "Statement of Acting Census Bureau Director William Barron Regarding the Adjustment Decision," U.S. Census Bureau News, October 17, 2001, CB01-CS.08.

Table 11-4.  
**Revised Preliminary Estimates of Percent Net Undercount: April 4, 2002**

Estimation grouping	Estimate	Standard error
<b>Total</b> .....	<b>0.06</b>	<b>0.18</b>
Black or African American .....	0.78	0.45
Hispanic origin .....	1.25	0.54
Asian and Pacific Islander .....	-0.06	0.90
Asian (not Hispanic) .....	-0.31	0.91
Native Hawaiian and Other Pacific Islander (not Hispanic) .....	4.64	2.79
American Indian and Alaska Native .....	3.44	1.60
White or Some Other Race (not Hispanic) .....	-0.33	0.21

Notes: A negative estimate indicates an overcount.

The race and Hispanic categories shown in this table represent estimation groupings used in developing estimates based on the Accuracy and Coverage Evaluation survey and do not conform with race and Hispanic categories that appeared in the redistricting (P.L. 94-171) files and other Census 2000 data products. For a complete description of the estimation groups, see DSSD Memorandum Q-37.

In general, American Indians and Alaska Natives (AIAN) are included in that category, regardless of whether they marked another race or are Hispanic. A few exceptions apply, especially for those who do not live on a reservation, on trust lands, or in an AIAN statistical area.

Similarly, Native Hawaiians and Other Pacific Islanders (NHPI) generally are included in that category, unless they lived outside of Hawaii and marked more than one race or marked Hispanic.

Hispanics are mostly in that category, unless they marked AIAN and lived on a reservation, on trust lands, or in an AIAN statistical area, or marked NHPI and lived in Hawaii.

People who marked Black or African American are generally in that category unless they fell into the categories described above; similarly those who marked Asian are generally in that category, unless they fell into the categories described above.

The final category includes most people who marked only White or only Some Other Race or marked three or more races but did not fall into the categories described above. The White and Some Other Race group in this table is different than the Other group in the October 2001 estimates.

The data in this table contain sampling and nonsampling error. The revised preliminary estimates have high variances.

Source: U.S. Census Bureau, "Revised Preliminary Estimates of Net Undercounts for Seven Race/Ethnicity Groupings," DSSD A.C.E. Revision II Memorandum Series PP-2, April 4, 2002, Table 1, p. 3 (table reproduced in part).

Table 11-5.  
**Accuracy and Coverage Evaluation Revision II Estimates of Percent Net Undercount: March 12, 2003**

Estimation grouping	Net undercount (percent)	Standard error (percent)
<b>Total</b> .....	<b>-0.49</b>	<b>0.20</b>
<b>Race and Hispanic Origin</b>		
American Indian and Alaska Native		
On reservation .....	-0.88	1.53
Off reservation .....	0.62	1.35
Hispanic Origin (of any race) .....	0.71	0.44
Black or African American (not Hispanic) .....	1.84	0.43
Native Hawaiian and Other Pacific Islander .....	2.12	2.73
Asian (not Hispanic) .....	-0.75	0.68
White or Some Other Race (not Hispanic) .....	-1.13	0.20

Notes: All net undercounts are for the household population. A negative net undercount denotes a net overcount.

The A.C.E. Revision II estimates of percent net undercount incorporate an adjustment for correlation bias using the "Two-Group" model.

Source: U.S. Census Bureau, "Decision on Intercensal Population Estimates," March 12, 2003, Table 3 (table reproduced in part), p. 10 (PDF version).

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## FREEDOM OF INFORMATION ACT REQUESTS

### The Freedom of Information Act

The Freedom of Information Act (FOIA), Title 5, U.S. Code, Section 552, enacted in 1966, provides individuals with the right to obtain and access federal government agency documents, with the exception of those that are protected from disclosure by one of the act's exemptions or exclusions. The general intent of the FOIA is to provide openness and transparency in government operations, while relying on exemptions or exclusions to protect validly confidential information.

FOIA exemptions protect from disclosure documents or portions thereof containing the following information: (1) national security, defense, and foreign policy classified information; (2) information pertaining only to internal agency personnel rules and practices; (3) information specifically protected from disclosure by other statutes; (4) information that is privileged or confidential commercial proprietary information or trade secrets; (5) information contained in an inter- or intra-agency document that is deliberative and predecisional in nature or is attorney-client privileged or constitutes attorney work product; (6) information pertaining to individuals of a personal privacy nature, such as that contained in medical and personnel files; (7) information prepared for law enforcement purposes; (8) information pertaining to the regulation and oversight of financial institutions; and (9) geological and geophysical information.

If a government agency fails to respond to a requester within the statute's prescribed deadline (20 working days), withholds information from disclosure pursuant to one or more of the nine aforementioned exemptions, or states that there are no responsive documents, the requester may file an appeal with the agency's FOIA appeals officer. (For the Census Bureau, the appeals officer is the assistant general counsel for administration, Office of General Counsel, U.S. Department of Commerce.) If the appeals officer's decision is unfavorable, the requester may appeal that decision by filing suit in federal district court (Title 5, U.S. Code, Section 552(a)(4)(B)).

### The Census Bureau and the FOIA

The Census Bureau receives and responds to a number of FOIA requests each year. Typically this number increases dramatically in the census year and during the years immediately preceding and following the census year (for the 2000 Census, between 1997 and 2002), as public interest in the census and matters pertaining to the Census Bureau is heightened. Over this period, the Census Bureau received over 1,700 census-related requests—an average of approximately 280 requests per year. This compares to an annual average of approximately 175 requests received in the years outside of this 6-year period.

Census 2000-related FOIA requests can be grouped into three categories. The first category includes those relating to adjustment issues, including the redistricting data adjustment decision and release of the adjusted data. The Census Bureau received approximately 25 such requests. The second category includes requests pertaining to nonadjustment-related programs or operations. This category comprised nearly 80 requests. The third category deals with personnel issues and with large contracts for services such as advertising and data capture. This third category encompassed nearly 450 requests.

### Requests Pertaining to Adjustment Issues

**Background.** One of the most contentious technical, legal, and political issues related to the decennial census over the past few decades is whether to use statistical sampling and estimation methodology to adjust raw data counts to correct for net coverage errors. As it had with the 1990 census, the Census Bureau conducted a coverage measurement survey (the Accuracy and Coverage Evaluation, or A.C.E.) in connection with Census 2000 to measure net coverage error and to assess the feasibility of adjusting the data. Legal challenges by opponents of sampling resulted in a 1999 Supreme Court decision, concluding that the use of statistical sampling (and thus statistical adjustment based on sampling) to produce the state population numbers for apportionment of

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the U.S. House of Representatives was precluded by the Census Act (Title 13, U.S. Code), specifically Section 195.<sup>195</sup> Because the Supreme Court concluded that Section 195 expressly prohibited sampling for purposes of apportionment of the U.S. House of Representatives and Section 195 made no mention of its use to produce numbers for redistricting or other purposes—and the Supreme Court did not explicitly address such uses in its opinion—the Clinton administration interpreted Section 195 to permit statistical adjustment for such purposes, if feasible.<sup>196</sup>

In March 2001, Secretary of Commerce Donald Evans determined that the unadjusted data were the most accurate data and would be the official redistricting data, and these were the only data released to the public. During the months preceding and following the Census Bureau's recommendation on adjustment and the Secretary of Commerce's decision, the department received a number of FOIA requests for documents related to these two events. Additionally, in the months following the Secretary's adjustment decision, both the Department of Commerce and the Census Bureau received requests for the Census 2000 adjusted block-level data. These FOIA requests are discussed in more detail below. The adjusted block-level data had been prepared in the event the Secretary of Commerce decided in favor of adjustment. The data were available for release to states and localities within the deadline stipulated in Public Law (P.L.) 94-171 (within 1 year following the decennial census date).

**Requests related to the adjustment methodology and decision-making process.** In the months surrounding the redistricting data adjustment decision, the Census Bureau and the Commerce Department received numerous FOIA requests from state and local government officials, various print media, and others, for documents relating to the decision and relevant background information. Of particular note were a request from the ranking minority member of the U.S. House Subcommittee on the Census and a series of requests from a law firm representing the city of Los Angeles. These requests pertained to, among other things, the A.C.E. program methodology; the bases for evaluating the adjusted versus the unadjusted data; documents produced for and/or reviewed by the Executive Steering Committee for Accuracy and Coverage Evaluation Policy (ESCAP)<sup>197</sup>; documents used by Census Bureau Acting Director William Barron in reaching his decision concurring with the ESCAP recommendation against adjustment; documents provided to Secretary of Commerce Donald Evans and/or his transition team relating to census adjustment; and documents used by Secretary Evans in reaching his decision to designate the unadjusted data as the official redistricting (P.L. 94-171) data and withhold the adjusted data.<sup>198</sup>

Prior to the Secretary's decision, the city of Los Angeles (and other plaintiffs) filed suit to challenge the new administration's changes regarding the Census 2000 redistricting data adjustment decision-making process.<sup>199</sup> Following the Secretary's decision, the plaintiffs amended their complaint, seeking a court order releasing the adjusted data as the official redistricting data.<sup>200</sup>

Much of the documentation responsive to the city of Los Angeles and similar requests was available from the Census Bureau's Web site, but some relevant documents given to Secretary Evans by the Census Bureau were withheld as predecisional and deliberative (Exemption 5 of the FOIA). Additionally, the extremely broad nature of some of the requests from the city of Los Angeles required the Census Bureau to process those requests on an ongoing basis, conducting its search and review activities and providing documents to the requester in a periodic manner, activities which, for some requests, continued for over a year.

**Requests for release of the adjusted data.** The most notable FOIA request for the Census 2000 adjusted block-level data was an April 2001 request from two Democratic senators from the

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<sup>195</sup> *Department of Commerce v. U.S. House of Representatives*, 119 S.Ct. 765 (1999).

<sup>196</sup> The section of this chapter entitled "The Debate Over the Use of Sampling" chronicles the challenges to the planned uses of sampling in Census 2000.

<sup>197</sup> ESCAP was a committee of senior Census Bureau officials charged with making a recommendation to the Director regarding whether the official redistricting data should incorporate a statistical adjustment.

<sup>198</sup> The ESCAP process, including the committee's report and recommendation, the Acting Director's concurrence document, and the Secretary of Commerce's decision, are discussed in more detail in "The Debate Over the Use of Sampling" section.

<sup>199</sup> The original rule defining the decision-making framework and the subsequent rule (superceding the earlier rule), promulgated by the new administration in February 2001, are discussed in "The Debate Over the Use of Sampling" section.

<sup>200</sup> This lawsuit, *City of Los Angeles v. Evans*, is summarized in the "Litigation" section of this chapter.

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Oregon state legislature, Susan Castillo and Margaret Carter, asking for the adjusted block-level data for the entire country. They requested the data for redistricting and other purposes and indicated that they would share the data for other states with legislators in those states, for similar purposes. In May 2001, the Census Bureau denied the request, citing the deliberative process privilege in Exemption 5 of the FOIA, stating that the adjusted block-level data were “predecisional” and “deliberative” and were related to an intradepartmental recommendation not to statistically adjust the official redistricting data, a recommendation accepted by the Secretary of Commerce. The state senators appealed the denial to the Office of General Counsel of the Department of Commerce, and in June 2001, the denial was upheld.

The state senators subsequently filed suit in the U.S. District Court for the District of Oregon, which held that the adjusted data must be released. The Department of Commerce appealed to the U.S. Court of Appeals for the Ninth Circuit. That court, in *U.S. Department of Commerce v. Carter*, upheld the district court decision ordering the release of the Census 2000 adjusted block-level data under the FOIA.<sup>201</sup>

The Census Bureau and Department of Commerce received many other FOIA requests for the adjusted data (usually at the block-level) from state and local government officials and various print media.<sup>202</sup> Following the Secretary’s decision, A.C.E. results below the national level were not publicly released, and all such FOIA requests, and subsequent appeals, were denied, citing the deliberative process privilege in Exemption 5 of the FOIA.<sup>203</sup>

### Requests Pertaining to Nonadjustment-Related Programs or Operations

#### Requests related to programs/operations legally challenged by the State of Utah.

The State of Utah and other plaintiffs filed two lawsuits relating to Census 2000 programs/operations.<sup>204</sup> In the first *Utah v. Evans*—this case is known as *Evans I*—which was filed on January 10, 2001, Utah challenged the Census Bureau policy of including overseas federal civilian and military employees and their dependents in Census 2000 for apportionment purposes but excluding thousands of missionaries of the Church of Jesus Christ of Latter-day Saints (the LDS Church) who were temporarily serving abroad when Census 2000 was conducted. The State of Utah contended that had the overseas LDS Church missionaries been included in, or the overseas federally affiliated households excluded from, the apportionment counts, it would have received a fourth seat in the U.S. House of Representatives. Acting on behalf of the plaintiffs, Brigham Young University professor Lara Wolfson made a FOIA request for (among other things) the counts of overseas military and federal civilian personnel and their resident dependents that the Census Bureau received from the various departments and agencies. She also requested the number of persons included in these counts that were not allocated to states for calculating the apportionment numbers. The Census Bureau provided the requested data. Further, Professor Wolfson requested the records from which the counts of overseas military personnel and their dependents were obtained; however, the Department of Defense had given the Census Bureau only the counts and state affiliations for these individuals.

On November 26, 2001, the Supreme Court issued a summary affirmation of the April 17, 2001, judgment of the three-judge panel of the district court in favor of defendants.

Utah and co-plaintiffs filed their second lawsuit—*Utah v. Evans (Evans II)*—on April 25, 2001. The state challenged the use of “hot-deck” count imputation in producing the Census 2000 apportionment counts, claiming that had it not been used, the state would have increased its number of seats in the U.S. House of Representatives from three to four. Among other things, Utah alleged that the use of count imputation was illegal, claiming that it was a form of statistical sampling,

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<sup>201</sup> *U.S. Department of Commerce v. Carter*, 307 F.3d 1084 (9th Cir. 2002). This case is summarized in the “Litigation” section.

<sup>202</sup> The series of FOIA requests made on behalf of the City of Los Angeles discussed above included a request for the adjusted block-level data.

<sup>203</sup> One such request pertained to the adjusted population counts for 38 jurisdictions in Texas. The denial of this request was also litigated in federal court, and the case, *Cameron County, Texas v. Evans*, is summarized in the “Litigation” section.

<sup>204</sup> For more information regarding these cases, see the “Litigation” section.

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which, as noted earlier, the Supreme Court concluded could not be used in producing the apportionment counts.<sup>205</sup> In connection with this second suit, a law firm representing the plaintiffs requested under the FOIA two technical reports relating to Census 2000 operations and one report pertaining to 1990 census imputation procedures. These documents were provided to the requester. The Supreme Court eventually upheld the Census Bureau's use of "hot-deck" count imputation.<sup>206</sup>

**Requests by the City of Los Angeles relating to the Census 2000 service-based enumeration (SBE).** Between June 2001 and May 2002, the Office of the City Attorney of Los Angeles and a law firm (Gibson, Dunn & Crutcher) representing the city each sent a broad request to the Census Bureau for information about, and data relating to, the conduct of the Census 2000 SBE in the city and county of Los Angeles. The SBE entailed enumeration of persons who were using services established to assist the very poor, for example, soup kitchens, homeless shelters, etc. The requesters sought all documents relating to the Census Bureau's dissemination of "homeless" data to the public as well as all documents relating to its decision not to publish a Census 2000 homeless count.

In a July 25, 2001, follow-up letter clarifying the earlier requests, Gibson, Dunn & Crutcher requested ". . . the breakdown of the other noninstitutionalized group quarters' category into its 6 [categories 701–706] component parts for Los Angeles County, by block, block-group or track [*sic*], at the lowest geographic level possible."<sup>207</sup> The referenced categories comprised the components of the SBE. That is, the SBE enumerated people at the following locations: emergency and transitional shelters (701); shelters for children who are runaways, neglected, or without conventional housing (702); shelters for abused women (or shelters against domestic violence) (703); soup kitchens (704); regularly scheduled mobile food vans (705); and targeted nonsheltered outdoor locations (706).<sup>208</sup>

The Census Bureau responded that the requested tabulation did not exist and explained that FOIA case law does not require the creation of "new documents" from data stored on computers, the determining factor being whether "substantial reprogramming" was required in order to create documents or records that otherwise do not exist.<sup>209</sup> The Census Bureau concluded that this request constituted the creation of a new document and, therefore, denied the request for the specified tabulation.

In responding to the other items of the requests, the Census Bureau referred the requesters to its Web site and provided documentation of the extensive research it carried out throughout the decade regarding the most effective and appropriate methods for enumerating persons without conventional housing. The Census Bureau also provided copies of many reports, publications, memoranda, and letters referencing the agency's plans for the enumeration of, and dissemination of Census 2000 data pertaining to, persons without conventional housing and emphasizing that it never intended to produce a count of the "homeless" population as that term is commonly understood. Additionally, the Census Bureau withheld portions of several "predecisional" and "deliberative" (Exemption 5) documents pertaining to internal deliberations regarding the use of the SBE methodology and/or how the data would be aggregated for publication purposes.

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<sup>205</sup> *Department of Commerce v. U.S. House of Representatives*, 119 S.Ct. 765 (1999).

<sup>206</sup> *Utah v. Evans*, 536 U.S. 452 (2002).

<sup>207</sup> Wayne M. Barsky, Gibson, Dunn & Crutcher, to Gerald Gates, Chief, Policy Office, U.S. Census Bureau, July 25, 2002.

<sup>208</sup> For more information about the Census 2000 SBE, see the "Group Quarters Enumeration" section of Chapter 5, "Data Collection." For information regarding the data products relating to the SBE, see the "Data Products Pertaining to Special Populations" section of Chapter 9, "Data Products and Dissemination."

<sup>209</sup> The agency also later noted in its court filings (*City of Los Angeles v. U.S. Department of Commerce*, No. 02-9122 WMB, in the U.S.D.C. for the Central District of California, Western Division, Defendant's Reply in Support of Defendant's Motion for Summary Judgment, September 10, 2003, p. 11, fn. 4) relating to the ensuing FOIA lawsuit that even if the Census Bureau were to produce such a tabulation at the specified geographic levels, the tabulation would have to be reviewed to determine whether the confidentiality provisions of Title 13 would permit its release. If these provisions would prohibit the release of the specified tabulation—because of the risk that the data pertaining to a particular respondent could be identified—then the Census Bureau would be obligated to withhold it and claim Exemption 3 of the FOIA as the basis for doing so. Exemption 3 pertains to information specifically protected from disclosure by other statutes—in this case, Title 13. However, given that the Census Bureau would first have to create the tabulation in order to conduct its Title 13 confidentiality review, as an initial FOIA consideration, the agency contended that it was not required to create the tabulation.

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In August 2002, Gibson, Dunn & Crutcher appealed the Census Bureau's refusal to produce and release the requested tabulation and its withholding of portions of documents under Exemption 5 of the FOIA. Stating that the appeal was not timely filed, the Office of General Counsel of the Department of Commerce denied it. The City of Los Angeles proceeded to file suit in the U.S. District Court for the Central District of California, Western Division, *City of Los Angeles v. U.S. Department of Commerce* (No. 02-9122 WMB). The resolution of this lawsuit is discussed in the "Litigation" section of this chapter.

**Other requests pertaining to nonadjustment-related programs or operations.** In addition to those summarized above, the Census Bureau received approximately 75 other requests regarding Census 2000 programs or operations that did not relate to adjustment issues. Among these were requests pertaining to jurisdictions participating in the Local Update of Census Addresses (LUCA) program<sup>210</sup>; operational data or published population and/or housing data for particular counties and/or municipalities; and Count Question Resolution (CQR) program issues or cases.<sup>211</sup>

### Requests Regarding Decennial Personnel Issues or Contracts

**Requests pertaining to decennial personnel issues.** The magnitude of decennial hiring—over 800,000 temporary appointments nationwide in year 2000 alone—resulted in the Census Bureau receiving and processing a large number of Census 2000 personnel-related FOIA requests. The Census Bureau responded to approximately 350 such requests.

Many of these requests were submitted by decennial census applicants and personnel who were seeking information regarding their nonselection or adverse actions taken against them. Some requesters asked for copies of administrative guides and manuals relating to the procedures for recruiting, testing, and hiring temporary decennial census employees. Some applicants sought information regarding their employment applications, tests they took, or their interviews, including criteria for selection.

In some cases, requesters sought applicant/personnel records of other individuals, and in responding to these requests, the Census Bureau complied with the relevant provisions of the Privacy Act and FOIA (Exemption 6—see the beginning of this section) to protect the privacy rights and interests of the individuals to whom the records pertained. The Privacy Act (Title 5, U.S. Code, Section 552a) provides protection for records pertaining to individuals that the government maintains and has within its possession. Disclosure of these records is prohibited except in limited circumstances and for limited uses. Generally, under the Privacy Act, an individual may gain access to and/or obtain copies of his or her own records, such as applicant/personnel records. With regard to such requests, the Census Bureau requires—in keeping with Department of Commerce regulations—that requesters include a signed, notarized authorization before it will release the records.

A large subset of personnel-related requests—roughly 60 percent—pertained to the criminal background security checks the Census Bureau conducts of its job applicants. These included requests for documentation regarding, or generated as a result of, this process.

**Requests for documents relating to decennial census contracts.** In Census 2000, many operations that were previously conducted by Census Bureau employees were contracted out to the private sector. Increased public interest in and attention to the census during the period leading up to and immediately following Census 2000 corresponded with a sharp increase in the number of FOIA requests regarding contracts relating to the programs and operations of Census 2000.

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<sup>210</sup> The LUCA program was a precensus activity, authorized by Title 13, U.S. Code, Section 16, in which the Census Bureau worked with local and tribal governments to improve the accuracy and completeness of the agency's Census 2000 address list. This program is described in detail in Chapter 8, "Addresses and Questionnaire Printing and Mailing."

<sup>211</sup> The CQR program was an administrative review program that handled challenges to particular official Census 2000 counts of housing units and group quarters population, focusing primarily on the geographic misplacement of data actually collected in the census—it did not involve reenumeration or adjustment of data. The program is described in more detail in Chapter 9, "Data Products and Dissemination."



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During this period, the Census Bureau received well over 80 requests for contracts or contract-related documents. These included requests for documents pertaining to some of the largest of the Census 2000 contract awards, which were for the following services:

- Development of DCS 2000, the system used for the imaging and data capture of the Census 2000 questionnaires.
- Locating and leasing buildings to house the data capture centers, and hiring and managing the employees who performed the data capture.
- Purchasing computer hardware for the regional census centers and the local census offices.
- Telephone questionnaire assistance services (800 telephone number) and telephone interviewing of respondents.
- Developing and implementing an advertising campaign for Census 2000, including creating the message and logo and placing advertisements on television, radio, and in print media.
- Developing and implementing a self-service Internet-based system for the dissemination of Census 2000 data products and other tabulations.

Many requests for documents regarding these awarded contracts came from unsuccessful bidders. However, confidential business information is protected from disclosure by Exemption 4 of the FOIA.<sup>212</sup> Thus, the Census Bureau FOIA Office (in accordance with law and Commerce Department regulation) contacts the relevant contractor before releasing contract-related documentation that could contain information to be withheld under Exemption 4 and provides an opportunity for the contractor to identify any information considered to be confidential proprietary information. To the extent the Census Bureau concurs in the contractor's designation, such information is withheld.

## LITIGATION

### 1990 Census Litigation

Three lawsuits relating to the 1990 decennial census remained unresolved at the time (September 1995) the 1990 census history chapter on litigation went to print.<sup>213</sup> Summaries of these cases are provided before the Census 2000 lawsuits are discussed.

***Wisconsin v. City of New York.***<sup>214</sup> This case was the principal lawsuit seeking an adjustment of the 1990 census counts and was filed in advance of the census itself. In October 1987, the Department of Commerce issued a press release stating that it did not intend to adjust the 1990 census for undercounts and overcounts. As a result, a number of states, counties, cities (including New York), organizations, and individual citizens from participating jurisdictions filed suit in the U.S. District Court for the Eastern District of New York on November 3, 1988, seeking a reversal of that decision. The defendants were the President and Commerce Department and Census Bureau officials, among others. The plaintiffs asserted that a disproportionate undercount of minorities and other disadvantaged groups (and of the states and localities in which the overwhelming majority of members of these groups resided) in the 1990 census was inevitable. They further

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<sup>212</sup> Protection is also afforded by the Trade Secrets Act, 18 U.S. Code § 1905, which imposes criminal penalties on, and removal from office of, federal employees for unauthorized disclosure of confidential business information.

<sup>213</sup> U.S. Census Bureau, *1990 Census of Population and Housing History, Part D*, 1990 CPH-R-2D (Washington, DC: Government Printing Office, 1996), Chapter 12. One of these suits, *Lanoue v. Clinton*, had been resolved, but was later refiled as *Slattery v. Clinton* (see below).

<sup>214</sup> As filed, the title of this action was *City of New York v. U.S. Department of Commerce*. It should be noted that when a lawsuit is filed, the name(s) of the party (or parties) bringing the suit—the plaintiff(s)—appears first in the case name. When a court ruling is appealed to and heard by a higher court, the name of the party filing the appeal (“the appellant”) appears first in the case name, regardless of whether or not the appellant is the plaintiff. The State of Wisconsin intervened in this lawsuit on the side of the defendants and was the first of the defendants to seek Supreme Court review of the circuit court ruling. Additionally, while most of the cases summarized in this section involve multiple plaintiffs and/or multiple defendants, the *et al.* (“and others”) that would follow the first plaintiff/defendant mentioned in the case name has been left off for the sake of convenience.

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argued that as evidence of this inevitability, the Census Bureau had committed itself to a program of undercount research and to the implementation of adjustment-related activities<sup>215</sup> designed to produce corrected census figures which, if they met certain preestablished standards of reliability, would become the official decennial census data. Plaintiffs claimed that the Department of Commerce's decision to overrule the Census Bureau and quell those activities was arbitrary and capricious and in violation of the Administrative Procedure Act (APA). Furthermore, they alleged that the anticipated undercount in the 1990 census would result in a loss of political representation and federal funding to the plaintiff jurisdictions and the individual plaintiffs residing in those jurisdictions, thereby violating those individuals' constitutional rights under Article I, Section 2, and the Fifth and Fourteenth Amendments to the Constitution.

The plaintiffs requested an injunction to preclude the taking of the 1990 census unless it were subject to an adjustment. Specifically, they asked the court to require the defendants to (1) conduct a "full-scale" post-enumeration survey (PES) in connection with the 1990 decennial census; (2) correct the 1990 census for undercounts or overcounts, using the most accurate correction methods available; and (3) use the corrected population figures for all purposes for which the defendants use decennial census data.

In July 1989, the parties agreed to "stay" (postpone) the suit (the "Agreement"). The Agreement provided that the plaintiffs would withdraw their motion to enjoin the taking of the census; in exchange, the department would undertake a thorough reconsideration of the question of adjusting the 1990 census. The Census Bureau agreed not only to conduct the traditional enumeration, but also a PES and certain other adjustment-related planning operations in a manner intended to result in the most accurate counts practicable. The Secretary of Commerce would make an adjustment if, in his judgment, doing so would satisfy guidelines developed by the department. These guidelines, published in final form in March 1990, were to establish the technical and policy grounds upon which the Secretary would base his decision.<sup>216</sup>

Also as part of the Agreement, Commerce Secretary Robert A. Mosbacher convened an eight-member special advisory panel in October 1989 to make individual recommendations to him on whether to adjust the 1990 census. The plaintiffs and defendants each selected four panel members. The decision on adjustment was to be made no later than July 15, 1991.

In June 1991, the eight members of the panel sent the Secretary their individual recommendations on adjustment. They split—the plaintiffs' four in favor and the defendants' four against. The same month, Barbara Everitt Bryant, the Census Bureau's Director, and Michael Darby, Under Secretary of Commerce for Economic Affairs (and Administrator of the Department's Economics and Statistics Administration, which had immediate oversight of the Census Bureau), presented their recommendations to Secretary Mosbacher—Dr. Bryant for adjustment, and Dr. Darby against.<sup>217</sup>

Dr. Bryant cited the majority opinion of the Census Bureau's Undercount Steering Committee<sup>218</sup> (USC) that the improvement to the counts, on average, for higher levels of geography (the nation, states, and places with a population of 100,000 or more) brought about by statistical adjustment

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<sup>215</sup> At that time, the "adjustment-related activities" embodied dual system estimation. In general, a sample survey would be conducted contemporaneously with the decennial census, and the questionnaires from the households in the survey would be matched against those from the same households in the census. This methodology provided a measure of coverage: (1) persons found in the survey but not in the census reflected an undercount and (2) persons found in the census but not in the survey reflected an overcount. From these results, the Census Bureau would develop mathematical adjustment factors, tailored to the age, gender, race, geographic location, etc., of the persons involved. These adjustment factors would then be applied to the census data to correct for net overcount and undercount.

<sup>216</sup> *Federal Register*, Vol. 55, No. 51 (March 15, 1990), pp. 9838–61.

<sup>217</sup> U.S. Census Bureau, Barbara Everitt Bryant, Director, "Recommendation to Secretary of Commerce Robert A. Mosbacher on Whether or Not to Adjust the 1990 Census," June 28, 1991; U.S. Department of Commerce, Michael R. Darby, Under Secretary of Commerce for Economic Affairs, "Recommendation to the Secretary on the Issue of Whether or Not to Adjust the 1990 Decennial Census," undated.

<sup>218</sup> The USC was a group of senior Census Bureau statisticians and demographers convened to evaluate the agency's adjustment research and results.

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would more than outweigh the risk that the adjusted data were possibly less accurate for smaller geographic areas.<sup>219</sup> She concluded, “I stand . . . with the majority of the Census Bureau’s Undercount Steering Committee in judging that adjustment would improve the 1990 census.”<sup>220</sup>

Dr. Darby’s recommendation against adjustment focused on distributive accuracy,<sup>221</sup> but also raised concerns that adjustment was “substantially more vulnerable to manipulation for political gain,” would “institutionalize non-participation in the census,” and result in two sets of census numbers being issued. This latter circumstance would “introduce chaos, additional costs and further litigation into the political redistricting process. . . .” He noted the “heavier emphasis” Dr. Bryant placed on the perceived superior numeric accuracy of the adjusted data at broad geographic levels, but stated that distributive accuracy was important for most uses of census data. He stated that “[no] convincing evidence has been presented that they [the adjusted data] will increase . . . distributive accuracy.” He concluded: “Ultimately, it is your decision, Mr. Secretary, as to which criterion [numeric versus distributive accuracy] is more important for all the purposes of the census.”<sup>222</sup>

The Secretary considered the range of issues and the diversity of professional opinion among his advisors concerning adjustment of the 1990 census. He evaluated the adjusted counts in terms of the eight guidelines developed as criteria for the adjustment decision.<sup>223</sup> On July 15, 1991, Mosbacher announced that the 1990 decennial census would not be statistically adjusted.<sup>224</sup>

In deciding against adjustment, Mosbacher acknowledged that adjustment would likely lead to more accurate figures at the national level<sup>225</sup> and for racial and ethnic minorities.<sup>226</sup> There was a division of opinion among the Secretary’s advisors as to whether the adjusted counts would result in greater distributive accuracy at the state and local levels.<sup>227</sup> Mosbacher concluded that use of the adjusted numbers would not result in greater distributive accuracy, the appropriate measurement relating to apportionment of the U.S. House of Representatives.<sup>228</sup> He also expressed concern that uncertainty in the adjustment methodology and its assumptions might lead to disagreement over the numbers<sup>229</sup> and that further research might weaken the evidence supporting adjustment.<sup>230</sup> Mosbacher also felt that “. . . adjustment would open the door to political tampering with the census in the future.”<sup>231</sup> However, Secretary Mosbacher requested that the Census Bureau research the possible incorporation of results from the PES in the intercensal estimates program.<sup>232</sup>

Following Mosbacher’s decision, the plaintiffs returned to court, seeking an order compelling the department to adjust the 1990 census to rectify the acknowledged undercount of certain minority groups. The plaintiffs asserted this undercount would result in the injuries claimed in their complaint. They also alleged that the decision violated the July 1989 agreement, the APA, and the Constitution and that it was influenced by partisan political considerations. The States of Wisconsin and Oklahoma joined the suit on the side of the government in September and December of 1991, respectively.

In February 1992, the district court granted the plaintiffs’ request for an evidentiary hearing (that is, a trial). Judge Joseph K. McLaughlin presided over the 13-day trial. Expert witnesses from both sides presented extensive, highly technical testimony on the assumptions, methodology, and

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<sup>219</sup> “Recommendation to Secretary of Commerce Robert A. Mosbacher on Whether or Not to Adjust the 1990 Census,” p. 15.

<sup>220</sup> *Ibid.*, p. 4.

<sup>221</sup> Distributive accuracy refers here to the total state counts most accurately reflecting the correct proportionality of one state to another, based upon resident population size.

<sup>222</sup> “Recommendation to the Secretary on the Issue of Whether or Not to Adjust the 1990 Decennial Census,” p. E-2.

<sup>223</sup> *Federal Register*, Vol. 55, No. 51 (March 15, 1990), pp. 9838–61.

<sup>224</sup> *Federal Register*, Vol. 56, No. 140 (July 22, 1991), pp. 33582–642.

<sup>225</sup> *Ibid.*, p. 33583.

<sup>226</sup> *Ibid.*, p. 33582.

<sup>227</sup> *Ibid.*, p. 33583.

<sup>228</sup> *Ibid.*, p. 33584.

<sup>229</sup> *Ibid.*, p. 33583.

<sup>230</sup> *Ibid.*, p. 33584.

<sup>231</sup> *Ibid.*, p. 33583.

<sup>232</sup> *Ibid.*, pp. 33582–83.

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results of the Census Bureau's adjustment procedure. On April 13, 1993, while finding much substantive merit in the plaintiffs' case, Judge McLaughlin ruled in favor of the defendants, stating that the Secretary's decision not to adjust the 1990 decennial census counts did not violate the APA, the Constitution, the agreement entered into by the parties, or any statute. He stated that the Secretary's conclusions under each guideline and his ultimate decision against adjustment could not be characterized as "arbitrary or capricious," an APA standard of review. However, he noted that ". . . were this Court called upon to decide this issue *de novo*, I would probably have ordered the adjustment."<sup>233</sup> Judge McLaughlin also observed in a footnote that ". . . in light of recent improvement in statistical tools and the practical benefits that the 1990 PES has provided, the use of adjustment in the next census is probably inevitable."<sup>234</sup>

The plaintiffs filed an appeal in the U.S. Court of Appeals for the Second Circuit in July 1993. They argued that the district court had incorrectly applied an APA standard of review to the case, contending that the appropriate standard was one under the Constitution.

The Second Circuit Court heard oral argument in January 1994 and, in August of the same year, voided the decision of the district court, finding that the lower court had applied the wrong standard of review. The Second Circuit Court agreed with the district court in rejecting a *de novo* standard of review that would have resulted in the circuit court deciding which numbers—the adjusted or unadjusted data—were more accurate. It also rejected conclusions reached by the Sixth and Seventh Circuit Courts of Appeals in the early 1990s, both of which held that there was no judicially recognizable right to sue over adjustment of the census.<sup>235</sup>

Holding that "the right to equal apportionment is rooted in the right to equal protection,"<sup>236</sup> the Second Circuit Court determined that the equal protection provisions of the Fifth and Fourteenth Amendments to the Constitution required the application of standards developed under the "one-person, one-vote" cases. This set of standards requires that when a government action affects the fundamental right to vote of a "suspect" class, such as a minority group, the action be subject to "heightened scrutiny." The government must make a good faith effort to achieve equal representation as nearly as practicable. According to the court, the adjusted data were concededly more accurate than the unadjusted census counts. Therefore, because the government chose to use the less accurate counts, causing a disparate and harmful impact upon minorities, if the decision were to stand, the government had to demonstrate that such a position (1) furthered a legitimate governmental objective and (2) was essential for the achievement of that objective.<sup>237</sup> The Second Circuit Court returned the case to the district court for a determination of the presence of a "legitimate governmental objective."

The States of Wisconsin and Oklahoma subsequently filed petitions for rehearing in the Second Circuit, which were rejected. These same parties then filed petitions for writs of *certiorari* <sup>238</sup> in the Supreme Court on March 31 and April 4, 1995, respectively, followed by the federal government defendants filing their own *certiorari* petition on June 5. On June 30, the States of Indiana and Ohio jointly filed an *amicus curiae* <sup>239</sup> brief recommending that the Court agree to hear the case. The plaintiffs filed a response brief on July 3, requesting that the Supreme Court deny the petitions. Subsequently, additional *amicus* briefs in support of the *certiorari* petitions were filed, including one by the Commonwealth of Pennsylvania and another by U.S. Senators Herb Kohl (D-WI), Russ Feingold (D-WI), and Arlen Specter (R-PA). The Supreme Court granted the *certiorari* petitions and heard oral argument on January 10, 1996. The court issued its decision on March 20 of that year.

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<sup>233</sup> *City of New York v. U.S. Department of Commerce*, 822 F.Supp. 906, 928 (E.D.N.Y. 1993).

<sup>234</sup> *Ibid.*, p. 928, fn. 27.

<sup>235</sup> The Sixth and Seventh Circuit Courts decided the 1990 census adjustment cases of *City of Detroit v. Franklin* (4 F.3d 1367 (CA6 1993)) and *Tucker v. U.S. Department of Commerce* (958 F.2d 1411 (CA7 1992)), respectively. For summaries of these cases, see U.S. Census Bureau, *1990 Census of Population and Housing, History, Part D*, 1990 CPH-R-2D (Washington, DC: Government Printing Office, 1996), pp. 12-9–12-11.

<sup>236</sup> *City of New York v. U.S. Department of Commerce*, C.A. 2 (N.Y.) 1994, 34 F.3d 1114, 1128.

<sup>237</sup> *Ibid.*, p. 1131.

<sup>238</sup> A petition for a writ of *certiorari* is a request that a higher court decide to hear a case and review the lower court's ruling. The term most commonly refers to such requests made of the U.S. Supreme Court.

<sup>239</sup> Literally meaning "friend of the court," *amicus curiae* briefs are filed by individuals or entities on behalf of one of the parties to the litigation, but also serve to put forth the particular interests of the *amicus* filer in the matter. They are commonly filed in appeals pertaining to matters of broad public interest.

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The Supreme Court reversed the Second Circuit ruling, unanimously upholding the constitutionality of Secretary Mosbacher's decision not to adjust the 1990 census.<sup>240</sup> The Opinion of the Court, delivered by Justice Rehnquist, stated that Mosbacher's action was ". . . well within the constitutional bounds of discretion over the conduct of the census provided to the Federal government."<sup>241</sup> Utilizing the standard the Court had established in two earlier constitutional challenges relating to the 1990 census, the adjustment decision was examined to determine if it was ". . . consistent with the constitutional language and the constitutional goal of equal representation."<sup>242</sup> Notwithstanding his acknowledgment of the likely superior numeric accuracy (at the national level) of the adjusted counts, the Court determined that the Secretary's decision to focus on distributive accuracy was

. . . not inconsistent with the Constitution. Indeed, a preference for distributive accuracy (even at the expense of some numerical accuracy) would seem to follow from the constitutional purpose of the census, viz., to determine the apportionment of the Representatives among the States.<sup>243</sup>

The justices further rejected the plaintiffs' contention that the Court should conduct a *de novo* review of the Secretary's determination that the evidence before him tended to support the greater distributive accuracy of the unadjusted counts, and they noted that Mosbacher's conclusion was a ". . . reasonable choice in an area where technical experts disagree."<sup>244</sup> The Court therefore concluded that, given the virtually unlimited discretion in conducting the census vested in Congress by the Constitution and the delegation of that broad authority by Congress to the Secretary of Commerce, the Secretary's decision not to adjust the 1990 census counts was ". . . consonant with . . . the text and history of the Constitution. . . ."<sup>245</sup>

The ruling acknowledged that the Secretary of Commerce enjoys a substantial degree of discretion in the methods used to take the census. However, the decision did not address either the constitutionality or the legality of sampling: "We do not decide whether the Constitution might prohibit Congress from conducting the type of statistical adjustment considered here"<sup>246</sup> [nor] ". . . the precise bounds of the authority delegated to the Secretary through the Census Act."<sup>247</sup>

***National Law Center on Homelessness and Poverty v. Kantor.*** In this suit, filed in the U.S. District Court for the District of Columbia on October 8, 1992, the plaintiffs challenged the design, implementation, and results of the 1990 decennial census Shelter and Street Night (S-Night) operation.<sup>248</sup> The plaintiffs claimed that the 1990 count of people living in shelters or present at pre-identified street sites was ". . . so arbitrarily limited in scope and deficient in execution as to be useless as a count of even a segment of the homeless population."<sup>249</sup>

Plaintiffs included the cities of Baltimore and San Francisco, shelters and service providers, advocacy organizations, and homeless persons and registered voters from the named jurisdictions. The defendants in the case were the Census Bureau, the Department of Commerce, and the Secretary of Commerce.

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<sup>240</sup> *Wisconsin v. City of New York*, 517 U.S. 1 (1996).

<sup>241</sup> *Ibid.*, p. 24.

<sup>242</sup> *Ibid.*, p. 19. In *Department of Commerce v. Montana* (503 U.S. 442 (1992)), the Court upheld the use of the equal proportions apportionment formula. In *Franklin v. Massachusetts* (505 U.S. 788 (1992)), the Court upheld the inclusion in the apportionment counts of overseas military and federal civilian personnel and their dependents living with them. For summaries of these cases, see U.S. Census Bureau, *1990 Census of Population and Housing History, Part D*, 1990 CPH-R-2D (Washington, DC: Government Printing Office, 1996), pp. 12-14-12-16.

<sup>243</sup> *Ibid.*, p. 20.

<sup>244</sup> *Ibid.*, p. 23.

<sup>245</sup> *Ibid.*, p. 24, citing *Franklin*, 505 U.S., at 806.

<sup>246</sup> *Ibid.*, p. 19, fn. 9.

<sup>247</sup> *Ibid.*, p. 19, fn. 11.

<sup>248</sup> *National Law Center on Homelessness and Poverty v. Brown*, Civ. A. No. 92-2257, U.S.D.C. for the District of Columbia, Complaint for Declaratory and Injunctive Relief. Shelter and Street Night was a census operation that took place during the evening hours of March 20 and the early morning hours of March 21, 1990. It was designed to count persons living in pre-identified public shelters (including those for abused women) and places of commerce such as bus or train stations, and persons visible on the streets. For a more detailed description of the operation, see U.S. Census Bureau, *1990 Census of Population and Housing, History, Part A* 1990 CPH-R-2A (Washington, DC: Government Printing Office, 1993), pp. 6-52-6-53.

<sup>249</sup> Complaint for Declaratory and Injunctive Relief, p. 5.

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Advocacy organization plaintiffs argued they were injured by S-Night results and the Census Bureau's inadequate disclaimer regarding the comprehensiveness of the data<sup>250</sup> because they needed to expend considerable resources to counter "misinformation" resulting from the release of S-Night counts,<sup>251</sup> which they claimed substantially understated the "true" homeless population.<sup>252</sup>

Plaintiffs who were recipients (both direct and indirect) of federal funds—municipalities, shelters and service providers, and individual homeless persons—contended they lost or would lose federal monies from programs that utilize census data in allocating funds as a result of the deficient S-Night counts.<sup>253</sup>

Individual registered voters who were parties to the suit claimed that the undercount of the homeless population would result in dilution of their vote, in violation of the constitutional requirement of equal representation.<sup>254</sup>

Finally, plaintiffs contended that defendants' actions violated the Constitution, the APA, and other laws affecting the homeless.<sup>255</sup>

The plaintiffs requested that the court require the defendants to (among other things):

- (1) Include a disclaimer as to the accuracy of S-Night figures on all releases of the data and provide such notice to the highest-elected official of each state and local government in the United States and to the heads of relevant federal agencies.
- (2) Recount the homeless population using such techniques as sampling and estimation and incorporate the results of this recount into the 1990 census counts.
- (3) Use the results of such count for all relevant funding allocations.
- (4) Employ similar statistical techniques to count the homeless in the 2000 decennial census.<sup>256</sup>

The district court heard oral argument in July 1993 and issued its ruling on September 15, 1994, in which it dismissed the suit.<sup>257</sup>

Citing the *Franklin* case, the court ruled that the appropriate standard of review in census cases was not the APA standard, but a constitutional one.<sup>258</sup> It found that the Census Bureau's

. . . alleged failure to count the homeless is not tantamount to a failure to perform their constitutional duty to conduct the decennial census. The Constitution does not provide individuals with a right to be counted. . . . Nor did defendants discriminate against the homeless in violation of the Equal Protection Clause. Homeless persons are not a suspect class. . . . Accordingly, plaintiffs must show intentional discrimination by the Census Bureau in order to make out an equal protection claim. . . . [T]he undisputed facts about S-Night's development and application of special methods for counting the homeless preclude a constitutional claim of intentional neglect.<sup>259</sup>

The plaintiffs appealed this decision to the U.S. Court of Appeals for the District of Columbia Circuit in October 1994. That court heard oral argument in October 1995 and issued its decision on August 9, 1996.

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<sup>250</sup> *Ibid.*, at ¶¶ 98–100.

<sup>251</sup> *Ibid.*, at ¶ 44.

<sup>252</sup> *Ibid.*, at ¶¶ 62–65.

<sup>253</sup> *Ibid.*, at ¶¶ 42 and 43.

<sup>254</sup> *Ibid.*, at ¶ 46.

<sup>255</sup> These other laws include 13 U.S.C. § 141 and 2 U.S.C. § 2a. *Ibid.*, pp. 5–6.

<sup>256</sup> *Ibid.*, pp. 35–36.

<sup>257</sup> *National Law Center on Homelessness and Poverty v. Brown*, Civ. A. No. 92-2257, 1994 WL 521334 (D.D.C. Sept. 15, 1994). This case was not selected for publication in the *Federal Supplement*.

<sup>258</sup> *Ibid.*, at \*7, citing *Franklin v. Massachusetts* (112 S.Ct., at 2777 (1992)).

<sup>259</sup> *Ibid.*, at \*8.

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The U.S. Court of Appeals for the District of Columbia Circuit affirmed the district court's ruling in favor of the defendants, although on different grounds.<sup>260</sup> It noted that the lower court did not address the issue of standing,<sup>261</sup> but instead made its ruling on the merits of plaintiffs' claims. The Court of Appeals determined that it was first appropriate to decide whether plaintiffs—any of them—had standing to bring their suit, before addressing the substance of their complaint. However, because the Court of Appeals in fact determined that plaintiffs *did not* have standing, as discussed below, it did not need to address the merits of the case.

The court determined that none of the plaintiffs could demonstrate suffering a concrete injury and none was likely to suffer injury as a result of defendants' actions in the conduct of S-Night. For example, the court noted that plaintiff advocacy organization the National Law Center on Homelessness and Poverty (NLC) had expended resources to collect and disseminate data and information on the homeless population before and after the conduct of S-Night, and these appeared to be ordinary program expenditures for the organization, so the NLC would have expended resources on these activities regardless of the particular conduct and results of S-Night. Thus, the court concluded, it cannot be said that the NLC was injured by defendants' actions.<sup>262</sup>

With regard to plaintiff recipients of federal funds, the court stated that one cannot specifically determine the effect a given methodology for counting the homeless would have on the federal funding of a particular plaintiff recipient. In fact, an improved count's effect on any recipient depends both on the use to which census data are put in a given program and on the methodology's effect on the counts of other recipients. Given that in most federal programs the disbursement of funds is based on a fixed sum, the court reasoned a more accurate recount might enlarge some communities' shares, but at the same time, reduce the shares of other communities (including possibly, the plaintiff municipalities). This situation would occur because even though the latter communities' counts would be larger than before, they would show smaller proportional increases than the counts of localities whose funding shares would increase.<sup>263</sup>

Additionally, the court found that none of the plaintiffs demonstrated that the Census Bureau's implementation of its S-Night procedures *caused* the alleged injuries nor was any plaintiff able to establish that the use of proffered alternative methodologies likely would result in significantly different outcomes.<sup>264</sup> For example, with regard to the vote dilution claim of the individual plaintiffs, the court determined that the plaintiffs could not demonstrate that a different counting method would not only have resulted in greater numbers of homeless being counted, but would have relieved the dilution of their votes.<sup>265</sup> Therefore, the court determined that plaintiffs also had failed to meet the causation and redressability requirements of standing.

The plaintiffs did not appeal the Court of Appeals ruling.

***Slattery v. Clinton (originally filed as Lanoue v. Clinton)***. This suit, in its original incarnation, was filed by Spencer Roff Lanoue and other plaintiffs in the US. District Court for the District of Connecticut on March 31, 1993. The plaintiffs were parents and their children who were conceived but not born prior to April 1, 1990 (Census Day).

The plaintiffs claimed that the Census Bureau's deliberate exclusion from the 1990 census counts of children born within 9 months after April 1, 1990, undermined the right of the adult plaintiffs to their fair share of representation in the U.S. House of Representatives, in violation of the Census Clause (Article I, Section 2, Clause 3) of the Constitution as amended by Section 2 of the

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<sup>260</sup> *National Law Center on Homelessness and Poverty v. Kantor*, No. 94-5312, 1996 WL 446791 (D.C.Cir., 1996).

<sup>261</sup> Defined briefly, "standing to sue" is a concept used to determine if the plaintiff is sufficiently affected by the action at issue so that the claim can be adjudicated by a court. To establish standing, plaintiffs must demonstrate that (1) they have suffered an injury, (2) the injury was caused by the defendant, and (3) the injury is redressable by the court. *Lujan v. Defenders of Wildlife*, 504 U.S. 555, 561, 112 S.Ct. 2130, 119 L.Ed.2d 351 (1992); *Allen v. Wright*, 468 U.S. 737, 751, 104 S.Ct. 3315, 82 L.Ed.2d 556 (1984).

<sup>262</sup> *National Law Center on Homelessness and Poverty v. Kantor*, No. 94-5312, 1996 WL 446791, at \*5.

<sup>263</sup> *Ibid.*, at \*\*6–8.

<sup>264</sup> *Ibid.*, at \*\*5–6.

<sup>265</sup> *Ibid.*, at \*\*8–9.

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Fourteenth Amendment to the Constitution. Plaintiffs sought to have the 1990 census counts “corrected” to include these individuals.<sup>266</sup> The defendants were Bill Clinton, President of the United States; William M. Daley, Secretary of the Department of Commerce; and the Director of the Census Bureau.

For procedural reasons, the suit was initially dismissed “without prejudice”—meaning that plaintiffs would be permitted to refile their suit—and on April 1, 1996, with the Lanoue child and parents no longer party to the suit and the addition of new plaintiffs John, Christopher, and Eileen Slattery of New York, the suit was recommenced in the U.S. District Court for the Southern District of New York. Plaintiffs’ claims remained the same, and on March 28, 1997, the district court granted defendants’ motion to dismiss. The court ruled that plaintiffs had failed to establish standing, because they did not provide evidence that counting unborn fetuses would have produced a different (and more favorable) apportionment of representatives.<sup>267</sup> The court went on to note that even if plaintiffs were provided an opportunity to amend their complaint to provide such evidence, their claims would fail on the merits.

Thus, the court rejected plaintiffs’ claim that the term “persons” as it is used in the Census Clause and Section 2 of the Fourteenth Amendment includes fetuses. Rather, the court cited the decision in *Roe v. Wade*,<sup>268</sup> in which the Supreme Court held that the word “person” as it is used in Section 1 of the Fourteenth Amendment does not include the unborn. The court noted that it was appropriate to interpret the word “person” (or “persons”) in the Apportionment Clauses in the same manner in which it is interpreted with regard to Section 1 of the Fourteenth Amendment. Thus, the district court rejected plaintiffs’ constitutional claim, noting that there was no constitutional requirement to attempt to include fetuses in the census apportionment counts.<sup>269</sup>

Plaintiffs appealed the district court ruling to the U.S. Court of Appeals for the Second Circuit. However, on June 16, 1997, the Second Circuit Court dismissed the appeal because plaintiffs failed to meet the filing requirements after filing their notice of appeal.

### Census 2000 Litigation

For summary information about the Census 2000 lawsuits, see Table 11-6 at the end of this section.

***Clinton v. Glavin and Department of Commerce v. U.S. House of Representatives.*** These two lawsuits, challenging the legality and constitutionality of the planned uses of sampling to produce the apportionment counts in Census 2000,<sup>270</sup> were filed in February 1998.

*Glavin v. Clinton* (as filed) was filed in the U.S. District Court for the Eastern District of Virginia, Alexandria Division, on February 12 by Matthew Glavin (then-president of the Atlanta-based Southeastern Legal Foundation); Robert Barr, individually and in his capacity as a member of the U.S. House of Representatives (R-GA); William J. Byrn, individually and in his official capacity as Cobb County (GA) Commission Chairman; Cobb County, Georgia; Bucks County, Pennsylvania; Delaware County, Pennsylvania; DuPage County, Illinois; and residents of Georgia, Indiana, Pennsylvania, Ohio, Virginia, Florida, Connecticut, California, Nevada, Arizona, New Jersey, Montana, Wisconsin, and Illinois.

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<sup>266</sup> U.S. Census Bureau, *1990 Census of Population and Housing, History, Part A*, 1990 CPH-R-2A (Washington, DC: Government Printing Office, 1993), pp. 12-18 and 12B-4; and summary of case history in *Slattery v. Clinton*, No. 96 Civ. 2366 DLC, 1997 WL 148235, at \*1 (S.D.N.Y. March 28, 1997). This case was not selected for publication in the *Federal Supplement*. Section 2 of the Fourteenth Amendment to the Constitution reads, in part: “Representatives shall be apportioned among the several States according to their respective numbers, counting the whole number of persons in each State. . . .”

<sup>267</sup> *Slattery v. Clinton*, No. 96 Civ. 2366 DLC, 1997 WL 148235, at \*2. In her decision, the district court judge raised the practical difficulty of knowing, as of Census Day, which fetuses would result in live births. *Ibid.* at \*1, fn. 2.

<sup>268</sup> 410 U.S. 113 (1973).

<sup>269</sup> *Slattery v. Clinton*, No. 96 Civ. 2366 DLC, 1997 WL 148235, at \*3.

<sup>270</sup> *Glavin* plaintiffs also contended that the Census Bureau’s planned use of sampling in the census would result in their loss of political representation at the intrastate level (as a result of the issuance of statistically adjusted redistricting data) and of federal funding. *Glavin v. Clinton*, Civ. A. No. 98-207-A, U.S.D.C. for the Eastern District of Virginia, Alexandria Division, Complaint for Declaratory and Injunctive Relief, ¶¶ 60–61 and ¶ 67.



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The defendants were William J. Clinton, President of the United States; the U.S. Department of Commerce; William M. Daley, Secretary of the Department of Commerce; the U.S. Bureau of the Census; and James F. Holmes, Acting Director of the Bureau of the Census.

Numerous individuals and entities intervened in the case on behalf of the defendants. Additionally, a number of *amicus curiae* briefs were filed—some on behalf of the defendants, others on behalf of the plaintiffs.

*U.S. House of Representatives v. Department of Commerce* (as filed) was brought by the U.S. House leadership on behalf of the U.S. House of Representatives and filed on February 20 in the U.S. District Court for the District of Columbia. Defendants included the U.S. Department of Commerce; William M. Daley, Secretary of the Department of Commerce; the U.S. Bureau of the Census; and James F. Holmes, Acting Director of the Bureau of the Census.

Parties that intervened on behalf of the defendants in the *Glavin* suit intervened or sought to intervene on defendants' behalf in this case, and a number of *amicus* briefs were also filed in this case. In both cases, plaintiffs sought a declaration that the proposed uses of sampling violated the Census Act and the Census Clause of the Constitution and sought an injunction barring their use in Census 2000 for apportionment purposes.

In the *U.S. House of Representatives* case, the court issued its decision and order on August 24, 1998. With regard to the issue of the plaintiff's standing to bring the suit, the three-judge district court ruled that the House had “. . . properly alleged a judicially cognizable injury through [1] its right to receive information by statute and through [2] the institutional interest in its lawful composition. . . .”<sup>271</sup> On the merits, the court ruled that Section 195 of Title 13 prohibited the use of sampling to produce the apportionment counts and permanently enjoined the Census Bureau from implementing its planned uses of statistical sampling to produce the apportionment counts in Census 2000. Defendants appealed the district court ruling to the U.S. Supreme Court, and the Court noted probable jurisdiction on September 10, 1998.

On September 24, the district court panel in the *Glavin* case also ruled that Section 195 barred the use of sampling (both proposed uses) in the production of the apportionment counts and permanently enjoined its use. The executive branch appealed the district court ruling to the Supreme Court of the United States, and on October 9, the Court noted probable jurisdiction. The Supreme Court agreed to hear the cases<sup>272</sup> and consolidated them for oral argument, which took place on November 30, 1998. A number of *amicus* briefs were filed in the Supreme Court—some on behalf of the appellees and others on behalf of the appellants.

On January 25, 1999, the Supreme Court ruled, in *Department of Commerce v. U.S. House of Representatives*, that Section 195 of the Census Act<sup>273</sup> precludes the use of sampling to produce the congressional apportionment counts.<sup>274</sup>

Justice O'Connor delivered the five-justice majority opinion. Justice Scalia wrote a concurring opinion; Justice Breyer filed a dissenting opinion; and Justice Stevens filed a dissenting opinion, joined in by Justices Souter and Ginsburg.

The Supreme Court ruled that *Glavin* plaintiffs had established standing with regard to their claims of interstate and intrastate vote dilution (claims under Article I, Section 2 and Section 2 of the Fourteenth Amendment to the Constitution). With their motion for summary judgment submitted in district court, plaintiffs had filed an affidavit by Dr. Ronald F. Weber <sup>275</sup> that claimed that “[i]t is a virtual certainty that Indiana will lose a seat . . . under the Department's Plan [to use sampling in the Integrated Coverage Measurement (ICM) program].”<sup>276</sup> The Supreme Court contended that,

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<sup>271</sup> *U.S. House of Representatives v. Department of Commerce*, 11 F.Supp.2d 76, 85 (D.D.C. Aug. 24, 1998).

<sup>272</sup> *Clinton v. Glavin* (No. 98-564) and *Department of Commerce v. U.S. House of Representatives* (No. 98-404).

<sup>273</sup> Title 13, U.S. Code, the Census Act, provides the statutory authority for the Census Bureau's conduct of censuses and surveys, including the decennial census.

<sup>274</sup> *Department of Commerce v. U.S. House of Representatives* (525 U.S. 316, 119 S.Ct. 765 (1999)).

<sup>275</sup> A professor of government at the University of Wisconsin–Milwaukee.

<sup>276</sup> Affidavit of Dr. Ronald F. Weber, App. in No. 98-564, at 65.

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while citing flaws in Dr. Weber’s statistical analysis, the defendants’ experts did not refute his ultimate conclusion regarding the State of Indiana’s apportionment. Indiana residents’ votes would therefore be diluted vis-a-vis residents of other states—demonstration of a concrete harm to and thereby establishing standing for plaintiff Hofmeister, a resident of Indiana.

Additionally, the Court ruled that *Glavin* plaintiffs living in particular counties established that they were substantially likely to suffer (intrastate) vote dilution vis-a-vis residents of other parts of those states with larger net undercount rates, noting that several of these states require the use of decennial census population counts to carry out state legislative redistricting. Plaintiffs’ contention of intrastate vote dilution was based on an analysis contained in the Weber affidavit, and the Court concluded that appellants (executive branch entities and officials) were not able to satisfactorily refute his conclusion that the Census Bureau’s implementation of the ICM would cause a loss in population share for counties in which plaintiffs reside, thereby resulting in the dilution of their votes. The justices agreed with plaintiffs’ contention that these harms could be traced directly to the proposed use of sampling and that enjoining its use would relieve them of the likely injuries.

In addressing the substantive issue of the two cases, the Court examined the provisions of the Census Act in question, Sections 141 and 195. Section 141(a) requires the Secretary of Commerce to conduct a “. . . decennial census of population . . . in such form and content as he may determine, including the use of sampling procedures and special surveys.” Section 195 reads as follows:

Except for the determination of population for purposes of apportionment of Representatives in Congress among the several States, the Secretary shall, if he considers it feasible, authorize the use of the statistical method known as ‘sampling’ in carrying out the provisions of this title.

When Congress amended Title 13 in 1976, one of the revisions involved Section 195. The phrase “the Secretary may, where he deems it appropriate” was changed to “the Secretary shall, if he considers it feasible.” The Clinton administration interpreted the revised except/shall language to mean that Congress made (through the 1976 amendments) sampling permissible for apportionment purposes, but obligatory (*shall*) for all other purposes (upon a determination of feasibility). The Court did not accept that interpretation, noting that for over 200 years federal statutes clearly prohibited the use of sampling to produce the apportionment counts. The Opinion of the Court noted that the Solicitor General (representing the executive branch) argued before the Supreme Court in *Klutznick v. Young*<sup>277</sup> that “. . . 13 U.S.C. 195 prohibits the use of statistical ‘sampling methods’ in determining the state-by-state population totals.”<sup>278</sup> The Court further noted that the executive branch did not change its position on this interpretation until 1994, when the Clinton administration Assistant Attorney General, in a memorandum to the Solicitor General, concluded that using statistical sampling to adjust census figures was consistent with the Census Act.

The Opinion of the Court concluded that if Congress had intended to permit such a dramatic change (with the 1976 amendment) to the way in which the apportionment counts were produced, it would have been abundantly clear in both the plain text and the legislative history. Thus, the Court ruled, when Congress amended Section 195 of Title 13 in 1976,

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<sup>277</sup> A 1980 census lawsuit dealing with the issue of statistical adjustment. *Young v. Klutznick*, 652 F.2d 617 (CA6 1981). The 1980 census adjustment litigation is briefly discussed in U.S. Census Bureau, *1980 Census of Population and Housing, History, Part E, PHC80-R-2E* (Washington, DC: Government Printing Office, 1989), p. 10-8.

<sup>278</sup> *Department of Commerce v. U.S. House of Representatives*, 525 U.S. 340. In fact, as recently as 1990, the executive branch argued in *City of New York* (the 1990 census adjustment lawsuit discussed earlier) that the use of sampling for apportionment purposes was not permitted by Title 13, U.S. Code, Section 195: “Notwithstanding plaintiffs’ disingenuous claim that no court has ever held that a ‘correction’ of the enumeration is illegal or unconstitutional, . . . the decision in *Orr v. Baldrige* . . . would bar the ‘correction’ [that is, statistical adjustment based on sampling] plaintiffs seek because it held that apportionment counts cannot be derived from sampling.” *City of New York v. U.S. Department of Commerce*, 88-Civ-3474 (JMCL), U.S.D.C. for the Eastern District of New York, Defendants’ Opposition to Plaintiffs’ Motion for a Supplemental Order to Enforce the Court’s July 17, 1989, Order and for Declaratory Judgment, May 3, 1990, p. 11, fn. 7.

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[it] . . . changed a provision that permitted the use of sampling for purposes other than apportionment into one that required that sampling be used for such purposes if ‘feasible.’ They also added to the existing delegation of authority to the Secretary to carry out the decennial census a statement indicating that despite the move to mandatory use of sampling in collecting non-apportionment information, the Secretary retained substantial authority to determine the manner in which the decennial census is conducted.<sup>279</sup>

The majority also rejected the interpretation of Section 195 in Justice Breyer’s opinion. He contended that sampling was permitted so long as it was not used as a substitute for traditional census-taking methods; that is, it was permissible so long as it was utilized only as a “supplement” to the traditional methods. The Court found this interpretation unpersuasive, arguing that even if it were only used to supplement the count, one would still be using sampling “for the determination of population for purposes of apportionment” [the language in Section 195].

Justice Breyer had argued that “Integrated Coverage Measurement would not substitute for, but rather would supplement, a traditional headcount, and it would do so to achieve the basic purpose of the statutes that authorize the headcount—namely, accuracy.”<sup>280</sup> He conceded that the nonresponse follow-up operation would use sampling to complete the initial “count,” but contended that because the number of people so estimated was “. . . sufficiently small, as a portion of the total population,”<sup>281</sup> this use of sampling could still be considered a “supplement” to the enumeration as well.

The Opinion of the Court also noted that the legislative history does not support appellants’ interpretation of Section 195. Had the legislators intended such an interpretation of the language, the Court argued, it is hard to imagine no legislator speaking out on what would amount to a fundamental change to the way the census is taken. Yet the debate during consideration of the 1976 amendments, according to the Opinion of the Court, revealed no such discussions, because such a fundamental change was not intended.

The Court did not address the constitutionality of sampling, having determined sampling’s use for purposes of apportionment violated Section 195. However, in Part II of his concurring opinion—in which Justices Thomas, Rehnquist, and Kennedy joined—Justice Scalia questioned the constitutionality of the use of sampling for apportionment purposes:

For reasons of text and tradition, fully compatible with a constitutional purpose that is entirely sensible, a strong case can be made that an apportionment census conducted with the use of “sampling techniques” is not the “actual Enumeration” that the Constitution requires.<sup>282</sup>

He also noted that the executive branch itself had made that argument in *Young v. Klutznick*.<sup>283</sup>

Justice Stevens, in his dissenting opinion (in which he adopted appellants’ position on the interpretation of Title 13, U.S. Code, Section 195), also weighed in on the constitutional issue, but came to the opposite conclusion as Justice Scalia. Justice Stevens contended that “[t]he words ‘actual Enumeration’ require . . . apportionments to be based on actual population counts, rather than mere speculation or bare estimate, but they do not purport to limit the authority of Congress to direct the ‘Manner’ in which such counts should be made.”<sup>284</sup> He noted “[t]he census is intended to serve ‘the constitutional goal of equal representation.’ That goal is best served by the use of a ‘Manner’ that is most likely to be complete and accurate.”<sup>285</sup> Thus, he argued, because “. . . it is perfectly clear that the use of sampling will make the census more accurate . . .,”<sup>286</sup> its use for apportionment purposes would pass constitutional muster.

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<sup>279</sup> *Department of Commerce v. U.S. House of Representatives*, 525 U.S. 341.

<sup>280</sup> *Ibid.*, Opinion of Justice Breyer, p. 353.

<sup>281</sup> *Ibid.*, p. 356.

<sup>282</sup> *Ibid.*, Opinion of Justice Scalia, p. 349.

<sup>283</sup> *Ibid.* *Young v. Klutznick*, 497 F.Supp. 1318, 1332 (E.D.Mich. 1980), *rev’d*, 652 F.2d 617 (CA6 1981).

<sup>284</sup> *Ibid.*, Opinion of Justice Stevens, p. 363.

<sup>285</sup> *Ibid.*, p. 364.

<sup>286</sup> *Ibid.*

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Finally, because the Court's sustaining of the lower court's ruling in *Glavin* addressed the substantive issue in *U.S. House of Representatives*, the justices determined that there was no need to rule separately on the latter case, and thus dismissed it (although the Supreme Court case retains the name *Department of Commerce v. U.S. House of Representatives*).

***Utah v. Evans (Evans I)***.<sup>287</sup> On January 10, 2001, the State of Utah and other plaintiffs, including Utah elected officials and four residents of Utah serving overseas as Mormon missionaries at the time of Census 2000, filed suit in federal district court, claiming that the “. . . Defendants' failure, in the most recent census, to count missionaries of the Church of Jesus Christ of Latter-day Saints (‘the LDS Church’) who are temporarily serving abroad on the same terms as federal employees temporarily serving abroad”<sup>288</sup> would cause the state to be denied a fourth seat in the U.S. House of Representatives. A three-judge panel was convened pursuant to Title 28, U.S. Code, Section 2284.<sup>289</sup>

In Census 2000, as in the 1990 census, the apportionment numbers included counts of overseas military and federal civilian personnel and their dependents living with them. The overseas households were allocated to particular states based on “home of record” data in their personnel records.

Defendants in the suit included Norman Y. Mineta, Secretary of Commerce, and Kenneth Prewitt, Director, U.S. Census Bureau.

According to the complaint, approximately 10,000 LDS missionaries were serving abroad at the time of Census 2000, and a “. . . correspondingly large proportion of . . . [them] reside in Utah and return there after completing their service.”<sup>290</sup> Had these persons been included in the apportionment counts, plaintiffs contended, Utah would receive a fourth House seat. Instead, that seat was slated to be awarded to North Carolina. Plaintiffs also contended that had the overseas federally affiliated households not been included in the apportionment numbers, Utah would receive a fourth seat.

Among other things, plaintiffs sought an order directing the defendants to include in the Census 2000 apportionment counts those missionaries of the LDS Church who were temporarily serving abroad at the time of the census. Alternatively, plaintiffs requested that the U.S. District Court for the District of Utah, Central Division, issue an injunction requiring defendants to remove counts of the overseas federally affiliated persons from the apportionment figures.<sup>291</sup> Plaintiffs also sought a declaration that in failing to include in the apportionment counts LDS missionaries serving abroad, the “. . . Census Bureau's disparate treatment of similarly-situated citizens”<sup>292</sup> was unconstitutional under the Apportionment Clause, Equal Protection and Due Process Clauses, and Section 2 of the Fourteenth Amendment; arbitrary and capricious under the Administrative Procedure Act (APA); and in violation of Title 2, U.S. Code, Section 2a, the Religious Freedom Restoration Act (RFRA), and the Census Act.

With regard to their claim under the RFRA, plaintiffs contended that “[d]efendants' disparate treatment of U.S. citizens temporarily living abroad substantially burdens the free exercise of the LDS faith” and “. . . frustrates, rather than furthers, the compelling governmental interests associated with the census,”<sup>293</sup> thereby resulting in a violation of the act.

Given the State of North Carolina's interest in the matter—if Utah prevailed, the 435th seat would be assigned to Utah instead of North Carolina—that state, its governor, lieutenant governor, attorney general, the majority and minority leaders of the two houses of the North Carolina legislature,

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<sup>287</sup> Because the State of Utah and other plaintiffs in this suit later filed a second suit against the Secretary of Commerce (Donald Evans) and Census Bureau Director, this suit is sometimes referred to as *Evans I*.

<sup>288</sup> *Utah v. Evans*, No. 2:01CV0023B, in the U.S.D.C. for the District of Utah, Central Division, Plaintiffs' First Amended Complaint for Declaratory and Injunctive Relief, p. 2.

<sup>289</sup> *Utah v. Evans*, 143 F.Supp.2d 1290, 1293 (D.Utah April 17, 2001).

<sup>290</sup> Plaintiffs' First Amended Complaint at ¶ 39.

<sup>291</sup> *Ibid.*, at ¶ 3.

<sup>292</sup> *Ibid.*, at ¶ 8.

<sup>293</sup> *Ibid.*, at ¶ 72.

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and the state's entire congressional delegation filed a motion to intervene in the suit on the side of defendants; the court granted the motion.<sup>294</sup>

On April 13, 2001, plaintiffs filed a Motion for Leave to File a Third Amended Complaint. Through a third amended complaint, plaintiffs sought to add a claim alleging that had the Census Bureau not employed the use of "hot-deck" count imputation in producing the Census 2000 apportionment counts, Utah would have received one additional seat for a total of four seats in the U.S. House of Representatives. On April 17, the three-judge panel of the district court denied plaintiffs' motion,<sup>295</sup> and the plaintiffs later filed the imputation claim as a separate lawsuit. That case, also styled as *Utah v. Evans (Evans II)*, is discussed below.

Also on April 17, the district court issued its opinion granting defendants' and intervenors' cross-motions for summary judgment and denying plaintiffs' motion for summary judgment.<sup>296</sup>

With regard to their RFRA claim, the court held that the plaintiffs (the four Utah residents who were on overseas LDS missions at the time of Census 2000)

" . . . present[ed] nothing more than conclusory and completely speculative allegations that their practice of religion or religious beliefs were burdened in any way by the Census Bureau's decision not to enumerate LDS missionaries who were abroad on Census Day 2000."<sup>297</sup>

Additionally, the court determined that the Census Bureau's inclusion of federally affiliated households in the apportionment counts, but not other groups of Americans overseas, did not violate the Census Act.

The court further held that the ruling in *Franklin v. Massachusetts* (505 U.S. 788 (1992)) foreclosed the possibility of a claim under the APA.<sup>298</sup> In that case, plaintiffs challenged, among other things, the Census Bureau's inclusion of overseas federally affiliated households in the 1990 census apportionment counts, which the Supreme Court upheld.<sup>299</sup> With regard to the APA, the Supreme Court held that the Secretary of Commerce's transmittal of state population totals to the President of the United States was not a final agency action reviewable under the APA, because the apportionment counts were not final until the President took affirmative steps to calculate and transmit the apportionment to Congress.<sup>300</sup> Furthermore, the Court noted that the President's action was not subject to review under the APA, because that office is not an agency within the meaning of the act.

Finally, the district court examined plaintiffs' claims under the Constitution. The court noted that if it were to direct the Census Bureau to include LDS missionaries abroad in the Census 2000 apportionment counts, such action would clearly favor Utah vis-a-vis all other states. It went on to further note that *Franklin* established that ". . . the 'constitutional goal' underlying the Apportionment Clause is 'equal representation'."<sup>301</sup> The court therefore concluded "[g]iven that the goal of apportionment is 'to achieve a fair apportionment for the *entire country* [emphasis added],' . . . commanding the enumeration of one group from one state obviously fails to further the constitutional goal of 'equal representation.' Indeed, inclusion of one such group to the clear advantage of one state would seem to undermine another goal of the Apportionment Clause, which is distributive accuracy."<sup>302</sup>

The court also noted that if it were to order the defendants to include LDS missionaries in the apportionment counts, there would likely be similar constitutional challenges brought by other groups of Americans overseas (business people, students, members of other religious institutions,

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<sup>294</sup> *Utah v. Evans*, 143 F.Supp.2d 1290.

<sup>295</sup> *Utah v. Evans*, No. 2:01CV0023B, in the U.S.D.C. for the District of Utah, Central Division, Order of April 17, 2001.

<sup>296</sup> *Utah v. Evans*, 143 F.Supp.2d 1290, 1293.

<sup>297</sup> *Ibid.*, p. 1297.

<sup>298</sup> *Ibid.*, p. 1295.

<sup>299</sup> For a summary of the *Franklin* case, see U.S. Census Bureau, *1990 Census of Population and Housing, History, Part D*, 1990 CPH-R-2D (Washington, DC: Government Printing Office, 1996), pp. 12-14-12-16.

<sup>300</sup> *Franklin*, 505 U.S. 799.

<sup>301</sup> *Utah v. Evans*, 143 F.Supp.2d 1298, citing *Franklin*, 505 U.S. 806.

<sup>302</sup> *Ibid.*, citing *U.S. Department of Commerce v. Montana*, 503 U.S. 442, 464 (1992).

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etc.). Moreover, the court opined, “. . . the inclusion of various other groups of private American citizens abroad . . . [would] invite the kind of manipulation by states or the injection of local or parochial bias which the founders wished to avoid.”<sup>303</sup>

With regard to plaintiffs’ alternative requested remedy—that the defendants be required to remove counts of the overseas federally affiliated persons from the apportionment totals—the court relied on the *Franklin* case in which the Supreme Court found that the Secretary’s decision to include these persons in the apportionment counts was

. . . consonant with, though not dictated by, the text and history of the Constitution. . . . The Secretary’s judgment does not hamper the underlying constitutional goal of equal representation, but, assuming that employees temporarily stationed abroad have indeed retained their ties to their home States, actually promotes equality.<sup>304</sup>

The court noted that the *Franklin* ruling discussed how the federally affiliated households were a unique group of overseas Americans. With regard to methodological concerns, they had retained their ties to particular states and could be reliably counted. Also, there was bipartisan support in Congress for their inclusion in the 1990 census apportionment counts. Furthermore, their overseas posting was involuntary, that is, at the behest of their government, which differentiated them from most other groups of Americans overseas. In addition, the district court noted that the

. . . evidence presented in this case indicates that, while the distribution of federal overseas employees among the fifty states does not precisely mirror the distribution of resident state populations, it also does not present any extreme variations among the states.<sup>305</sup>

Thus, the court concluded in its April 17, 2001, ruling that the Secretary’s decision to only include federally affiliated overseas Americans in the Census 2000 apportionment counts was “. . . a rational exercise of the Secretary’s discretion, delegated to the Census Bureau, to conduct its obligation to enumerate the population for apportionment purposes.”<sup>306</sup>

Plaintiffs subsequently filed a petition for writ of *certiorari* in the U.S. Supreme Court.<sup>307</sup> On November 26, 2001, the Court issued a summary affirmation (without hearing the case) of the April 17, 2001, judgment of the three-judge panel of the district court.<sup>308</sup>

***Utah v. Evans (Evans II)***. On April 25, 2001, the State of Utah and other plaintiffs, including Utah elected officials and four residents of the state, filed a second lawsuit (discussion of the first one immediately precedes this summary) relating to Census 2000, this one contending that the state lost a seat in the U.S. House of Representatives as a result of the Census Bureau’s use of “hot-deck” count imputation in producing the apportionment counts.<sup>309</sup> Plaintiffs argued that had count imputation not been used, Utah, rather than the state of North Carolina, would have been awarded the 435th House seat.<sup>310</sup>

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<sup>303</sup> *Ibid.*, p. 1301.

<sup>304</sup> *Ibid.*, p. 1299, citing *Franklin*, 505 U.S. 806.

<sup>305</sup> *Ibid.*, p. 1301.

<sup>306</sup> *Ibid.*

<sup>307</sup> In apportionment cases, the Supreme Court serves as the immediate appellate court for the three-judge panel of the district court.

<sup>308</sup> *Utah v. Evans, aff’d*, 534 U.S. 1038 (2001) (*Evans I*).

<sup>309</sup> The use of hot-deck count imputation was previously challenged in connection with the 1980 census in *Orr v. Baldrige*, No. IP81604C, slip. op. (S.D.Ind. July 1, 1985). The district court in that case upheld its use. For a summary of the lawsuit, see U.S. Census Bureau, *1980 Census of Population and Housing, History, Part E, PHC80-R-2E* (Washington, DC: Government Printing Office, 1989), pp. 10-8–10-9.

<sup>310</sup> *Utah v. Evans*, No. 2:01CV00292G, in the U.S.D.C. for the District of Utah, Central Division (*Evans II*), Complaint for Declaratory and Injunctive Relief, ¶ 41.

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## Background Information <sup>311</sup>

Count imputation in Census 2000 consisted of three distinct processes.<sup>312</sup> The first, known as status imputation, was designed by the Census Bureau to be used when it has ambiguous or conflicting information about the existence of a structure at a reported address or about the function of the structure—a housing unit as opposed to, say, a business establishment. The Census Bureau knows from past experience that some percentage of these questionable addresses are actual housing units; thus the accuracy of the census would decrease if the agency were to assume that none of them existed and deleted them all from the master address file (MAF). Instead, the agency uses the statistical process known as “hot-deck” imputation to assign a status—nonexistent, vacant, or occupied.

Under the assumption that housing unit status and household size are most similar among housing units that are close to each other, the Census Bureau uses the status (nonexistent, vacant, or occupied) of the geographically closest address and imputes that status to the unit/address with unknown status. Because the “donor” pool contains status information—obtained through enumerator-completed forms—from the continuously updated census files, this imputation method is known as “hot-deck.” Thus, through the process of status imputation, housing units/addresses that previously had unknown statuses are deemed nonexistent, vacant, or occupied. If the unit is imputed as occupied, then the size (population count) of the donor household is assigned to the unit.

The second imputation process is used when a housing unit is known to exist, but the Census Bureau has ambiguous or conflicting information about whether or not the unit is occupied and therefore cannot determine the occupancy situation. The Census Bureau knows that some number of these housing units are actually occupied, so decreased accuracy would result if the agency were to assume that all of them were vacant and thus assign a “zero” population count to the units. Instead, the Census Bureau again uses “nearest neighbor” hot-deck imputation, with the donor pool being enumerator-completed forms for vacant and occupied housing units. Thus, a housing unit with previously undetermined occupancy is imputed as either vacant or occupied. Again, if it is imputed as occupied, it takes the household size of the donor unit.

The Census Bureau carries out the third imputation process when no information is known about the inhabitants of an occupied housing unit. Once again, given that the Census Bureau knows these units to be occupied, it would result in decreased census accuracy if the agency did not assign a nonzero population count to these units. Thus, nearest-neighbor hot-deck imputation is used to assign that count from enumerator-completed forms of occupied units with a known population count.

The Census Bureau carries out these count imputation processes separately for single-unit versus multiple-unit dwellings. In a subsequent operation called substitution, short-form characteristics are imputed for the count-imputed households.<sup>313</sup>

In Census 2000, count imputation accounted for approximately 0.4 percent (1.2 million persons) of the nation’s total population of 281.4 million.<sup>314</sup> Count imputation increased the population of North Carolina by 0.4 percent, but Utah’s population by only 0.2 percent.<sup>315</sup>

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<sup>311</sup> This summary of count imputation is based on information contained in the “Imputation” section of Chapter 6, “Data Capture and Processing.”

<sup>312</sup> The three processes of count imputation were actually carried out in the reverse order from which they are described here. That is, those housing units requiring household size imputation were processed first, followed by those requiring occupancy status imputation, and then units/addresses subject to housing unit status imputation were processed last.

<sup>313</sup> Substitution is also used in instances when the household size is known, but all the characteristic data are missing. In the substitution process, the person records of a nearby fully enumerated household of the same size are used to fill in the missing data. The selection of the hot-deck for substitution is independent from the selection process used for count imputation.

<sup>314</sup> *Utah v. Evans*, 536 U.S. 452 (2002).

<sup>315</sup> *Ibid.*

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## Legal Proceedings

Plaintiffs filed this suit in the U.S. District Court for the District of Utah, Central Division. Donald Evans, Secretary of the U.S. Department of Commerce, and William G. Barron, Acting Director of the U.S. Census Bureau, were named as defendants. Plaintiffs contended that they had standing to bring the action under P.L. 105-119, Section Title II, 209(b), based on their claim that they were “aggrieved by the use of any statistical method in violation of the Constitution or any provision of law . . . in connection with the 2000 or any later decennial census, to determine the population for purposes of the apportionment or redistricting of Members in Congress. . . .”<sup>316</sup>

In their complaint, the plaintiffs claimed that count imputation was a form of statistical sampling, which, based on the Supreme Court’s interpretation of Title 13, U.S. Code, Section 195 in *Department of Commerce v. U.S. House of Representatives* (summarized above), could not be used in producing the apportionment counts.<sup>317</sup> Plaintiffs claimed that “[l]ike the methodology struck down by the Supreme Court, [count] imputation attempts to estimate persons who are not actually enumerated by traditional methods of enumeration. It seeks to do so by use of a sample or statistical model.”<sup>318</sup>

Additionally, plaintiffs claimed that the use of count imputation was in violation of the Census Clause of the Constitution, as amended by Section 2 of the Fourteenth Amendment to the Constitution. The Census Clause references the conduct of an “actual Enumeration.”<sup>319</sup> Plaintiffs contended that “[d]efendants violated these constitutional requirements in supplementing the actual enumeration of the 2000 apportionment population with statistical sampling estimates under the imputation methodology.”<sup>320</sup>

In a supplemental filing, plaintiffs had noted, and defendants did not dispute, that the use of imputation for housing unit status caused the harm for which they sought redress. That is, some number of units the existence of which could not be confirmed, were imputed as occupied and assigned a population count from donor housing units. While plaintiffs also challenged count imputation in general, had the population counts from status imputation not been included in the apportionment totals, the last House seat would have been awarded to Utah instead of North Carolina.<sup>321</sup>

Plaintiffs contended that defendants’ illegal and unconstitutional action had deprived the State of Utah and its citizens of their rightful representation in the U.S. House of Representatives and was an arbitrary and capricious final agency action and therefore in violation of the Administrative Procedure Act (APA). Thus, plaintiffs sought the following relief:

- (1) A declaration that the use of count imputation was in violation of Title 13, U.S. Code, Section 195; P.L. 105-119, Title II, Section 209; the APA; and the Census Clause of the Constitution, as amended by Section 2 of the Fourteenth Amendment.
- (2) An injunction requiring the defendants to remove from the apportionment counts the data obtained through count imputation; and submit revised apportionment counts (and the associated apportionment) to the President, who sends an apportionment statement to the Clerk of the U.S. House of Representatives that indicates the number of seats to which each state is entitled.<sup>322</sup>

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<sup>316</sup> 111 Stat. 2481.

<sup>317</sup> The text of § 195 is provided in this section’s summary of *U.S. House of Representatives*.

<sup>318</sup> Complaint at ¶ 36.

<sup>319</sup> U.S. Constitution, Article I, Section 2, Clause 3.

<sup>320</sup> Complaint at ¶ 44.

<sup>321</sup> *Utah v. Evans*, 182 F.Supp.2d 1165, 1170 (D.Utah Nov. 1, 2001).

<sup>322</sup> Complaint, p. 15.



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Pursuant to plaintiffs' request, a three-judge panel of the district court was convened to hear the case. Given their obvious interest in the outcome of the case, the State of North Carolina, its governor, lieutenant governor, attorney general, the majority and minority leaders of the two houses of the North Carolina legislature, and the state's entire congressional delegation intervened in the case on the side of defendants.<sup>323</sup>

On November 1, 2001, in a split decision, the three-judge panel of the district court granted defendants' and defendant-intervenors' cross-motions for summary judgment.<sup>324</sup> The three-judge panel cited *Franklin v. Massachusetts*<sup>325</sup> in finding that plaintiffs had standing to bring their claims under the Census Act and Constitution;<sup>326</sup> however, the panel also relied on that case in determining that plaintiffs could not make a claim under the APA.<sup>327</sup>

In deciding the merits of plaintiffs' claims, the panel noted that the parties in *Orr v. Baldrige* (see footnote 309) agreed, as did that court, that count imputation was not sampling.<sup>328</sup> The panel also rejected the dissenting opinion of Judge Greene (the third judge on the panel), who determined that imputation was statistical sampling and made much of the fact that the Census Bureau, in its 1997 "Report to Congress," appeared to blur whatever distinction exists between sampling and imputation. The panel did acknowledge, however, that the report, for example, discusses the historical use of "statistical methods," making specific reference to the use of count imputation in past censuses, in a subsection entitled "Reliance on Sampling in Previous Censuses." But the panel reasoned that simply because the Census Bureau, at a time when it was trying to mollify the concerns of many members of Congress over the planned uses of sampling in Census 2000, used the strategy of tying together the uses of sampling and imputation under the rubric of "statistical methods," did not mean that the agency does not distinguish between these two methodologies.<sup>329</sup> Thus, the court determined that count imputation was not statistical sampling, and therefore was not prohibited by Title 13, U.S. Code, Section 195 from being used in producing the apportionment counts.<sup>330</sup>

With regard to plaintiffs' claim that the Constitution's reference to an "actual Enumeration" precluded the use of any statistical estimation in conducting the decennial census for apportionment purposes, the panel rejected this claim, noting that the Supreme Court held in *Wisconsin v. City of New York* (discussed above) that the Census Clause vests virtually unlimited discretion in the Congress in determining the "manner" in which the census is to be carried out.<sup>331</sup> In Title 13, Congress delegated that broad authority to the Secretary of Commerce. The panel further noted that the Court held in *Wisconsin* that the Secretary's decisions regarding the conduct of the decennial census " . . . need bear only a reasonable relationship to the accomplishment of an actual enumeration of the population, keeping in mind the constitutional purpose of the census."<sup>332</sup> Thus, characterizing the use of hot-deck count imputation in Census 2000 as a "narrowly tailored" use of a statistical methodology, the panel summarized part of Justice Stevens' dissenting opinion in *U.S. House of Representatives* in holding that ". . . statistical methodologies [that are] used to improve the accuracy of the census count . . . were consonant with the Constitutional requirement of an 'actual enumeration'."<sup>333</sup>

Plaintiffs appealed the district court ruling to the U.S. Supreme Court. The Court decided to determine the issue of standing at the same time that it considered the merits of the case. The Court held oral argument on March 27, 2002, and issued its decision on June 20, 2002.

The Supreme Court ruled that hot-deck count imputation was not statistical sampling and therefore its use in producing the apportionment counts did not violate Title 13, U.S. Code, Section

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<sup>323</sup> *Utah v. Evans*, 182 F.Supp.2d 1165.

<sup>324</sup> *Ibid.*, p. 1167.

<sup>325</sup> 505 U.S. 788 (1992).

<sup>326</sup> *Utah v. Evans*, 182 F.Supp.2d 1171.

<sup>327</sup> *Ibid.*, p. 1172.

<sup>328</sup> *Ibid.*, p. 1176.

<sup>329</sup> *Ibid.*, pp. 1177–78.

<sup>330</sup> *Ibid.*, p. 1178.

<sup>331</sup> *Ibid.*, p. 1179.

<sup>332</sup> *Ibid.*, citing *Wisconsin v. City of New York*, 517 U.S. 20.

<sup>333</sup> *Ibid.*, p. 1180. It should be noted that the majority in *U.S. House of Representatives* did not address the constitutionality of the use of sampling in producing the apportionment counts.

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195. Additionally, the Court ruled that the use of count imputation did not violate the Census Clause as amended by Section 2 of the Fourteenth Amendment to the Constitution.<sup>334</sup>

Justice Breyer delivered the Opinion of the Court, in which Chief Justice Rehnquist and Justices Stevens, Souter, and Ginsburg joined. Justice Scalia issued a dissenting opinion; Justice O'Connor issued an opinion concurring in part and dissenting in part; and Justice Thomas, joined by Justice Kennedy, issued an opinion concurring in part and dissenting in part.

The Court held that plaintiffs here, as in *Franklin*,<sup>335</sup> had standing to challenge the apportionment after the President had transmitted to the Clerk of the U.S. House of Representatives the apportionment statement declaring the number of seats in the Congress to which each state was entitled. Justice Scalia, who filed an opinion in *Franklin* that concurred in part and concurred in judgement and in which he concluded that plaintiffs there could not establish standing, dissented in the present case for the same reasons. He argued that even if the Court were to order the Secretary of Commerce to recalculate the census numbers to exclude the counts that resulted from imputation and submit those revised apportionment counts to the President, the President's role in the process was not purely ministerial and thus he was under no obligation to "obediently follow the advice of his subordinates"<sup>336</sup> and accept the revised apportionment counts for purposes of producing a new apportionment statement. Thus, as in *Franklin*, Justice Scalia argued that because it would be entirely speculative to assume the President would accept the revised counts and issue a new reapportionment statement, and given that the Court could not order him to do so, the Court would not be likely to effect the redress plaintiffs sought, and therefore they could not establish standing.<sup>337</sup>

In addition to this defect in plaintiffs' ability to establish standing, defendant-intervenor North Carolina had argued—and Justice Scalia agreed—that the statute governing the reapportionment process, Title 2, U.S. Code, Section 2a, effectively precluded redress. That statute states, in relevant part: "Each State shall be entitled, . . . until the taking effect of a reapportionment under this section or subsequent statute, to the number of Representatives shown in [that] statement."<sup>338</sup>

Once again, Justice Scalia argued that the Court would not be likely to effect redress, because, according to the language of Section 2a(b), once the President produced the apportionment statement, the number of seats to which each state was entitled could not be changed until the reapportionment following the next census (2010) unless Congress enacted a statute in the interim providing for a new reapportionment. Given that the Court would have little to no basis for assuming that Congress would pass (and the President would sign) such legislation, and noting that the Congress could not be ordered to do so,<sup>339</sup> Justice Scalia contended that this statutory constraint to changing the apportionment also created an insurmountable hurdle for plaintiffs to be able to establish standing.

Countering Justice Scalia's argument regarding Title 2, U.S. Code, Section 2a, the majority found that, as in *Franklin*, the statute's provisions do not preclude revision of the apportionment statement under other circumstances, such as in cases of error, including those of ". . . court-determined legal error leading to a court-required revision of the underlying Secretarial 'report'."<sup>340</sup> Following the issuance of the "new" census report, ". . . the relevant calculations and consequent apportionment-related steps would be purely mechanical . . .,"<sup>341</sup> according to the

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<sup>334</sup> *Utah v. Evans*, 536 U.S. 452 (2002).

<sup>335</sup> In *Franklin*, the Supreme Court upheld the inclusion of overseas federally affiliated households in the 1990 census apportionment counts. Plaintiffs had challenged this action after reapportionment took place and argued that they lost a House seat as a result of the inclusion of these households in the apportionment counts. As relief, they requested that the Court order the Secretary of Commerce to exclude those households and submit revised counts to the President for issuance of a new apportionment statement. *Franklin v. Massachusetts*, 505 U.S. 788 (1992).

<sup>336</sup> *Utah v. Evans*, 536 U.S. 511 (2002).

<sup>337</sup> *Ibid.*

<sup>338</sup> 2 U.S.C. § 2a(b).

<sup>339</sup> *Utah v. Evans*, 536 U.S. 512 (2002).

<sup>340</sup> Opinion of the Court, p. 462. Justice Scalia, however, found the Court's reading of the statute to permit revisions under these other circumstances to be "an astonishing exercise of raw judicial power." Dissenting Opinion of Justice Scalia, p. 513.

<sup>341</sup> Opinion of the Court, p. 463.

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majority. Thus, the Court determined, “[u]nder these circumstances it would seem, as in *Franklin*, ‘substantially likely that the President and other executive and congressional officials would abide by an authoritative interpretation of the census statute and constitutional provision. . . .’”<sup>342</sup> The majority therefore concluded that Title 2, U.S. Code, Section 2a did not pose a bar to plaintiffs’ ability to obtain redress from the Court.

With regard to the merits of the case, the Court first addressed plaintiffs’ claim that the use of count imputation for apportionment purposes violated Title 13, U.S. Code, Section 195. The Court held that count imputation was not statistical sampling and provided the following explanation regarding the differences between the two methodologies:

The nature of the Bureau’s enterprise [count imputation] was not the extrapolation of the features of a large population from a small one [sampling], but the filling in of missing data as part of an effort to count individuals one by one. . . . The Bureau’s methodology was not that typically used by statisticians seeking to find a subset that will resemble a whole through the use of artificial, random selection processes; but that used to assure that an individual unit (not a ‘subset’), chosen nonrandomly, will resemble other individuals (not a ‘whole’) selected by the fortuitous unavailability of data. . . . And the Bureau’s immediate objective was the filling in of missing data; not extrapolating the characteristics of the ‘donor’ units to an entire population.<sup>343</sup>

Justice O’Connor, in her opinion concurring in part (agreeing that plaintiffs had established standing) and dissenting in part, concluded that count imputation was sampling and thus its use in producing the apportionment counts was prohibited.<sup>344</sup> Using the definition of sampling in the Census Bureau’s 1997 “Report to Congress”—“In our common experience, ‘sampling’ occurs whenever the information on a portion of a population is used to infer information on the population as a whole.”<sup>345</sup>—Justice O’Connor argued that the data from the donor pools, a portion of the population, was used to “infer information on the population as a whole,” specifically, the “. . . overall number of people in the population who had not responded (or had not provided a consistent response). . . .”<sup>346</sup> Thus, she concluded that count imputation constituted sampling.

Justice O’Connor also contended that the majority conceded that the “. . . sampling at issue in *U.S. House of Representatives* differs ‘in degree if not in kind’ from the imputation at issue here,”<sup>347</sup> and she noted that the Court had “. . . already decided that the *extent* [emphasis in original] of the Bureau’s reliance on sampling is irrelevant,” holding that “. . . § 195 prohibits sampling for apportionment purposes regardless of whether it is used as a ‘substitute’ for or ‘supplement’ to a traditional enumeration.”<sup>348</sup>

The Court also concluded that the language of the provision—including the use of the words “known as” and the quotation marks around the word “sampling”—suggests that a term of art with a precise meaning was intended, and therefore implies that a broader definition of sampling as Justice O’Connor attempts to apply was not the intent of Congress.<sup>349</sup> Furthermore, the majority stated that, with regard to the legislative history, the word “sampling” in the provision should be read as the “sampling” that the Secretary of Commerce had in mind when that provision became law in 1958. Although the Census Bureau had been using what we now call “long-form” sampling in the census since 1940, the Secretary had requested that the Congress add this provision to make clear that the Secretary of Commerce had the legal authority to collect some of the detailed information in the census on a sample basis. Thus, it is apparent, the Court reasoned, that the “sampling” referred to in the provision is this “sampling,” the practice of which the

<sup>342</sup> *Ibid.*, citing the Opinion of Justice O’Connor in *Franklin*, 505 U.S. 803.

<sup>343</sup> *Ibid.*, pp. 466–67.

<sup>344</sup> Opinion of Justice O’Connor, p. 480.

<sup>345</sup> *Ibid.*, p. 482, citing U.S. Census Bureau, “Report to Congress—The Plan for Census 2000,” July 1997, revised and reissued August 1997, p. 23. However, it should be noted that, later on in that same paragraph, the Census Bureau states: “Among professional statisticians, the term ‘sample’ is reserved for instances when the selection of the smaller population is based on the methodology of their science.”

<sup>346</sup> *Ibid.*, p. 483.

<sup>347</sup> *Ibid.*, pp. 483–84.

<sup>348</sup> *Ibid.*, p. 483, citing *U.S. House of Representatives*, 525 U.S. 342.

<sup>349</sup> Opinion of the Court, p. 467.

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Secretary sought to have established in statute. In obtaining Congress's support, the Secretary of Commerce did not object to a prohibition in the provision on the use of sampling for purposes of determining the congressional apportionment counts.<sup>350</sup>

Because count imputation was not under consideration when this provision was enacted into law, the Court reasoned, it was not Congress's intent for it to apply to that methodology. In fact, had the Secretary thought that the provision applied to apportionment-related count imputation, he likely would have objected, as the Census Bureau had used such imputation in the past and planned to continue to do so, according to the majority.<sup>351</sup> Finally, the Court noted that the Census Bureau had, for a long time, consistently interpreted this provision as permitting count imputation and the Congress, while being aware of this interpretation and the Census Bureau's use of this methodology for apportionment purposes, had not attempted to change the statute in this regard.<sup>352</sup>

Justice O'Connor countered these arguments by contending that it is unlikely that Congress had intended such a narrow interpretation of what constitutes sampling when § 195 is viewed as a continuation of the prohibition against methodologies other than a traditional enumeration. Furthermore, she argued that when Section 195 is viewed as an authorization to “. . . permit the utilization of something less than a complete enumeration, as implied by the word ‘census’ . . .”, for purposes other than apportionment, there is no reason to believe that Congress intended to narrowly define “sampling” and thereby tightly restrict the methodologies by which the Census Bureau could collect data for nonapportionment purposes.<sup>353</sup>

As to the constitutional question, the Court held that the Census Clause, as amended by Section 2 of the Fourteenth Amendment to the Constitution, does not preclude the use of count imputation in producing the apportionment counts.

The majority did not accept plaintiffs' argument—with which Justices Thomas and Kennedy agreed—that the phrase “actual Enumeration” in the Census Clause was a prohibition of the use of estimation methods, including count imputation, for producing the apportionment counts. According to this argument (see below for a summary of Justice Thomas's opinion), in order to pass constitutional muster, the census has to be an “actual” enumeration—that is, a count only—that does not employ inference or estimation.

The Court maintained that this interpretation is based on a misunderstanding of the context in which the word “actual” was being used by the framers of the Constitution. Because the first Congress would be convened prior to the taking of the first census, the apportionment for that Congress would be based on a rough estimate of the population, without any attempt to conduct a count of the population. Thus, the word “actual” was used to distinguish the constitutionally mandated census, which would be an “actual” enumeration, from the conjectural basis for determining the composition of the first Congress.<sup>354</sup>

Additionally, the Court reasoned that the framers did not intend to define or limit the methodology of the census by using the phrase “actual Enumeration”; on the contrary, they gave wide latitude to the Congress in defining the methodology: “. . . in such Manner as they [the Congress] shall by Law direct.”<sup>355</sup> As did the three-judge panel of the district court, the majority cited *Wisconsin* in support of this proposition.<sup>356</sup>

Furthermore, the Court determined that the framers' various decisions regarding use of a periodic census as a basis for distributing power in the U.S. House of Representatives among the states suggested a strong constitutional interest in the accuracy of such an enumeration. Bearing this in

<sup>350</sup> *Ibid.*, pp. 468–69.

<sup>351</sup> *Ibid.*, p. 469. There appears to be some misunderstanding on this point. Citing the declaration of Howard Hogan of the Census Bureau, Justice O'Connor states that, at the time this provision was being considered, the “. . . Bureau had never before added people to the apportionment count using that process [imputation].” Opinion of Justice O'Connor, p. 486.

<sup>352</sup> Opinion of the Court, p. 472.

<sup>353</sup> Opinion of Justice O'Connor, p. 486, citing U.S. House of Representatives, 85th Cong., 1st Sess., 1957, H. Rept. 85-1043, p. 10.

<sup>354</sup> Opinion of the Court, p. 475.

<sup>355</sup> U.S. Constitution, Article I, Section 2, Clause 3.

<sup>356</sup> Opinion of the Court, p. 474.

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mind, the majority reasoned that this emphasis favors the last-resort use of imputation, given that it improves the accuracy relative to the alternative suggested by plaintiffs; that is, where the population count of a housing unit is not known, the count must be recorded as zero in all cases. The Court's conclusion that the count imputation procedure succeeded in improving accuracy was based on evidence it cited from the Census Bureau's postcensus research.<sup>357</sup>

Justice O'Connor questioned this conclusion, noting that the Census Bureau had admitted that numeric accuracy drives the census planning process. She pointed out that no one had provided evidence that the use of count imputation improved distributive accuracy, and she cited the decision in *Wisconsin* in which the Court noted the importance of distributive accuracy:

. . . a preference for distributive accuracy (even at the expense of some numerical accuracy) would seem to follow from the constitutional purpose of the census, viz., to determine the apportionment of the Representatives among the States.<sup>358</sup>

In his opinion concurring in part (agreeing with the Court that count imputation was not sampling) and dissenting in part, Justice Thomas argued that the framers chose their words with precision when they wrote the phrase "actual Enumeration" into the Constitution. Countering the majority's argument regarding the meaning of the word "enumeration," Justice Thomas contended that the word "[e]numeration" meant at the time of the founding, as it does now, to count individually and specifically and simply does not admit of various counting methodologies.<sup>359</sup>

Justice Thomas argued that the framers were aware that calculations of population could be and often were manipulated for political or financial gain and that the use of estimation left the door open to such abuse.<sup>360</sup> Thus, he noted that the framers' debates about issues relating to the census and apportionment focused on developing a standard in the Constitution that would minimize the possibility of manipulation.<sup>361</sup> Justice Thomas contended that the framers were quite aware that estimation could be used to supplement the enumeration, but instead they chose to require an "actual Enumeration," because, despite the majority's assertion that there was a strong constitutional interest in accuracy, ". . . the Framers placed a higher value on preventing political manipulation."<sup>362</sup>

The majority countered the argument by Justice Thomas regarding the susceptibility to manipulation, at least as it pertained to the present case, by finding that it would be difficult to use count imputation to manipulate the apportionment data for political gain because it would not be clear in advance as to which states would gain or lose as a result of its use. Justice O'Connor, on the other hand, argued that ". . . in every census where imputation would alter the resulting apportionment, the mere decision to impute or not to impute is a source of possible manipulation."<sup>363</sup>

Justice Thomas concluded that "[b]y accepting one method of estimation [count imputation] as constitutionally permissible, the Court has opened the door, and we will be continually called to judge whether one form of estimation is more acceptable than another."<sup>364</sup> The Court acknowledged that it had failed to define the "precise methodological limits foreseen by the Census Clause," but held that "those limits are not exceeded" by the use of count imputation in producing the Census 2000 apportionment counts.<sup>365</sup>

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<sup>357</sup> *Ibid.*, p. 478, citing U.S. Census Bureau, "Initial Research on Count Imputation in Census 2000," Census 2000 Informational Memorandum No. 110, August 10, 2001.

<sup>358</sup> Opinion of Justice O'Connor, p. 488, citing *Wisconsin*, 517 U.S. 20.

<sup>359</sup> Opinion of Justice Thomas, p. 493, fn. 5. The Census Bureau does not dispute that count imputation is a form of estimation (*ibid.*, p. 490) and, as Justice Thomas states, ". . . estimation . . . by definition cannot be an actual counting of persons." *Ibid.*, p. 507.

<sup>360</sup> *Ibid.*, pp. 500–502 and 507.

<sup>361</sup> *Ibid.*, pp. 500–503.

<sup>362</sup> *Ibid.*, p. 506.

<sup>363</sup> Opinion of Justice O'Connor, p. 487. Although she did not explicitly address the constitutionality of using count imputation in producing the apportionment data, she noted that Justice Thomas's arguments did "raise[ ] a difficult constitutional question." *Ibid.*

<sup>364</sup> Opinion of Justice Thomas, pp. 509–10.

<sup>365</sup> Opinion of the Court, p. 479.

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**City of Los Angeles v. Evans.** In October 2000, the Clinton administration finalized a rule governing the Census 2000 redistricting data adjustment decision.<sup>366</sup> Under the rule, the Secretary of Commerce delegated to the Census Bureau Director the authority for making the determination as to whether the official redistricting data would incorporate a statistical adjustment. The rule provided that “[t]he determination of the Director of the Census shall not be subject to review, reconsideration, or reversal by the Secretary of Commerce.”<sup>367</sup> On February 16, 2001, the Secretary of Commerce under President George W. Bush, Donald Evans, signed a rule rescinding the delegation of authority.<sup>368</sup>

On February 21, 2001, the City of Los Angeles and other plaintiffs filed suit in the U.S. District Court for the Central District of California, claiming that the Secretary’s changes to the rule governing the Census 2000 redistricting data adjustment decision were in violation of the Administrative Procedure Act’s (APA) notice and comment requirements for making other than minor amendments to a substantive rule.

The plaintiffs filed their lawsuit after the final rule was signed and prior to its publication in the *Federal Register*. They contended that the revocation constituted a substantive change to the rule, given that the purpose of the October 2000 final rule was to “. . . insulate from partisan politics the final determination of which census data should be released. . . .”<sup>369</sup> Plaintiffs also noted that the original rule ensured that the adjusted data would be released if a Census Bureau committee of senior career professionals (known as the Executive Steering Committee for Accuracy and Coverage Evaluation Policy, or ESCAP) recommended their use for redistricting, notwithstanding a subsequent decision by senior management in favor of the use of unadjusted data for redistricting.<sup>370</sup>

Plaintiffs requested a temporary restraining order and preliminary and permanent injunctions prohibiting the new rule from taking effect. On February 23, the district court denied plaintiffs’ motion for a temporary restraining order.

On March 12, 2001, following the Secretary’s decision to release the unadjusted data as the official redistricting data and to not release the adjusted data,<sup>371</sup> the City of Los Angeles and its coplaintiffs amended their complaint. Plaintiffs contended that the Secretary’s adjustment decision should be declared void because of the alleged improper revocation of the delegation of authority<sup>372</sup> and that Section 195 of Title 13 required release of the adjusted data because it was “. . . unassailably ‘feasible’ to adjust the census data using sampling . . . and the majority of the evidence indicates that the adjusted data are more accurate.”<sup>373</sup> Plaintiffs therefore requested that the court require the Secretary to release also the adjusted data as the official redistricting data.<sup>374</sup>

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<sup>366</sup> P.L. 94-171 (Title 13, U.S. Code, Section 141(c)) mandates that the redistricting data are to be provided to the states and localities within 1 year of Census Day.

<sup>367</sup> *Federal Register*, Vol. 65, No. 195 (October 6, 2000) (Final Rule), p. 59716.

<sup>368</sup> *Federal Register*, Vol. 66, No. 37 (February 23, 2001) (Final Rule), pp. 11231–33. Both this rule and the prior rule are discussed in more detail in the section of this chapter entitled “The Debate Over the Use of Sampling.”

<sup>369</sup> *City of Los Angeles v. Evans*, No. CV 01-1671, in the U.S.D.C. for the Central District of California, Complaint for Declaratory and Injunctive Relief, ¶ 27.

<sup>370</sup> For information about the genesis and charge of the ESCAP, see “The Debate Over the Use of Sampling” section.

<sup>371</sup> See “The Debate Over the Use of Sampling” section for a discussion of the Secretary’s adjustment decision.

<sup>372</sup> Memorandum in Support of Plaintiffs’ Renewed Application for Temporary Restraining Order and Order to Show Cause Re Preliminary Injunction, p. 7.

<sup>373</sup> *Ibid.*, p. 1. While the ESCAP did state that “. . . the majority of the evidence indicates . . . the superior accuracy of the adjusted numbers . . .” (*Federal Register*, Vol. 66, No. 46 (March 8, 2001), p. 14005), the committee identified a number of concerns regarding the accuracy of the data that required additional investigation. The Census Bureau later determined that the adjusted data were “. . . so severely flawed that all potential uses of these data would be inappropriate.” U.S. Census Bureau, “Requests for Adjusted Data from Census 2000,” memorandum for executive staff and all divisions, from Preston Jay Waite, Associate Director for Decennial Census, December 6, 2002 (attachment). See “The Debate Over the Use of Sampling” section of this chapter for additional discussion on this issue.

<sup>374</sup> Memorandum in Support of Plaintiff’s Renewed Application for Temporary Restraining Order and Order to Show Cause Re Preliminary Injunction, p. 2.

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On April 25, Judge Gary Allen Feess of the U.S. District Court for the Central District of California dismissed the plaintiffs' complaint, thereby upholding the Secretary's decision.<sup>375</sup> The plaintiffs, according to Judge Feess, had asked that the court reject the Secretary's adoption of the ESCAP's recommendation. He said that plaintiffs had argued that because Section 195 creates "a presumption of accuracy in the adjusted data" [given the feasibility determination]<sup>376</sup>, and given that ". . . the adjusted data . . . [have]not been proven inaccurate . . . [they] should be released as the official census [data]."<sup>377</sup>

Judge Feess said, on the other hand, that the Commerce Department had contended that the Secretary ". . . has discretion to reject the use of statistically adjusted data where strong evidence exists that its use will not improve the accuracy of the final census figure."<sup>378</sup> Noting that ". . . the paramount objective of the Census Act is accuracy in counting population . . .," and the "substantial evidence" presented of the agency's concerns regarding the accuracy of the adjusted data, Judge Feess thereby concluded that the ". . . Secretary's actions are consistent with a permissible construction of the Census Act."<sup>379</sup>

The plaintiffs subsequently appealed the district court ruling to the U.S. Court of Appeals for the Ninth Circuit, and on September 27, 2002, the Ninth Circuit Court upheld the district court ruling.<sup>380</sup> The Ninth Circuit ruled that

[b]ecause Congress conditioned the use of sampling on the Secretary's consideration of its feasibility, Section 195 does not create a presumption in favor of statistical adjustment of the census, nor does it require the Secretary to consider the adjusted data as the default data for Census 2000. Instead, Section 195 grants broad discretion upon the Secretary to "consider" as an initial matter what uses of sampling are 'feasible'.<sup>381</sup>

The court concluded that ". . . Secretary Evan's interpretation of the statute, as permitting him to consider accuracy as a component of feasibility, was a permissible construction of the statute."<sup>382</sup>

Additionally, the Ninth Circuit Court agreed with the district court that the alleged violations of the APA's notice and comment requirements stemming from the revocation of the delegation of authority was a moot issue, because the Acting Director of the Census Bureau accepted the recommendation of the ESCAP not to use the statistically adjusted data for purposes of redistricting and, therefore, would have made the same decision as the Secretary. Thus, no harm to plaintiffs flowed from the alleged APA violations.<sup>383</sup>

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<sup>375</sup> *City of Los Angeles v. Evans*, No. CV 01-1671, 2001 WL 34125617 (C.D.Cal. April 25, 2001). This case was not selected for publication in the *Federal Supplement*.

<sup>376</sup> For more information on this issue, see *Federal Register*, Vol. 65, No. 119 (June 20, 2000), pp. 38370-71 and 38374-98.

<sup>377</sup> *City of Los Angeles v. Evans*, No. CV 01-1671, 2001 WL 34125617, at \*1.

<sup>378</sup> *Ibid.*

<sup>379</sup> *Ibid.*, at \*2.

<sup>380</sup> *City of Los Angeles v. Evans*, 307 F.3d 859 (9th Cir. 2002).

<sup>381</sup> *Ibid.*, p. 871.

<sup>382</sup> *Ibid.*, p. 877.

<sup>383</sup> *Ibid.*

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***U.S. Department of Commerce v. Carter.*** This lawsuit pertained to an April 20, 2001, reedom of Information Act (FOIA) request from two Oregon state senators for the Census 2000 adjusted block-level data for the entire country. As explained in more detail in the “Freedom of Information Act Requests” section of this chapter, the Census Bureau denied their request, and the denial was subsequently upheld by the Department of Commerce’s assistant general counsel for administration.

Having exhausted their administrative remedies, pursuant to the provisions of the FOIA (Title 5, U.S. Code, Section 552(a)(4)(B)), the two state senators filed suit (*Carter v. U.S. Department of Commerce* as filed) in district court on June 11, 2001.<sup>384</sup> The U.S. District Court for the District of Oregon, in ruling on the case, relied on *U.S. Department of Commerce v. Assembly of California*, a FOIA lawsuit dealing with release of the 1990 census adjusted block-level data.<sup>385</sup> In that case, the U.S. Court of Appeals for the Ninth Circuit ruled that the 1990 census adjusted data were neither predecisional nor deliberative. The district court in the *Carter* case held that the Census 2000 adjusted block-level data also were not predecisional nor deliberative. Finding that both these criteria must be met for the adjusted data to be protected from disclosure by the deliberative process privilege, on November 20, 2001, the court granted plaintiffs’ motion for summary judgment and ordered the defendant to release the data to plaintiffs.<sup>386</sup>

The Department of Commerce appealed the district court ruling to the U.S. Court of Appeals for the Ninth Circuit. Oral argument was held before the Ninth Circuit Court on September 10, 2002, and the court issued its ruling on October 8, 2002, upholding the district court order.<sup>387</sup>

The court noted that the district court had relied on the Ninth Circuit’s ruling in the *U.S. Department of Commerce v. Assembly of California* case for determining that the adjusted data were neither predecisional nor deliberative. The Ninth Circuit Court rejected defendant’s argument that the circumstances surrounding the Census 2000 adjustment decision were significantly dissimilar from those pertaining to the 1990 census determination, thereby warranting that the Census 2000 adjusted data be withheld. For example, defendants had argued that, following the initial decision pertaining to redistricting, the adjusted data were the subject of the deliberative process leading to the October 2001 decision on other possible uses (incorporation in sample data products, intercensal estimates, etc.) of the adjusted data. The Ninth Circuit rejected this argument, agreeing with the district court that the adjusted data themselves did not “contribute” to either decision. The court also cited *Assembly* in determining that the adjusted data could not be considered predecisional simply because the agency continued to evaluate them and/or consider them for potential future uses. The court agreed with the district court’s determination that the purported factual differences surrounding the 1990 and the 2000 adjusted data were not “legally significant.”<sup>388</sup>

The Department of Commerce did not appeal the Ninth Circuit ruling and subsequently released the data to the plaintiffs.<sup>389</sup>

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<sup>384</sup> *Carter v. U.S. Department of Commerce*, 186 F.Supp.2d 1147 (D.Or. Nov. 20, 2001).

<sup>385</sup> 968 F.2d 916 (9th Cir. 1992). It is worth noting that the Eleventh Circuit Court of Appeals, in *U.S. Department of Commerce v. Florida House of Representatives*, 961 F.2d 941 (11th Cir. 1992), reached the opposite conclusion, holding that the 1990 census adjusted block-level data fell within the scope of the deliberative process privilege in Exemption 5 of the FOIA, and that court therefore upheld the withholding of those data. For summaries of these cases, see U.S. Census Bureau, *1990 Census of Population and Housing, History, Part D*, 1990 CPH-R-2D (Washington, DC: Government Printing Office, 1996), pp. 12-12–12-13.

<sup>386</sup> *Carter v. U.S. Department of Commerce*, 186 F.Supp.2d 1147, 1148, 1153 (D.Or. Nov. 20, 2001).

<sup>387</sup> *U.S. Department of Commerce v. Carter*, 307 F.3d 1084 (9th Cir. 2002).

<sup>388</sup> *Ibid.*, pp. 1089–91.

<sup>389</sup> U.S. Census Bureau, “Requests for Adjusted Data from Census 2000,” memorandum for executive staff and all divisions, from Preston Jay Waite, Associate Director for Decennial Census, December 6, 2002.



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**Waxman v. Evans.** On April 6, 2001, a number of members of the U.S. House of Representatives' Committee on Government Reform, which included the Census Subcommittee, requested from the Secretary of Commerce the Census 2000 adjusted block-level data for all states by April 20, 2001.

In the letter, the committee members claimed that

[a]lthough the steering committee [the ESCAP] concluded that the adjusted numbers should not be released at that time for redistricting purposes, it reached this decision only because the impending April 1, 2001, statutory deadline prevented a full analysis of the accuracy of the adjusted data.<sup>390</sup>

Noting that the Government Reform Committee had legislative and oversight responsibilities for matters relating to population and demography, including the census, the committee members requested the adjusted block-level data under the "Seven Member Rule."

Under the provisions of the Seven Member Rule,

[a]n Executive agency, on request of the Committee on Government Operations [renamed the Committee on Government Reform in the 106th Congress] of the U.S. House of Representatives, or any seven members thereof, or on request of the Committee on Governmental Affairs of the Senate, or any five members thereof, shall submit any information requested of it relating to any matter within the jurisdiction of the committee.<sup>391</sup>

The letter noted several reasons for the request for the adjusted data, including the fact that the committee was

. . . actively considering whether to amend the law regarding the timing and release of adjusted and unadjusted census data. Concerns have been raised that the existing provisions of the Census Act effectively prevent the most accurate data from being used for redistricting and other purposes. Review of the adjusted data will enable us to evaluate the need for legislation in this area.<sup>392</sup>

The Department of Commerce did not respond by the deadline set forth in the request, and the requesting committee members filed suit on May 21, 2001, in the U.S. District Court for the Central District of California to compel the release of the Census 2000 adjusted block-level data under the Seven Member Rule.<sup>393</sup>

On June 5, Secretary Evans responded to the initial request, declining to provide the adjusted data under the Seven Member Rule, stating that "[c]onsistent with the long-standing Executive Branch interpretation of this statute, in which the Congressional Research Service [CRS] has concurred, we do not believe the statute applies in this circumstance."<sup>394</sup> The Secretary went on to note: "We are mindful of your stated needs for the adjusted data, however, and we are continuing to consider whether release of the data is warranted. The Department expects to make a final decision in the near future."<sup>395</sup>

On January 18, 2002, the U.S. District Court for the Central District of California ruled in favor of the plaintiffs and ordered Secretary Evans to provide the data to them.<sup>396</sup> Plaintiffs had argued that a "plain language" reading of the statute in question required the Secretary to provide the requested data to them, giving him no discretion in responding to requests made pursuant to Section 2954 of Title 5, U.S. Code, the "Seven Member Rule."

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<sup>390</sup> Rep. Henry A. Waxman et al., Committee on Government Reform, U.S. House of Representatives, to Donald L. Evans, Secretary, U.S. Department of Commerce, April 6, 2001, pp. 1–2.

<sup>391</sup> Title 5, U.S. Code, Section 2954 (2006).

<sup>392</sup> Letter from Rep. Waxman et al., to Secretary Evans, April 6, 2001, p. 2.

<sup>393</sup> Two of Rep. Waxman's colleagues who were signatories to the April 6, 2001, letter did not participate in the litigation. They were Reps. Paul Kanjorski (D-PA) and Jim Turner (D-TX).

<sup>394</sup> Donald L. Evans, Secretary, U.S. Department of Commerce, to Rep. Henry A. Waxman, Ranking Minority Member, Committee on Government Reform, U.S. House of Representatives, June 5, 2001.

<sup>395</sup> *Ibid.*

<sup>396</sup> *Waxman v. Evans*, No. CV014530LGB (AJWX), 2002 WL 32377615 (C.D.Cal. Jan. 18, 2002). This case was not selected for publication in the *Federal Supplement*.

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The defendant had argued that the court was being asked to resolve what was basically a dispute between the minority members of a House committee and an executive branch agency over access to the agency's files. According to the defendant, the separation of powers doctrine militated against the judiciary getting involved in and settling such skirmishes between the branches of government. Thus, the executive branch argued that the court should decline to rule on the merits and should dismiss the suit, noting that the 73-year old statute had yet to be adjudicated by a court.

Alternatively, the defendant had contended that if the court decided to rule on the merits, Section 2954 must be interpreted in the manner in which Congress intended. Rather than providing a small minority of those committees with a sweeping grant of authority to access any information in the files of agencies under their respective jurisdictions, the statute was enacted to preserve access to information contained in statutorily required reports that another section of the original statute of 1928 was abolishing. That is, the purpose of the provision was to ensure that members of the committees could, if they so requested, still obtain the underlying information that was contained in the reports to be discontinued.

Thus, defendant argued, plaintiffs were not entitled to the information they sought, because the adjusted census data did not fall within Section 2954's narrow scope. To reinforce this position, defendant noted that the CRS had similarly interpreted the provision: "The legislative history . . . indicates that the purpose of the 1928 Act was not to assert a sweeping right of Congress to obtain any information it might desire from the executive branch."<sup>397</sup>

The court, however, stated that "[i]n light of the fact that the purposes and policies of Section 2954 are not clearly expressed by the legislative history, this Court follows the text rather than the legislative history."<sup>398</sup> "Reading the terms of Section 2954 in their ordinary and common meanings as this Court must . . .," the district court concluded that the ". . . plain language of Section 2954 mandates that the Secretary release the requested data to Plaintiffs."<sup>399</sup>

Defendant subsequently filed a motion for reconsideration. On March 25, the court denied the Commerce Department's motion.<sup>400</sup> The Department of Commerce appealed the decision to the Ninth Circuit Court of Appeals on May 10.<sup>401</sup> As discussed earlier, the Ninth Circuit Court subsequently (October 2002) ruled in *U.S. Department of Commerce v. Carter* that the Census 2000 adjusted block-level data could not be withheld under the FOIA. Accordingly, the Ninth Circuit Court of Appeals vacated the district court judgment in *Waxman v. Evans* and remanded the case to the district court with instructions to dismiss the appeal as moot.<sup>402</sup>

***Cameron County, Texas v. Evans.*** Cameron County, Hidalgo County, the judges for those counties, and 35 cities in Texas filed suit on May 10, 2001, in the U.S. District Court for the Southern District of Texas, Brownsville Division, claiming that Secretary of Commerce Evans did not have the authority to make the Census 2000 redistricting data adjustment decision and that Title 13, U.S. Code, Section 195 required release of the adjusted data for all purposes other than apportionment of representatives in the U.S. House.<sup>403</sup> Defendants included Donald Evans as Secretary of the U.S. Department of Commerce and the U.S. Department of Commerce.

One of the plaintiffs' claims pertained to the rule that governed the decision whether the official redistricting (P.L. 94-171) data would incorporate a statistical adjustment. Plaintiffs argued that Secretary Evans violated the rule-making requirements of the Administrative Procedure Act (APA)

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<sup>397</sup> Defendant's Opposition to Plaintiffs' Motion for Summary Judgment and Memorandum in Support of Motion to Dismiss or, in the Alternative, Cross-Motion for Summary Judgment, p. 3. Defendant cites the CRS document as "Memorandum from American Law Division to Senate Government Operations Committee," January 15, 1975, p. 2.

<sup>398</sup> *Waxman v. Evans*, No. CV014530LGB (AJWX), 2002 WL 32377615, at \*9.

<sup>399</sup> *Ibid.*, at \*7.

<sup>400</sup> Brief for Appellant, Statement of Jurisdiction, *Waxman v. Evans*, 2002 WL 32115555, at \*1 (9th Cir. May 21, 2002) (No. 02-55825). This case was not selected for publication in the *Federal Reporter*.

<sup>401</sup> *Ibid.*

<sup>402</sup> *Waxman v. Evans*, Fed.Appx. 84, 2002 WL 31748590, at \*1 (9th Cir. Dec. 6, 2002).

<sup>403</sup> *Cameron County, Texas v. Evans*, C.A. No. B01082, in the U.S.D.C. for the Southern District of Texas, Brownsville Division, Complaint for Declaratory and Injunctive Relief, ¶ 45. It should be noted, however, that plaintiffs here only sought release of the adjusted data for federal and state funding-allocation purposes.

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when he revoked portions of the existing substantive rule and promulgated a new final substantive rule (the “Evans Rule”) without providing for a notice and comment period before those actions took effect. Thus, by revoking the initial rule’s delegation of authority to the Census Bureau Director to make the redistricting data adjustment decision and issuing a new rule in which he retained such authority, the Secretary, plaintiffs argued, was not authorized to make the decision.<sup>404</sup>

As to their claim under Title 13, United States Code, Section 195, plaintiffs contended that the provision required release of the adjusted data, which were based on statistical sampling, for all purposes other than apportionment, if “feasible” (the language in that section). Secretary Evans, in deciding that the unadjusted data would be released as the official redistricting data, cited the ESCAP’s concerns regarding potential problems with the Accuracy and Coverage Evaluation (A.C.E.) methodology that may have resulted in overstated A.C.E. estimates of net undercount in Census 2000.<sup>405</sup> However, plaintiffs quoted the ESCAP report that concluded “. . . there is considerable evidence to support the use of the adjusted data . . .” and that the A.C.E. was an “. . . efficient and effective operation that produced high quality data.”<sup>406</sup> Thus, plaintiffs argued, the “feasibility” of the adjusted data had clearly been demonstrated and once that burden was met, Section 195 did not provide to the decision-maker the discretion to not release the adjusted data for purposes other than apportionment.<sup>407</sup>

Finally, plaintiff jurisdictions fashioned equal protection and due process claims, arguing that their populations included large numbers of Hispanics, who are known to be differentially undercounted in the census, unless it is subjected to a statistical adjustment. Thus, plaintiffs contended that defendants had arbitrarily discriminated against a protected class, in violation of the constitutional guarantee of equal protection, and that defendants’ failure to release adjusted data that would correct for the differential undercount would result in their significant loss of federal funding over the decade (an alleged due process violation).<sup>408</sup>

Plaintiffs sought the following items of relief, among others:

- (1) A declaratory judgment that the Evans Rule was arbitrary, an abuse of discretion, and invalid, and therefore Secretary Evans did not have the authority to make the redistricting data adjustment decision.
- (2) A judgment that it was feasible to release the adjusted census data, and therefore the data must be released and denominated the official census data for federal and state funding purposes.
- (3) An injunction requiring that defendants release the adjusted population counts for the plaintiff jurisdictions.<sup>409</sup>

On July 20, 2001, defendants filed a motion to dismiss or for summary judgment. With regard to the validity of the Evans Rule, defendants argued that plaintiffs’ claim was moot because the Census Bureau Acting Director, who concurred with and adopted the ESCAP recommendation to denominate the unadjusted data as the official redistricting data, would have made the same decision as the Secretary had the delegation of authority not been revoked.<sup>410</sup> As to plaintiffs’ contention that Section 195 required release of the adjusted data for purposes other than apportionment

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<sup>404</sup> *Ibid.*, ¶¶49 and 66. For more information about the “Evans Rule” and its predecessor, see “The Debate Over the Use of Sampling” section of this chapter.

<sup>405</sup> *Federal Register*, Vol. 66, No. 49 (March 13, 2001), p. 14521.

<sup>406</sup> Complaint, ¶ 52. The ESCAP’s concerns were well-founded—the Census Bureau later learned that the A.C.E. did not account for a large number of census erroneous enumerations, many of which were duplicates, leading to an overstatement of the Census 2000 net undercount by at least 3 million persons. This level of error rendered the data “. . . so severely flawed that all potential uses of these data would be inappropriate.” U.S. Census Bureau, “Requests for Adjusted Data from Census 2000,” memorandum for executive staff and all divisions, from Preston Jay Waite, Associate Director for Decennial Census, December 6, 2002 (attachment). See “The Debate Over the Use of Sampling” section of this chapter for further information on the Census Bureau’s analyses revealing the severity of the level of error in the adjusted data.

<sup>407</sup> Complaint, ¶¶ 56 and 57.

<sup>408</sup> *Ibid.*, ¶¶ 58–60 and ¶ 70.

<sup>409</sup> *Ibid.*, pp. 27–28.

<sup>410</sup> Memorandum in Support of Defendant’s Motion to Dismiss, or, in the Alternative, for Summary Judgment, July 19, 2001, p. 2.

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(given that the data's "feasibility" had been ascertained), defendants contended that plaintiffs' interpretation of that section as not providing the Secretary with the discretion to reject the use of the adjusted data because of concerns regarding their accuracy was contrary to Section 195's language and the overall purposes of the statute, among other things.<sup>411</sup> With regard to these first two claims, defendants noted that nearly identical claims had been rejected by the district court in *City of Los Angeles v. Evans* (No. CV 01-1671, 2001 WL 34125617 (C.D.Cal. April 25, 2001), *aff'd*, 307 F.3d 859 (9th Cir. 2002)), which is summarized above.

Furthermore, defendants' argued that plaintiffs claims with regard to the release of adjusted data for federal funding purposes were not "ripe" for adjudication because the Census Bureau was further evaluating the adjusted data and that evaluation could result in the decision to incorporate the adjusted data in the production of intercensal population estimates, which are used in the allocation formulae in the vast majority of federal funding programs.<sup>412</sup> Finally, defendants also argued that, with regard to plaintiffs' equal protection/due process claims, plaintiffs had not established standing to bring such claims, because the claims were not specific enough to be justiciable but, rather, constituted generalized grievances.<sup>413</sup>

In a related action, on June 27, 2001, one of the attorneys for plaintiffs filed a Freedom of Information Act (FOIA) request for the adjusted population counts for the 37 plaintiff jurisdictions and one additional Texas jurisdiction.<sup>414</sup> On July 16, 2001, the Census Bureau responded to the request, denying the requested data as "predecisional" and "deliberative" under the deliberative process privilege of Exemption 5 of the FOIA.<sup>415</sup> Plaintiffs subsequently filed an amended complaint in which they added a FOIA claim pertaining to their June 27 request.<sup>416</sup>

On September 10, 2001, defendants responded to the amended complaint, filing a motion (and supporting memorandum) for judgment on the pleadings or for summary judgment. Defendants reiterated their earlier arguments on the merits, but also contended that plaintiffs were not entitled to having their FOIA claim adjudicated on the merits, not having exhausted their administrative remedies.<sup>417</sup> Furthermore, defendants argued that, even if the court were to consider the claim on the merits, the data were properly withheld under Exemption 5 of the FOIA.<sup>418</sup>

On January 28, 2002, with regard to all of plaintiffs' claims except the FOIA one, the district court either ruled in favor of defendants or dismissed the claims.<sup>419</sup> As to the FOIA claim, the court noted that defendants were no longer contending that it was not "ripe" for judicial review,<sup>420</sup> and rejected defendants' contention that the adjusted data were protected by the deliberative process privilege of Exemption 5, citing the district court ruling in *Carter* (discussed above) that concluded that release of the adjusted data ". . . would not reveal anything more about the deliberative process than has already been disclosed. . . ." <sup>421</sup> Thus, the court granted judgment in favor of the plaintiffs on the FOIA claim and ordered defendants to release the adjusted Census 2000 population counts for the plaintiff jurisdictions.<sup>422</sup>

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<sup>411</sup> *Ibid.*, pp. 17–18.

<sup>412</sup> *Ibid.*, p. 9. For more information about the decision regarding possible nonredistricting uses of the Census 2000 adjusted data, see "The Debate Over the Use of Sampling" section.

<sup>413</sup> *Ibid.*, pp. 10–11 and 22–23.

<sup>414</sup> Rolando L. Rios, Attorney at Law, to Mr. Gerald W. Gates, FOIA Officer, Policy Office, Bureau of the Census, June 27, 2001. The city of Hildago was not one of the original plaintiffs, but the FOIA request for adjusted population counts included this jurisdiction.

<sup>415</sup> Gerald W. Gates, Chief, Policy Office, U.S. Census Bureau, to Mr. Rolando L. Rios, Law Offices of Rolando L. Rios, July 16, 2001. For more information regarding FOIA requests for the Census 2000 adjusted data, see the summary of *U.S. Department of Commerce v. Carter* above and the "Freedom of Information Act Requests" section of this chapter.

<sup>416</sup> The amended complaint added the City of Hildago as a plaintiff.

<sup>417</sup> A similar situation (failure to exhaust administrative remedies with regard to a FOIA denial) arose in the *City of Los Angeles* FOIA suit (see below) relating to the release of data from the Census 2000 service-based enumeration.

<sup>418</sup> Memorandum in Support of Defendants' Motion for Judgment on the Pleadings, or, in the Alternative, for Summary Judgment, September 10, 1991, pp. 1–3.

<sup>419</sup> *Cameron County, Texas v. Evans*, C.A. No. B01082 (S.D.Texas Jan. 28, 2002). This case was not reported.

<sup>420</sup> *Ibid.*, p. 3, fn. 1.

<sup>421</sup> *Ibid.*, p. 13, citing *Carter v. U.S. Department of Commerce*, 186 F.Supp.2d 1157 (D.Or. Nov. 20, 2001).

<sup>422</sup> *Cameron County, Texas v. Evans*, C.A. No. B01082 (S.D.Texas Jan. 28, 2002).

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On February 5, 2002, defendants filed an appeal of the district court ruling with regard to the FOIA claim in the U.S. Court of Appeals for the Fifth Circuit and requested the district court to stay its order pending appeal of the decision. On April 8, the district court granted defendants' motion for stay.<sup>423</sup> As noted earlier in this section, on October 8, 2002, before the Fifth Circuit was able to hear defendants' appeal in the present case, the Ninth Circuit Court in *Carter* ruled that the Census 2000 adjusted data were not protected from disclosure by Exemption 5 of the FOIA.<sup>424</sup> Thus, having been ordered to disclose and having actually released the adjusted data to the plaintiffs in the Ninth Circuit case, defendants voluntarily withdrew their Fifth Circuit appeal on the FOIA claim and complied with the order of the district court.

***Assyrian National Congress of America v. Bureau of the Census.*** This suit was filed in the U.S. District Court for the Eastern District of California on March 3, 2000, by the Assyrian National Congress of America (ANCA)—an “Assyrian-American cultural organization”—and Sargon Dadesho, president of the ANCA. The defendants were the Bureau of the Census, the U.S. Department of Commerce, and the United States of America.

When the Census Bureau announced its plans for publishing Census 2000 data relating to the long-form question on ancestry, it noted that “Assyrian,” “Chaldean,” “Syriac,” and some other responses would be grouped into the category “Assyrian/Chaldean/Syriac.” Plaintiffs filed suit to challenge those plans, arguing that “Chaldean” is a religion and not an ethnic group and therefore should not be placed in the ancestry category name along with Assyrian.<sup>425</sup>

In the 1980 and 1990 censuses, the ancestry category “Assyrian” was used, and it included those who responded as “Chaldean.”

After 2 years of extensive research and consultations with interested parties (including plaintiffs, other Assyrians, and Chaldeans) that were held prior to Census 2000, the Census Bureau adopted the categorization plan to be used in Census 2000. This proposal was put forth by Assyrian and Chaldean representatives with whom the agency had consulted.

In their suit, plaintiffs claimed that defendants' actions were in violation of the Establishment Clause<sup>426</sup> of the First Amendment to the Constitution and Section 221(c)<sup>427</sup> of Title 13, U.S. Code, and were arbitrary and capricious (the standard of review for adjudicating final agency actions under the Administrative Procedure Act (APA)).<sup>428</sup>

Plaintiffs sought preliminary and permanent injunctions to prevent defendants from using the planned categorization scheme with respect to the publication of ancestry data from Census 2000.<sup>429</sup> They also sought a declaratory judgment that the planned classification was null and void, “arbitrary and capricious,” and unauthorized by law.<sup>430</sup>

In summarizing plaintiffs' claims, the defendants noted:

The present lawsuit is extraordinary in that it, unlike virtually every other challenge to the census, does not even allege that Plaintiffs have . . . [or will suffer] any concrete injuries—such as a loss of funding or a congressional representative—but merely asserts the amorphous and untenable claim that all Assyrians will somehow be stigmatized by the Census Bureau's actions.<sup>431</sup>

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<sup>423</sup> Final Judgment and Order on Motion for Stay, April 8, 2002.

<sup>424</sup> *U.S. Department of Commerce v. Carter*, 307 F.3d 1084 (9th Cir. 2002).

<sup>425</sup> *Assyrian National Congress v. Bureau of the Census*, Civ. F005376 (REC/DLB), in the U.S.D.C. for the Eastern District of California, Complaint for Judicial Review and Injunctive Relief, ¶¶ VI–VII.

<sup>426</sup> The Establishment Clause reads as follows: “Congress shall make no law respecting an establishment of religion, or prohibiting the free exercise thereof.” U.S. Constitution, Amendment I.

<sup>427</sup> Title 13, U.S. Code, § 221(c) reads as follows: “Notwithstanding any other provision of this title, no person shall be compelled to disclose information relative to his religious beliefs or to membership in a religious body.”

<sup>428</sup> Complaint at ¶ I.

<sup>429</sup> *Ibid.*, at ¶ XIX.

<sup>430</sup> *Ibid.*, at ¶¶ XV and XIX.

<sup>431</sup> Defendants' Memorandum in Support of Motion to Dismiss or for Summary Judgment and in Opposition to Plaintiffs' Motion for a Preliminary Injunction, May 24, 2000, p. 1.

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The defendants pointed out, for example, that “[t]here is no known use of the ancestry data by Federal or State agencies to make determinations about funding or services for particular organizations or individuals.”<sup>432</sup>

Defendants argued that plaintiffs’ claims were not reviewable under the APA because (1) the challenged action was “committed to agency discretion by law,”<sup>433</sup> (2) the Census Bureau had yet to take “final agency action” with regard to the publication of ancestry data from the Census 2000 long form,<sup>434</sup> that is, plaintiffs’ claims were not “ripe” for review, and (3) the courts had held that the issuance of an agency informational report (in this case, the publication of ancestry data from Census 2000, using a particular category heading) does not constitute “final agency action” for purposes of APA review.<sup>435</sup> Defendants further argued that even if their actions were reviewable under the APA, they were rational and reasonable and could not be considered arbitrary or capricious.<sup>436</sup>

On October 5, 2000, the district court issued an order granting defendants’ motion to dismiss or for summary judgment and denying plaintiffs’ motion for preliminary injunction.<sup>437</sup> In granting defendants’ motion, the court rejected plaintiffs’ constitutional claim. However, the court found that the Census Bureau’s decision regarding the use of the category heading “Assyrian/Chaldean/Syriac” was a “final agency action” subject to review under the APA. The court held that the Census Bureau’s decision could not be characterized as “. . . arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law,” noting that “. . . there is a rational basis for the decision based on a consideration of relevant factors.”<sup>438</sup>

On October 16, plaintiffs filed a motion for reconsideration. That motion was denied by the court on November 15, 2000.<sup>439</sup> Plaintiffs did not appeal the district court ruling.

**Morales v. Evans.** In this lawsuit, plaintiffs—five residents of Texas, all of whom were American citizens—filed their complaint on March 29, 2000, in the U.S. District Court for the Southern District of Texas, Houston Division, claiming, among other things, that the Census 2000 short- and long-form questionnaires included “numerous, extreme and outrageous questions” and that “[t]he objectionable census questions are all those which purport to demand information beyond the ‘actual enumeration’ permitted by the Constitution.”<sup>440</sup> That is, plaintiffs contended that “[a]ll questions propounded in the short and long forms beyond the first question—asking the number of persons living at a particular address—fall into this proscribed category of data collection.”<sup>441</sup>

Plaintiffs claimed that through the issuance of those questionnaires, defendants had employed an impermissible statistical method;<sup>442</sup> engaged in arbitrary and capricious administrative behavior

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<sup>432</sup> *Ibid.*, p. 5.

<sup>433</sup> The Administrative Procedure Act, 5 U.S. Code § 701(a)(2).

<sup>434</sup> At the time, the Census Bureau planned to publish the ancestry data from Census 2000 in the fall of 2002.

<sup>435</sup> Defendants’ Memorandum in Support of Motion to Dismiss or for Summary Judgment and in Opposition to Plaintiffs’ Motion for a Preliminary Injunction, pp. 17–21.

<sup>436</sup> *Ibid.*, pp. 21–22.

<sup>437</sup> *Assyrian National Congress v. Bureau of the Census*, Civ. F005376 (REC/DLB) (E.D.Cal. Oct. 5, 2000). This case was not reported.

<sup>438</sup> *Ibid.*, pp. 43–44.

<sup>439</sup> Order Denying Plaintiffs’ Motion for Reconsideration, November 15, 2000.

<sup>440</sup> *Morales v. Daley*, C.A. No. H-00-1010, in the U.S.D.C. for the Southern District of Texas, Houston Division, “Complaint for Declaratory, Injunctive and Other Appropriate Relief,” ¶¶ 7 and 8.

<sup>441</sup> *Ibid.*, at ¶ 12.

<sup>442</sup> *Ibid.*, at ¶¶ 11 and 12. Plaintiffs appear to cite § 209(b) of P.L. 105-119 (111 Stat. 2481) as providing them with a “right of action” based on their claim that they are “aggrieved by the use of any statistical method in violation of the Constitution or any provision of law . . . in connection with the 2000 or any later decennial census, to determine the population for purposes of the apportionment or redistricting of Members in Congress. . . .” Plaintiffs argue that the use of the long form to conduct the enumeration falls within the meaning of this provision and they also (erroneously) reference the Supreme Court ruling in *U.S. House of Representatives* (119 S.Ct. 765 (1999)) that held that statistical sampling could not be used to produce the congressional apportionment counts. Contrary to plaintiffs’ assertion, the fact that the Census Bureau collects additional characteristic information from a sample of the population through the long form does not mean that the apportionment counts are derived from sampling. Plaintiffs also appear to argue that because households that receive the long form are less likely to respond (at all), this circumstance will result in a “sample” census, which is prohibited by Section 195 of Title 13, U.S. Code.

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(in violation of the APA); and attempted to obtain, under threat of criminal prosecution, “information which is statutorily proscribed,”<sup>443</sup> and in doing so violated plaintiffs’ constitutional rights.

Plaintiffs requested the court to (1) declare as unconstitutional all questions on the Census 2000 questionnaires beyond those necessary to conduct an “actual enumeration” and (2) enjoin the Census Bureau from distributing the Census 2000 questionnaires (both the short and the long form) and collecting the information requested on them.

In response to plaintiffs’ complaint, the court granted a limited temporary restraining order, which the defendants agreed to, preventing the U.S. government from taking criminal action against plaintiffs for failing to respond to their census forms. The parties subsequently filed cross-motions for summary judgment.

The district court issued its ruling on June 7, 2000, granting defendants’ motion for summary judgment.<sup>444</sup> Plaintiffs claimed that their rights under the First, Fourth, and Fourteenth Amendments to the Constitution were violated by the questions on the long form.<sup>445</sup> The court rejected plaintiffs’ contention that the Constitution only permits a head count (that is, determining the number of people at each address), noting that the decennial census—from the first one in 1790—has always collected additional information such as race, sex, and age.<sup>446</sup>

With regard to plaintiffs’ equal protection claims, the court did not accept plaintiffs’ argument that they were being required, under penalty of criminal prosecution, to self-identify based on “suspect” classifications—for example, race and national origin—the use of which requires the government to provide a compelling or overriding interest for doing so. Plaintiffs had contended that the government had failed to meet that burden. In rejecting that argument, the court noted that the collection of data using classifications relating to race and ethnicity does not require the government to demonstrate a compelling interest, because the mere collection of demographic data in this manner does not constitute disparate treatment (based on those classifications) of those providing the data.<sup>447</sup>

With regard to their First Amendment claims, plaintiffs argued that the requirement, under threat of criminal prosecution, to classify themselves by race and ethnicity—classifications they found abhorrent—was an unconstitutional coercion of political speech. The court rejected this argument in part because, it noted, plaintiffs’ answers to the “offensive” classifications would not be attributable to them—under the confidentiality provisions of Title 13—and thus, it could not be said that they were “. . . being required to espouse publicly a repugnant idea or to engage in compelled speech.”<sup>448</sup>

As to the Fourth Amendment claims, plaintiff Van Fleet received the long-form questionnaire and contended that having to respond to many of the questions contained therein was a gross invasion of his privacy. He argued that the Fourth Amendment has been interpreted more broadly in recent cases to protect privacy generally, not just in the context of search and seizure.<sup>449</sup> Furthermore, he contended the questions regarding medical conditions and difficulty in engaging in certain activities because of the existence of such conditions were particularly intrusive. In order for the government to justify such an intrusion in a noncriminal context, it must demonstrate a compelling need for the information, which it had not done, Van Fleet argued.<sup>450</sup>

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<sup>443</sup> *Ibid.*, at ¶ 14. Plaintiffs cite statutes (for example, the Americans with Disabilities Act of 1990) that, in other contexts, prohibit entities (including the government) from asking about an individual’s race, disabilities, etc.

<sup>444</sup> *Morales v. Daley*, 116 F.Supp.2d 801, 821 (S.D. Texas 2000).

<sup>445</sup> The court pointed out that plaintiffs erroneously cited the Fourteenth Amendment (Section 1), which imposes prohibitions upon the states, not the federal government. The court inferred that plaintiffs had meant to cite the Fifth Amendment. *Ibid.*, p. 803, fn 1.

<sup>446</sup> *Ibid.*, p. 809.

<sup>447</sup> *Ibid.*, p. 815.

<sup>448</sup> *Ibid.*, p. 816.

<sup>449</sup> The relevant portion of the Fourth Amendment to the Constitution reads as follows: “The right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall not be violated. . . .”

<sup>450</sup> *Morales v. Daley*, 116 F.Supp.2d 816, 817 (S.D. Texas 2000).

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In responding to plaintiff Van Fleet’s Fourth Amendment contentions, the court cited a U.S. Court of Appeals for the Second Circuit ruling that held that the government’s collection of race and ethnicity data in the employment context did not have search and seizure implications and that challenging such a government data collection under the Fourth Amendment constituted a “frivolous” claim.<sup>451</sup> In addition, the court again noted that because the Census Bureau would maintain the confidentiality of Van Fleet’s responses, using them only for statistical purposes, it could not be persuasively argued that requiring him to respond to the questions on medical conditions would constitute an unreasonable invasion of his privacy.<sup>452</sup>

Thus, the court held that requiring respondents, under threat of criminal prosecution, to answer the questions on the Census 2000 short- or long-form questionnaire did not violate any constitutional provisions, and it granted defendants’ motion for summary judgment.

Plaintiffs subsequently filed an appeal in the U.S. Court of Appeals for the Fifth Circuit, which upheld without opinion the lower court ruling.<sup>453</sup> The plaintiffs then filed a petition for writ of *certiorari* in the Supreme Court. On February 19, 2002, the Supreme Court denied plaintiffs’ *certiorari* petition.<sup>454</sup>

**Lindsey v. Prewitt.** In this suit, filed on April 3, 2000, in the U.S. District Court for the District of Oregon, plaintiff Charles Aaron Lindsey—a resident of the state of Oregon and U.S. citizen—challenged the conduct of Census 2000 as unconstitutional because of the inclusion of noncitizens in the counts used to determine the apportionment of the U.S. House of Representatives. Kenneth Prewitt, Director of the U.S. Bureau of the Census, was named as the defendant.

The plaintiff requested the following items of relief, among others:

- (1) A declaration that Census 2000 violates the Constitution.
- (2) A preliminary injunction enjoining the Census Bureau “. . . from using the data in any form from Census 2000 as it is currently constructed.”
- (3) A requirement for the defendant “. . . to revise and reconstruct the Census 2000 survey to follow the requirements of the United States Constitution. . . .”<sup>455</sup> (Plaintiff argued that these requirements included obtaining the citizenship status of all census respondents for purposes of producing the apportionment counts.)

The court noted that the plaintiff did not provide any support for the proposition that the Constitution required apportionment counts to be based on the citizen population only.<sup>456</sup> Because the court determined that the plaintiff could not show that he had or would suffer any concrete harm as a result of defendant’s actions—thus, failing to establish standing—it granted defendant’s motion to dismiss on August 8, 2000.<sup>457</sup>

**Cahoon v. Bureau of the Census.** On May 15, 2000, plaintiff Robert Cahoon filed a “petition” in the U.S. District Court for the Middle District of Florida, Tampa Division, objecting to receiving and being required to complete the Census 2000 long form. Plaintiff claimed that the long form violated a number of provisions of the U.S. Constitution, including the Fourth and Fourteenth Amendments. Mr. Cahoon requested the court to order the Census Bureau to rescind the long form and only issue the Census 2000 short form; prohibit any enumerator from obtaining any information other than that requested on the short form; and declare that respondents cannot be prosecuted for failing to respond to the questions on the Census 2000 long form, other than those also found on the Census 2000 short form.

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<sup>451</sup> *Ibid.*, p. 820, citing *Caufield v. Bd. of Educ. of the City of New York*, 583 F.2d 612 (2nd Cir. 1978).

<sup>452</sup> *Ibid.*, p. 820.

<sup>453</sup> *Morales v. Evans*, 275 F.3d 45 (5th Cir. 2001).

<sup>454</sup> 534 U.S. 1135 (2002).

<sup>455</sup> *Lindsey v. Prewitt*, Civil No. 00-6091-TC, in the U.S.D.C. for the District of Oregon, Complaint for Declaratory and Injunctive Relief, pp. 4–5.

<sup>456</sup> *Lindsey v. Prewitt*, Civil No. 00-6091-TC (D.Or. Aug. 8, 2000), p. 3. This case was not reported.

<sup>457</sup> *Ibid.*, p. 6.



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On May 26, 2000, the district court dismissed the suit, finding the “. . . legal basis for the plaintiff’s petition indisputably meritless. . . .”<sup>458</sup> On June 13, 2000, plaintiff Cahoon filed a notice of appeal of the district court ruling. However, on November 17, 2000, the appeal was rejected by the U.S. Court of Appeals for the Eleventh Circuit because appellant Cahoon failed to file the required documentation within the prescribed time limits.

***Barnett v. U.S. Department of Commerce.*** On October 31, 2001, plaintiffs—three residents of the state of Illinois who were U.S. citizens—filed this lawsuit in the U.S. District Court for the Northern District of Illinois, Eastern Division, against the U.S. Department of Commerce and the Census Bureau, among others, seeking a permanent injunction to compel the Census Bureau to release, in an expedited fashion, a tabulation pertaining to the state of Illinois containing citizen voting-age population data, by race and Hispanic origin, for use in redistricting the Illinois legislature.<sup>459</sup> The block-level P.L. 94-171 files the Census Bureau releases as the official redistricting data do not contain information on citizenship.

Plaintiffs were challenging the redistricting plan that had been adopted by the Illinois Legislative Redistricting Commission as violative of the constitutional requirement of “one person, one vote,” because, among other things, it used total voting-age population data, as opposed to citizen voting-age data.<sup>460</sup> Plaintiffs argued that a recent U.S. Court of Appeals for the Seventh Circuit ruling in *Barnett v. City of Chicago* (141 F.3d 699 (7th Cir. 1998))—a lawsuit challenging the use of the 1990 census results to redraw the city of Chicago’s alderman districts—determined that the proper data for use in redistricting were those pertaining to the citizen voting-age population.<sup>461</sup> Thus, plaintiffs contended that the data they were requesting from the Census Bureau were required to draw a new redistricting plan that would pass constitutional muster.

On December 5, 2001, plaintiffs filed an amended complaint under the Voting Rights Act, adding a claim against new defendants, the Illinois State Board of Elections and its executive director,<sup>462</sup> seeking to prevent the use of the redistricting plan adopted by the Illinois Legislative Redistricting Commission in future elections of representatives and senators to the Illinois legislature.

On January 24, 2002, the federal defendants filed a motion to dismiss or, in the alternative, for summary judgment. Defendants noted that the requested tabulation (pertaining to the citizen voting-age population) did not exist and that defendant Census Bureau did not plan to produce the data at the level of geography requested by plaintiffs.<sup>463</sup> Defendants argued that plaintiffs were, in effect, asking the court to require the Census Bureau to produce a special tabulation<sup>464</sup> for them on an expedited basis. The provisions of Title 13 pertaining to special tabulations, defendants noted, provide the Secretary of Commerce with the discretion to undertake any special tabulation (subject to the confidentiality restrictions imposed by that section) and require that the

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<sup>458</sup> *Cahoon v. Bureau of the Census*, 8:00CV954T23A (M.D.Fla. May 26, 2000), pp. 1–2. This case was not reported.

<sup>459</sup> *Barnett v. U.S. Department of Commerce*, CV No. 01C8347, U.S.D.C. for the Northern District of Illinois, Eastern Division, Complaint for Injunctive Relief, ¶ 1. On December 19, 2001, additional parties joined the suit as plaintiff-intervenors. These included two residents of Illinois who were U.S. citizens, an Illinois state representative, the Midwest Community Council, and FORUM (Fulfilling Our Responsibility Unto Mankind).

<sup>460</sup> *Ibid.*, ¶¶ 30 and 32.

<sup>461</sup> *Ibid.*, ¶ 23.

<sup>462</sup> Initially, plaintiffs’ claims against state of Illinois defendants were part of a separate complaint against those entities, which the plaintiffs later withdrew.

<sup>463</sup> Plaintiffs did not specify the level of geography in their complaint, but later requested the data at the block-group level in a discovery request. In 1990, the Census Bureau released citizen voting-age data at the block-group level as a data product. These data were only provided by race as a special tabulation (see discussion in the text). Because Census 2000 respondents were permitted to mark one or more race categories, the presentation of race data includes 63 possible race groups (all of the possible single and multiple responses to the race question). The Census Bureau noted that this circumstance made it unlikely that the agency would be able to release—because of the risk that the data pertaining to a particular respondent could be identified—Census 2000 citizen voting-age population data by race at the geographic level that it did in 1990. Summary File 4, which at the time was scheduled for release between October 2002 and February 2003, would contain the data plaintiffs sought, but at the census tract level. Declaration of Preston Jay Waite in Support of Motion to Dismiss or for Summary Judgment, ¶¶ 15–17, Exhibit A to Federal Defendants’ Statement of Material Facts as to Which There Is No Genuine Issue, January 24, 2002.

<sup>464</sup> The Special Tabulations program is discussed in more detail in Chapter 9, “Data Products and Dissemination.”

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work to produce such a tabulation be done on a cost-reimbursable basis.<sup>465</sup> Because the Secretary's authority was discretionary, there was no statutory basis for compelling defendants to provide the tabulation to plaintiffs, making the complaint suitable for dismissal, at least with regard to federal defendants.

Furthermore, defendants pointed out that there was no federal statute requiring that states use the P.L. 94-171 or other decennial census data for redistricting purposes, so federal defendants were not responsible for the data that the state of Illinois officials used to redraw their state legislative districts. That is, the state of Illinois was not compelled by federal law to use the decennial census data in state legislative redistricting, so any alleged harm to plaintiffs as a result of the data used to conduct such redistricting was not traceable to federal defendants, but only to state officials. Thus, because federal defendants did not cause the "harm"—an unlawful and/or unconstitutional redistricting plan—for which plaintiffs sought redress, plaintiffs lacked standing to bring suit against them. After extensive procedural maneuvering, the plaintiffs withdrew the claim against federal defendants.

***City of Los Angeles v. U.S. Department of Commerce.*** This lawsuit was filed by the City of Los Angeles on November 27, 2002, in response to the Census Bureau's withholding of particular documents and data—pertaining to the Census 2000 service-based enumeration—that the city had requested under the Freedom of Information Act (FOIA). The specifics of the city's requests and the Census Bureau's responses are discussed in the "Freedom of Information Act Requests" section of this chapter.

In August 2002, Gibson, Dunn & Crutcher (on behalf of the City of Los Angeles) filed an appeal of the Census Bureau's partial denial of the requests. Stating that the appeal was not timely filed, the Department of Commerce assistant general counsel for administration denied it. The City of Los Angeles proceeded to file suit in the U.S. District Court for the Central District of California, Western Division.

On August 27, 2004, the district court granted defendant's motion for summary judgment, agreeing with the Department of Commerce that the plaintiff had not exhausted its administrative remedies before filing suit.<sup>466</sup> That is, the court ruled that it did not have jurisdiction to hear the case because the Department of Commerce's assistant general counsel for administration could have overturned the Census Bureau's partial denial of records—assuming the plaintiff had submitted a timely appeal—thereby obviating the need for judicial review. Thus, the City of Los Angeles would be required to initiate its FOIA request anew and would have to receive from the department a substantive response upholding the Census Bureau's denial (assuming the agency's response would remain the same) before it could proceed (again) with its lawsuit.

**Other litigation.** In addition to the lawsuits described above regarding Census 2000 programs, operations, methodologies, and procedures, during Census 2000 and subsequently, disputes arose over when decennial census field employees were entitled to overtime pay under the Fair Labor Standards Act, Title 29, U.S. Code, Section 207, *et seq.*, and the Federal Employees Pay Act, Title 5, U.S. Code, Section 5542, *et seq.* Some employees sued in U.S. district courts and in the U.S. Court of Federal Claims. At the time this chapter was submitted for publication, litigation regarding this issue remained pending.

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<sup>465</sup> 13 U.S.C. § 8(b).

<sup>466</sup> *City of Los Angeles v. U.S. Department of Commerce*, CV 02-9122WMB (C.D.Cal. Aug. 27, 2004), p. 8. This case was not reported.

Table 11-6.  
**Summary of Litigation Relating to 2000<sup>1</sup>**

Abbreviated case name (as filed), date filed, and court of filing <sup>2</sup>	Principal plaintiffs	Issue(s)	Resolution <sup>3</sup>
<i>Glavin v. Clinton</i> February 12, 1998 U.S. District Court for the Eastern District of Virginia, Alexandria Division	Matthew Glavin (then-president of the Southeastern Legal Foundation); Rep. Robert Barr (R-GA); William J. Byrn, Cobb County, GA, Commission Chairman; Cobb County, GA; Bucks and Delaware Counties in Pennsylvania; DuPage County, IL; and residents of Indiana, Pennsylvania, Ohio, Virginia, Florida, Connecticut, California, Nevada, Arizona, New Jersey, Montana, Wisconsin, and Illinois	The legality and constitutionality of the use of sampling to produce the apportionment counts.	The Supreme Court consolidated the <i>Glavin</i> case and the <i>U.S. House of Representatives</i> case and ruled that Section 195 of the Census Act (Title 13, U.S. Code) precludes the use of sampling to produce the congressional apportionment counts. The Court did not address the constitutional issues.
<i>U.S. House of Representatives v. Department of Commerce</i> February 20, 1998 U.S. District Court for the District of Columbia	U.S. House of Representatives	The legality and constitutionality of the use of sampling to produce the apportionment counts.	The Supreme Court dismissed the Department of Commerce's appeal in the <i>U.S. House of Representatives</i> case (although the caption of the decision case retains the name <i>Department of Commerce v. U.S. House of Representatives</i> ), because it adjudicated the same substantive issues with respect to the plaintiffs in <i>Glavin</i> .
<i>Utah v. Evans (Evans I)</i> January 10, 2001 U.S. District Court for the District of Utah, Central Division	The State of Utah, seven Utah state government elected officials, and Utah's entire congressional delegation; and four residents of Utah serving overseas as Mormon missionaries at the time of Census 2000	Plaintiffs challenged as illegal and unconstitutional the Census Bureau's failure to include in the Census 2000 apportionment counts Mormon missionaries temporarily serving overseas.	In a November 26, 2001, summary affirmation, the Supreme Court upheld the district court decision (April 17, 2001) rejecting plaintiffs' statutory and constitutional claims.
<i>Utah v. Evans (Evans II)</i> April 25, 2001 U.S. District Court for the District of Utah, Central Division	Same plaintiffs as in <i>Evans I</i>	The legality and constitutionality of the use of "hot-deck" count imputation in producing the Census 2000 apportionment counts.	On June 20, 2002, the Supreme Court issued a decision concluding that the use of hot-deck count imputation to produce the apportionment counts is neither contrary to the Constitution nor Title 13, U.S. Code, Section 195, thereby upholding the November 1, 2001, district court ruling.

See footnotes at end of table.

Table 11-6.  
**Summary of Litigation Relating to 2000<sup>1</sup>—Con.**

Abbreviated case name (as filed), date filed, and court of filing <sup>2</sup>	Principal plaintiffs	Issue(s)	Resolution <sup>3</sup>
<p><i>City of Los Angeles v. Evans</i>            February 21, 2001            U.S. District Court for the Central District of California</p>	<p>The cities and counties of Los Angeles and San Francisco, CA; Santa Clara County, CA; cities of San Jose and Inglewood, CA; lieutenant governor of California; ten Los Angeles City Council members; cities of New York, NY, Chicago, IL, Albuquerque, NM, Toledo, OH, San Antonio, TX, and Stamford, CT; mayor of Toledo, OH; minority leaders of the Illinois Senate; president of the Cook County (IL) Board of Commissioners; New York City (NYC) Council; Speaker of the NYC Council; NYC Boroughs of Bronx and Brooklyn; and presidents of the NYC Boroughs of Manhattan, Bronx, and Queens</p>	<p>Plaintiffs challenged the revised rule under which the Secretary of Commerce, not the Census Bureau Director, would determine whether to adjust the redistricting data.</p> <p>Plaintiffs amended their complaint to challenge Secretary Evans' decision to release the unadjusted data as the official redistricting data (Public Law [P.L.] 94-171), claiming that Title 13, U.S. Code, Section 195 required the use of sampling to adjust the census counts for all purposes other than apportionment. Specifically, plaintiffs requested that the court require the Secretary to release the adjusted data as the official P.L. 94-171 data.</p>	<p>On April 25, 2001, the district court dismissed plaintiffs' complaint, thereby upholding the Secretary's decision. Plaintiffs filed an appeal in the U.S. Court of Appeals for the Ninth Circuit.</p> <p>On September 27, 2002, the Ninth Circuit Court upheld the district court ruling with respect to the Secretary's decision and determined plaintiffs' other claims to be moot, as the revisions to the rule did not "cause" the injuries alleged by plaintiffs.</p>
<p><i>Carter v. U.S. Department of Commerce</i>            June 11, 2001            U.S. District Court for the District of Oregon</p>	<p>Margaret Carter and Susan Castillo, Oregon state senators</p>	<p>Release of the Census 2000 adjusted block-level data under the Freedom of Information Act (FOIA).</p>	<p>On November 20, 2001, the district court ruled the data were not protected from disclosure under the FOIA and ordered their release to the plaintiffs.</p> <p>The Department of Commerce (defendant) appealed that ruling to the U.S. Court of Appeals for the Ninth Circuit. On October 8, 2002, the Ninth Circuit Court upheld the district court ruling, and the defendant subsequently released the data to plaintiffs.</p>
<p><i>Morales v. Daley</i>            March 23, 2000            U.S. District Court for the Southern District of Texas, Houston Division</p>	<p>Edgar Morales and four other residents of Texas, all of whom were U.S. citizens.</p>	<p>Plaintiffs challenged the legality and constitutionality of being required, under threat of criminal prosecution, to respond to various questions on the Census 2000 short- and long-form questionnaires.</p>	<p>The U.S. Court of Appeals for the Fifth Circuit upheld the district court decision (June 7, 2000) granting summary judgment to defendants, and on February 19, 2002, the Supreme Court declined to hear plaintiffs' appeal.</p>

See footnotes at end of table.

Table 11-6.  
**Summary of Litigation Relating to 2000<sup>1</sup>—Con.**

Abbreviated case name (as filed), date filed, and court of filing <sup>2</sup>	Principal plaintiffs	Issue(s)	Resolution <sup>3</sup>
<p><i>Waxman v. Evans</i>            May 21, 2001            U.S. District Court for the Central District of California</p>	<p>Rep. Henry Waxman and 15 other members of the House Committee on Government Reform</p>	<p>The release of the Census 2000 adjusted block-level data under the “Seven Member Rule” (Title 5, U.S. Code, Section 2954).</p>	<p>The district court found on January 18, 2002, that the plain language of the Seven Member Rule required the Secretary to release the requested data to the House Government Reform Committee members.</p> <p>Defendant filed an appeal in the Ninth Circuit Court of Appeals. Before that court could adjudicate the appeal, it had ruled in <i>U.S. Department of Commerce v. Carter</i> that the adjusted data could not be withheld under the FOIA, thereby rendering defendant’s appeal in the present case moot.</p>
<p><i>Lindsey v. Prewitt</i>            April 3, 2000            U.S. District Court for the District of Oregon</p>	<p>Charles Aaron Lindsey, a resident of Oregon and U.S. citizen</p>	<p>The constitutionality of including noncitizens in the census counts used for apportionment.</p>	<p>The district court granted defendant’s motion to dismiss on August 8, 2000.</p>
<p><i>Cameron County, Texas v. Evans</i>            May 10, 2001            U.S. District Court for the Southern District of Texas, Brownsville Division</p>	<p>Cameron and Hildago Counties in Texas; the judges for those counties; and 36 Texas cities</p>	<p>Plaintiffs challenged the revised rule under which the Secretary of Commerce, not the Census Bureau Director, would determine whether to adjust the redistricting data.</p> <p>Additionally, plaintiffs claimed that Title 13, U.S. Code, Section 195 required release of the adjusted data for purposes other than apportionment, but also sought release under the FOIA of the adjusted population counts for each of the plaintiff 36 cities and two counties. Plaintiffs sought use of the adjusted data for federal and state funding-allocation purposes.</p>	<p>On January 28, 2002, with regard to all of plaintiffs’ claims except the FOIA one, the district court either ruled in favor of defendants or dismissed the claims.</p> <p>On the FOIA claim, the court ordered defendants to release the adjusted Census 2000 population counts for the plaintiff jurisdictions.</p> <p>On February 5, 2002, defendants filed an appeal in the U.S. Court of Appeals for the Fifth Circuit with regard to the ruling on plaintiffs’ FOIA claim. Given the ruling in <i>Carter</i> on October 8, 2002, defendants voluntarily withdrew their Fifth Circuit appeal and complied with the order of the district court.</p>

See footnotes at end of table.

Table 11-6.  
**Summary of Litigation Relating to 2000<sup>1</sup>—Con.**

Abbreviated case name (as filed), date filed, and court of filing <sup>2</sup>	Principal plaintiffs	Issue(s)	Resolution <sup>3</sup>
<p><i>Assyrian National Congress of America v. Bureau of the Census</i>            March 3, 2000            U.S. District Court for the Eastern District of California</p>	<p>Assyrian National Congress of America (ANCA); and Sargon Dadesho, president of the ANCA</p>	<p>Plaintiffs challenged the legality and constitutionality of the defendant's use of the category "Assyrian/Chaldean/Syriac" in publishing responses to the long-form question on ancestry.</p>	<p>On October 5, 2000, the district court granted defendants' motion to dismiss or for summary judgment, rejecting plaintiffs' statutory and constitutional claims.</p> <p>Plaintiffs subsequently filed a motion for reconsideration, which was denied by the district court on November 15, 2000. Plaintiffs did not appeal the district court ruling.</p>
<p><i>Cahoon v. Bureau of the Census</i>            May 15, 2000            U.S. District Court for the Middle District of Florida, Tampa Division</p>	<p>Robert Cahoon</p>	<p>Plaintiff challenged the constitutionality of being required to complete the Census 2000 long form.</p>	<p>The district court dismissed the suit on May 26, 2000. Plaintiff filed an appeal in the U.S. Court of Appeals for the Eleventh Circuit, which rejected the appeal November 17, 2000, on procedural grounds.</p>
<p><i>Barnett v. U.S. Department of Commerce</i>            October 31, 2001            U.S. District Court for the Northern District of Illinois, Eastern Division</p>	<p>Richard Barnett and two other residents of Illinois, all of whom were U.S. citizens.</p>	<p>Plaintiffs were challenging the redistricting plan adopted by the Illinois Legislative Redistricting Commission for redistricting the Illinois legislature.</p> <p>They requested that the court compel the Census Bureau to provide, in an expedited fashion, a tabulation pertaining to the state of Illinois containing citizen voting-age population data, by race and Hispanic origin, for use in developing an alternative redistricting plan.</p>	<p>In their filings, federal defendants (the Department of Commerce, the Census Bureau, and their named officials) noted that plaintiffs were essentially requesting that the court compel the Census Bureau to produce a special tabulation of Census 2000 data, whereas the Secretary's authority for undertaking any special tabulation is discretionary (Title 13, U.S. Code, Section 8(b)).</p> <p>There being no statutory basis for compelling federal defendants to produce the requested tabulation, plaintiffs voluntarily withdrew their claim.</p>
<p><i>City of Los Angeles v. U.S. Department of Commerce</i>            November 27, 2002            U.S. District Court for the Central District of California, Western Division</p>	<p>City of Los Angeles</p>	<p>The release under the FOIA of particular documents and data pertaining to the planning and conduct of the Census 2000 service-based enumeration (SBE). Defendant had responded that the requested data tabulations did not exist, and the FOIA did not require their creation. Defendant also contended that the documents (or portions thereof) in question were properly withheld under Exemption 5 of the FOIA.</p>	<p>On August 27, 2004, the district court granted defendant's motion for summary judgment, agreeing with defendant that the court did not have jurisdiction to hear the case, because plaintiff had not exhausted its administrative remedies before filing suit.</p>

<sup>1</sup> For detailed information about the Census 2000 lawsuits, see "Census 2000 Litigation" in the "Litigation" section of this chapter. Lawsuits discussed under "Other litigation" are not included here.

<sup>2</sup> When a lawsuit is filed, the name(s) of the party (or parties) bringing the suit—the plaintiff(s)—appears first in the case name. When a court ruling is appealed to and heard by a higher court, the name of the party filing the appeal (the "appellant") appears first in the case name, regardless of whether or not the appellant is the plaintiff. Additionally, while most of the cases summarized here involved multiple plaintiffs and/or multiple defendants, the *et al.* ("and others") that would follow the first plaintiff/defendant mentioned in the case name has been left off for the sake of convenience.

<sup>3</sup> "Resolution" refers to the final adjudication of the case.

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# Chapter 12: Puerto Rico and the Island Areas

## INTRODUCTION

The decennial census is mandated by Article I, Section 2, of the U.S. Constitution, and Title 13 of the U.S. Code outlines the laws under which the census is conducted. Title 13 also specifies the geographic scope of enumeration and allows the Secretary of Commerce (and, by delegation, the Director of the U.S. Census Bureau) the discretion to enact decennial census plans subject to executive and congressional review. In addition to its stateside activities, the Census Bureau is responsible for collecting population and housing data for the Commonwealth of Puerto Rico and other areas under U.S. jurisdiction. Collectively known as the Island Areas, these areas include American Samoa, the Commonwealth of the Northern Mariana Islands, Guam, and the U.S. Virgin Islands.<sup>1</sup>

## Background

With the Treaty of Paris in 1898, Spain ceded the islands of Puerto Rico and Guam to the United States. In 1899, the U.S. War Department conducted a special census of Puerto Rico, but the island was not included in the decennial census until 1910. By 1952, Puerto Rico became a commonwealth, and beginning in 1960, the United States conducted the census of population and housing as a joint project between the Census Bureau and the government of Puerto Rico. The Puerto Rico Planning Board (PRPB) serves as the liaison agency for coordinating census activities on the island. The PRPB also works with the Census Bureau to develop questionnaire content to meet the statistical needs of the commonwealth.<sup>2</sup>

Guam is an organized, unincorporated territory of the United States. Between 1898 and 1950, administration of Guam was the responsibility of the U.S. Navy; administration then was transferred to the U.S. Department of the Interior. The Organic Act of Guam in 1950 enabled Guamanians to elect their own legislature, although the President of the United States appointed Guam's governor until 1970. Since 1973, Guam has had an elected, nonvoting delegate in the U.S. House of Representatives.<sup>3</sup> The United States conducted special censuses in Guam between 1901 and 1919; Guam's participation in the decennial census began in 1920.<sup>4</sup>

American Samoa consists of five major volcanic islands and two coral atolls that lie in the heart of Polynesia.<sup>5</sup> It is an unorganized, unincorporated territory of the United States, acquired through a series of negotiations between 1872 and 1904. The U.S. Navy governed American Samoa until 1951 when an executive order transferred the administration of the territory to the U.S. Department of the Interior. In 1960, American Samoa adopted a constitution, and since 1981 the territory has been represented in the U.S. House of Representatives by a nonvoting delegate. The

<sup>1</sup> U.S. Census Bureau, "Program Master Plan: Census 2000 Island Areas," Census 2000 Informational Memorandum No. 109, March 2001, p. 3. Although American Samoa was not specified in Section 191 of Title 13 of the U.S. Code, the Office of the Geographer recommended that it be included in the decennial census as it was in 1990. See Martha Farnsworth Riche, U.S. Census Bureau, Washington, DC, to William B. Wood, Office of the Geographer and Global Issues, Department of State, Washington, DC, January 24, 1995; and William B. Wood, Office of the Geographer and Global Issues, Department of State, Washington, DC, to Martha Farnsworth Riche, U.S. Census Bureau, Washington, DC, March 6, 1995.

<sup>2</sup> In October 1958 the Census Bureau and the government of Puerto Rico came to an agreement that divided the responsibilities for census planning and operations between the Commonwealth of Puerto Rico and the Census Bureau.

<sup>3</sup> A nonvoting delegate is an elected delegate who may not vote on the floor of the House of Representatives, but may vote on legislation as it is considered by committees to which the delegate has been named.

<sup>4</sup> U.S. Census Bureau, *Geographic Areas Reference Manual*, 1994, pp. 7-19-7-22.

<sup>5</sup> Swains Island, a coral atoll, was settled by an American in 1856, and his citizenship tied it to the United States. The island officially became part of American Samoa in 1925.

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Census Bureau first included American Samoa in the decennial census in 1900; the local governor conducted a special census in 1912, and since 1920 American Samoa has been part of each decennial census.<sup>6</sup>

The Commonwealth of the Northern Mariana Islands (CNMI), which is part of Micronesia, comprises the former Mariana Islands District of the Trust Territory of the Pacific Islands (TTPI). It consists of three main islands—Saipan, Tinian, and Rota—and several small islands and atolls. The United States gained control of the Mariana Islands in military victories over Japan in 1944. In 1947, a trusteeship agreement between the United States and the United Nations placed the administrative authority of the islands under the U.S. Department of the Interior. The Northern Mariana Islands, however, given their strategic significance, remained under military control until 1961. Over several years, the entities within the TTPI worked toward self-government. In 1975, the United States and the Northern Mariana Islands concluded a covenant that resulted in that entity becoming a commonwealth of the United States. In 1978, the Northern Mariana Islands established a separate government. By 1986, a presidential proclamation dissolved the trusteeship agreement for all of the TTPI, and Palau and the CNMI attained commonwealth status.<sup>7</sup> The CNMI was first included in the 1970 decennial census as part of the TTPI, but was treated separately in 1980 tabulations because the legal structure for its commonwealth status was in place.<sup>8</sup>

The U.S. Virgin Islands (USVI) is an organized, unincorporated territory of the United States. The USVI comprises over 50 separate islands and cays, the population of which is distributed between three main islands—St. Croix, St. Thomas, and St. John. In 1917, the United States purchased these islands from Denmark. They remained under the jurisdiction of the U.S. Department of the Navy until 1931, when an executive order placed them under the Department of the Interior. Virgin Islanders were granted U.S. citizenship in 1917. Since 1970 they have elected their own governor, lieutenant governor, and legislature. In 1973, the USVI gained representation in the U.S. House of Representatives by a nonvoting delegate. Although the Census Bureau conducted a special census of the USVI in 1917, Virgin Islanders were not included in the decennial census until 1930.<sup>9</sup>

Other minor outlying areas are also included in the decennial census. The Census Bureau consulted with the Office of the Geographer and Global Issues, U.S. Department of State, as to which areas should be included in Census 2000. In 1990, the Census Bureau collected administrative counts for Midway Islands; Wake Island; Johnston Atoll; Navassa Island; Baker, Howland, and Jarvis Islands; Kingman Reef; and Palmyra Atoll. The Office of the Geographer agreed that these islands should be included in Census 2000. These islands are either uninhabited, occupied by the military, or periodically manned as research stations; access by civilians is restricted. The Population Division of the Census Bureau obtained population counts from the U.S. Departments of Defense, Interior, and Transportation in June 2000. These counts are included in tabulations that show totals for the United States, individual states, territories, and possessions.

The Republic of Palau, which had been enumerated by the Census Bureau in 1990, became an independent state in October 1994, so it was not included in Census 2000.<sup>10</sup>

### Organization of Puerto Rico and Island Areas Branch

For Puerto Rico and the Island Areas, the Census Bureau's Puerto Rico and Island Areas (PRIA) Branch of the Decennial Management Division (DMD) worked with the PRPB and the Island Areas

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<sup>6</sup> U.S. Census Bureau, *Geographic Areas Reference Manual*, 1994, pp. 7-13-7-19.

<sup>7</sup> Though included in the 1990 census, Palau became a Freely Associated State under a Compact of Free Association with the United States on October 1, 1994. Since it is no longer under the geographic scope of the census as defined in Title 13, Palau was not included in Census 2000. U.S. Census Bureau, "Program Master Plan: Census 2000 Island Areas," Census 2000 Informational Memorandum No. 109, March 2001, p. 3.

<sup>8</sup> The Department of the Interior, the Department of the Navy, and the Japanese government conducted periodic censuses before 1970.

<sup>9</sup> U.S. Census Bureau, *Geographic Areas Reference Manual*, 1994, pp. 7-37-7-41.

<sup>10</sup> See Martha Farnsworth Riche, U.S. Census Bureau, Washington, DC, to William Wood, Office of the Geographer and Global Issues, Department of State, Washington, DC, January 24, 1995; and William B. Wood, Office of the Geographer and Global Issues, Department of State, Washington, DC, to Martha Farnsworth Riche, U.S. Census Bureau, Washington, DC, March 6, 1995.

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(IAs) governments, other Census Bureau divisions, and contractors to plan and coordinate Census 2000 activities. The PRIA Branch consisted of three sections—Puerto Rico, Island Areas, and Translation. The branch’s responsibilities included:

- Developing budgets and cost models.
- Drafting and negotiating the terms of each memorandum of agreement (MOA) for IAs and Puerto Rico, and ensuring all approvals and signatures were in place.
- Adapting geographic areas criteria.
- Preparing field and office procedures, manuals, and training guides.
- Preparing and purchasing outreach and promotional material.
- Developing an Island Areas Control System (IACS) to track progress at the local census office (LCO) level.
- Authorizing the disbursement of MOA funds to each area (IAs only).
- Maintaining communication with local government officials during planning, conduct, processing, and publication stages of the census.
- Ensuring closeout of LCOs and preparation of final accounting statements from each area (IAs only).

## PUERTO RICO

### Introduction

From 1960 to 1990, Puerto Rico was enumerated using the list/enumerate (L/E) methodology. However, in its planning for Census 2000, the Census Bureau decided to implement a mailback census methodology. An increase in the number of limited-access communities on the island, as well as a prevalence of two-income households prompted the Census Bureau to conduct Census 2000 using the update/leave (U/L) methodology.<sup>11</sup> In 1996, representatives from the Census Bureau’s Decennial Management Division, Population Division, Decennial Statistical Studies Division (DSSD), Geography Division (GEO), and Field Division formed the Puerto Rico 2000 Working Group. Responsible for the overall planning of census activities for Puerto Rico, this group also provided support to other divisions for specific operations in Puerto Rico.<sup>12</sup> To conduct Census 2000 in Puerto Rico, the Census Bureau established nine local census offices (LCOs), an Accuracy and Coverage Evaluation regional office, and an area office on the island. Responsible for the enumeration of 6,225 assignment areas, these LCOs operated under the same administrative infrastructure as stateside update/leave LCOs.<sup>13</sup>

### Geography

The Census Bureau treats the Commonwealth of Puerto Rico as the statistical equivalent of a state. The commonwealth is divided into 78 first-order subdivisions. In Puerto Rico, the primary legal subdivisions are called “municipios.” These represent the highest-level legal subdivisions of Puerto Rico, similar to a county in most states (See Figure 12-1).<sup>14</sup>

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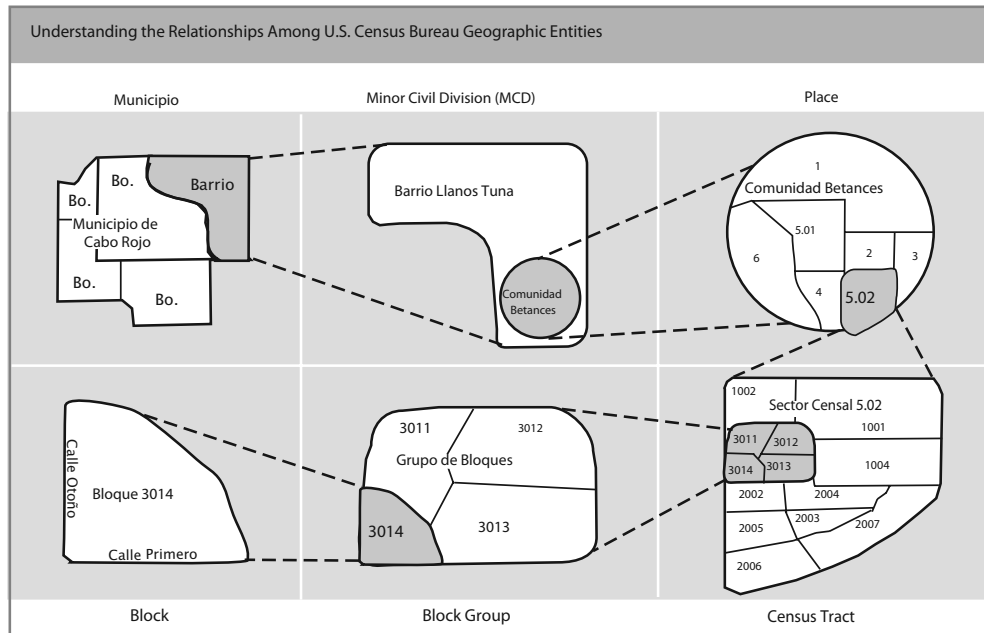
<sup>11</sup> U.S. Census Bureau, “Recommendation that the Census Bureau Use the Update/Leave Methodology for Data Collection During the Year 2000 Census of Puerto Rico,” Census 2000 Decision Memorandum No. 6, August 12, 1996; Tracey McNally, “Operational Analysis of Enumeration in Puerto Rico, Final Report,” Census 2000 Evaluation No. H.8., May 15, 2003. For more information on data collection methodologies, see Chapter 5, “Data Collection.”

<sup>12</sup> Julie Buckley-Ess and Idabelle Hovland, *Puerto Rico, Census 2000 Testing, Experimentation, and Evaluation Program Topic Report No. 14, TR-14* (Washington, DC: U.S. Census Bureau, February 2004) p. 9; U.S. Census Bureau, Decennial Payroll/Personnel Staff, Field Division, “2000 Census Organization Structure and Staffing,” April 2001, p. 3.

<sup>13</sup> For more information on the organization and administration of LCOs, see Chapter 5, “Data Collection.”

<sup>14</sup> There are 78 municipios in Puerto Rico.

Figure 12-1.  
**Census Small-Area Geography, Puerto Rico**



For Census 2000, the municipios were divided further into minor civil divisions (MCDs). MCDs are legally defined entities that subdivide the first-order subdivisions. For Puerto Rico, the Census Bureau recognizes barrios and barrios-pueblo as the primary legal divisions of municipios. One barrio in each municipio (except Florida, Ponce, and San Juan) is identified as the barrio-pueblo, the area that represented the seat of government at the time the commonwealth formalized the municipio and barrio boundaries in the late 1940s. Some barrios and barrios-pueblo in 23 municipios have been further subdivided into subbarrios that the Census Bureau treats as sub-MCDs.

Within MCDs are population centers without legally defined corporate limits or powers. Such entities are called census designated places (CDPs). CDPs are delineated by local officials in cooperation with the Census Bureau. Although in 1990 the Census Bureau required a CDP to have a population of at least 1,000 persons, for Census 2000 there was no minimum population threshold for CDPs. Since there are no incorporated places in Puerto Rico, the Census Bureau provides data for two types of CDPs there: zonas urbanas, which represent the governmental center of each municipio, and comunidades, which represent other settlements.<sup>15</sup>

Each geographic subdivision is further divided into census tracts (also called block numbering areas in 1990), which consist of block groups and blocks. In Puerto Rico, census tracts are small, statistical subdivisions of municipios. Typically averaging 4,000 persons, census tracts generally have stable boundaries and, when first established, were designed to have relatively homogeneous demographic characteristics. Census tracts are further divided into block groups (BGs). BGs are a collection of census blocks within a census tract sharing the same first digit of their four-digit identifying numbers. A block, the smallest geographic unit for which the Census Bureau tabulates data, is generally bounded by streets, legal boundaries, and other features.

<sup>15</sup> Places for the reporting of decennial census data include CDPs, consolidated cities, and incorporated places. U.S. Census Bureau, *Summary Social, Economic, and Housing Characteristics*, PHC-2-A, "Appendix A: Census 2000 Geographic Terms and Concepts," pp. A-17–A-18, <<http://www.census.gov/geo/www/tiger/glossry2.pdf>>, (accessed April 17, 2006).

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## Questionnaire Content

From 1960 to 1990, the Census Bureau worked with the Puerto Rico Planning Board (PRPB) to develop questionnaire content that met Puerto Rico's needs. In 1990, the Puerto Rico questionnaire included topics on parents' places of birth, vocational training, and condition of housing units, but it did not include stateside topics such as race, Hispanic origin, and home heating fuel. For Census 2000, however, the government of Puerto Rico requested the same decennial questionnaire content as stateside. The value of quicker processing and release of Puerto Rico census data, the inclusion of Puerto Rico in stateside summary statistics, and the comparability with stateside data were cited as justification for the change.<sup>16</sup> In November 1998, the Census Bureau decided to include data from Puerto Rico in the national summary data products and use the stateside questionnaire content for Census 2000.<sup>17</sup>

This departure from past practices provided greater comparability with stateside data. Questions about race and interpretations of racial identity, however, presented some difficulties. Residents of Puerto Rico overwhelmingly identified themselves as Hispanic (98.8 percent). About 95.1 percent of these identified themselves as Puerto Rican, 1.5 percent as Dominican, and less than 1.0 percent as either Cuban or Mexican.<sup>18</sup>

Although residents found Hispanic origin a concept with which they could easily identify, an evaluation using focus groups noted that the race question was confusing and inappropriate to the Puerto Rican context, where the concept of race is interpreted somewhat differently. There, the concept of the Puerto Rican "race" is viewed as a unique mixture of Spanish, Indian, and African, not identifiable using simply color or phenotypic characteristics. The notion of a Puerto Rican race appears to have prompted many respondents to report themselves as a single race, despite the fact that the questionnaire allowed for multiple races.<sup>19</sup> Of those Puerto Ricans who identified themselves as Hispanic, 80.7 percent identified themselves as White alone, while 7.9 percent identified themselves as Black alone, and under 7.0 percent reported themselves as Some Other Race.<sup>20</sup>

## Marketing and Promotion

An important part of the strategy for Census 2000 involved the use of paid advertising to inform the public and promote participation in Census 2000. In Puerto Rico, the Census Bureau implemented marketing and promotion programs similar to those used stateside and worked to tailor the messages to address the concerns of the local population.<sup>21</sup>

The Census Bureau contracted with Young & Rubicam Puerto Rico, a subsidiary of Young & Rubicam, to develop and implement the paid advertising campaign for Puerto Rico. While the campaign conveyed messages similar to those used stateside, creative concepts and Spanish translations were tailored for the Puerto Rico context.<sup>22</sup> An evaluation of this campaign indicated that Census 2000 promotion efforts were not favorably received by all Puerto Ricans. According to focus group participants, Puerto Ricans often perceived the advertising campaign messages as emphasizing only two things: (1) returning the questionnaire and (2) the role of the census in

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<sup>16</sup> Julie Buckley-Ess and Idabelle Hovland, *Puerto Rico, Census 2000 Testing, Experimentation, and Evaluation Program Topic Report No. 14, TR-14* (Washington, DC: U.S. Census Bureau, 2004), p. 3. This request was outlined in a letter from Norma Burgos, PRPB, to Martha Farnsworth Riche, U.S. Census Bureau, October 31, 1997.

<sup>17</sup> Carol Van Horn to John H. Thompson, "Decision to Include Data from Puerto Rico in the National Summary Data Products for Census 2000," Census 2000 Decision Memorandum No. 64, November 24, 1998. See appendix for Puerto Rico questionnaires.

<sup>18</sup> Julie Buckley-Ess and Idabelle Hovland, *Puerto Rico, Census 2000 Testing, Experimentation, and Evaluation Program Topic Report No. 14, TR-14* (Washington, D.C.: U.S. Census Bureau, 2004), pp. 13–16.

<sup>19</sup> Susan Berkowitz, "Puerto Rico Focus Groups on the Census 2000 Race and Ethnicity Questions," Census 2000 Evaluation No. B.13., July 2001. The results of this study derive from focus groups carried out with 86 individuals (57 women and 29 men) in 12 selected sites across Puerto Rico.

<sup>20</sup> Matthew Christenson, "Puerto Rico Census 2000 Responses to the Race and Ethnicity Questions," Census 2000 Evaluation No. B.12., July 2003.

<sup>21</sup> See Chapter 4, "The Partnership and Marketing Program" for more information on partnership and promotion activities for Census 2000.

<sup>22</sup> Kenneth Meyer, "Draft Decision Memo for Dr. Prewitt," undated, and correspondence between Young & Rubicam Inc. and U.S. Census Bureau, June 14, 1999.

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determining federal aid. Focus group participants felt that the census advertising campaign did not convey a broad sense of purpose and was reminiscent of a political campaign. This, according to the evaluation, combined with a more impersonal enumeration methodology, prompted suspicion of some census activities and negatively influenced response rates.<sup>23</sup>

### Address List Development

In 1990, as in earlier censuses, the Census Bureau enumerated Puerto Rico using the list/ enumerate (L/E) methodology. During the week before Census Day, the U.S. Postal Service (USPS) delivered unaddressed, short-form Advance Census Reports (ACRs) to all residences. Beginning on Census Day, L/E enumerators canvassed their assignment areas, retrieving completed ACRs and recording address information for all housing units. If a household had not completed the ACR, the enumerator used an enumerator-friendly questionnaire (EFQ) to enumerate the household. If the household was designated for a long-form questionnaire, the enumerator asked the long-form questions and noted the answers, as well as transcribed the data from the household's ACR, onto an EFQ. All of the stateside L/E operations, such as merge and sample tolerance checks, were also performed for Puerto Rico.<sup>24</sup>

For Census 2000, the Census Bureau replaced the L/E methodology with the update/leave (U/L) methodology. The decision to use this methodology required that housing units be listed in a pre-census operation called address listing. The Puerto Rico 2000 Working Group supported the move from L/E methodology to U/L methodology, but was concerned that using a procedure designed for rural enumeration in an urban setting could lead to problems both in the collection and processing routines. Equally daunting were the problems inherent in creating the address list for the island.

The address listing operation began with a thorough canvass of the island. Addresses were collected using a Puerto Rico address register that included an extra line for collecting urbanization or condominium name. An address listing canvasser noted the location of each housing unit on a map and assigned a "map spot" number for each. The canvasser then recorded the map spot number in the address register. Canvassers also updated the maps to show new or altered features, including buildings, roads, and bridges.

#### **Local Update of Census Addresses 1999 program (LUCA 99) and update/leave (U/L).**

LUCA 99 invited local governments to participate in the review of addresses collected during the address listing operation. In Puerto Rico, 50 of the 78 municipios participated and provided an additional 35,563 addresses. These addresses were sent out for field verification, and of these, 33,029 addresses were verified; 2,513 were deleted; 21 were determined to be nonresidential, and none needed to be corrected. Enumerators added a total of 9,874 additional addresses in recanvassed areas.<sup>25</sup>

During the LUCA 99 U/L operation, an enumerator delivered a questionnaire with a preprinted address label to every housing unit on the enumerator's address list. Existing units not listed on the address register received hand-addressed questionnaires and were added to the enumerator's address register. The respondent was instructed to fill out the questionnaire and mail it back using the envelope provided. While in the field delivering the questionnaires, staff also made corrections, deletions, and additions to the address lists and maps.

Differences in addressing conventions and the use of Spanish forms created challenges for the stateside processing systems. For each living quarters in Puerto Rico, the address register

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<sup>23</sup> Susan Berkowitz, "Puerto Rico Focus Groups on Why Households Did Not Mail Back the Census 2000 Questionnaires," Census 2000 Evaluation No. A.8., July 2001, pp. 15–16.

<sup>24</sup> Tracey McNally, "Operational Analysis of Enumeration in Puerto Rico, Final Report," Census 2000 Evaluation No. H.8., May 15, 2003, p. 2.

<sup>25</sup> Julie Buckley-Ess and Idabelle Hovland, *Puerto Rico, Census 2000 Testing, Experimentation, and Evaluation Program Topic Report No. 14, TR-14* (Washington, DC: U.S. Census Bureau, 2004), p. 8; Karen L. Owens, "Evaluation of the Local Update of Census Addresses 99 (LUCA 99)," Census 2000 Evaluation No. F.6., May 2002.

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required a four-line address rather than the three-line stateside address format. The fourth line indicated the urbanization or condominium name necessary for Puerto Rico addresses to have a unique ZIP+4 address.<sup>26</sup>

**Address list processing.** The Census Bureau's Decennial Systems and Contracts Management Office (DSCMO) had problems processing the address listing pages for Puerto Rico that were keyed in. Like stateside files, the keyed files included a 60-character address field that could contain a city-style address or location description. Stateside files had a flag, "A/D," set by the lister. "A" indicated a city-style address and "D" a location description. In Puerto Rico, the address listing pages were in Spanish and the flag was "D/L." "D" stood for *dirección* and indicated a city-style address. "L" stood for *localización* and indicated a physical location description. DSCMO read the "D" on the Puerto Rico address files as indicating a location description, as "D" did in the United States. When DSCMO reprocessed the files in an attempt to correct the error, unexpected address configurations arose that rendered the address information useless for the stateside standardizer. As a result, DSCMO and the Geography Division (GEO) could not get the correct information in the appropriate city-style address and location description fields on a master address file (MAF) that was specifically designed for stateside addressing conventions. GEO and DSCMO decided to load the entire address field (city-style and location description) in the location description field on the MAF. This decision allowed field enumeration operations to continue, but compromised Puerto Rico address listing data.

**Address list postprocessing.** In April 2000, in an attempt to clean up the Puerto Rico MAF, GEO entered into a contract with a private firm, Seek Data, to create a revised MAF record layout. The revised MAF record layout included additional address fields and split the address information collected during census field operations into component parts. Seek Data added approximately 64,000 new housing units to the MAF and geocoded each address to a municipio, tract, and block. Working with customer files of the USPS in Puerto Rico, the company attempted to match the MAF with information on new housing units that came from the USPS delivery sequence file.<sup>27</sup>

## Data Collection

In 1996, the Census Bureau decided to use the U/L methodology to conduct Census 2000, marking a departure from previous censuses, which relied upon the L/E methodology. Based upon the 1990 census results, the agency recognized that large parts of Puerto Rico were sufficiently urbanized to make a mail methodology feasible for the census. The Census Bureau decided to use the U/L enumeration method that it determined to be well-suited to Puerto Rico. A single enumeration methodology provided cost savings and simpler reporting and monitoring requirements.<sup>28</sup>

To conduct U/L, census field offices (CFOs) first conducted a precensus operation called address listing (see "Address List Development" in this chapter). The Census Bureau's National Processing Center (NPC) keyed these address listing pages, which became the address list used for U/L. LCOs grouped these addresses into assignment areas and put them into address registers. Questionnaire delivery began on March 3, 2000, with the intent that all questionnaires would be delivered by Census Day. However, the operation was not complete until April 6. During the U/L operation, an enumerator delivered a questionnaire with a preprinted address label to every housing unit on

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<sup>26</sup> "Urbanization" is used here to indicate an area, sector, or development within a geographic area. In addition to being a descriptive word, it precedes the name of the area. This descriptor, commonly used in Puerto Rican urban areas, is an important part of the addressing format of Puerto Rico, as it describes the location of a given street. Megan C. Ruhnke, "The Address Listing Operation and Its Impact on the Master Address File, Final Report," Census 2000 Evaluation No. F.2., January 30, 2002, p. 8; pp. 7–10.

<sup>27</sup> The contract between Seek Data and the Census Bureau expired in December 2004 at a total cost of about \$5 million. These addresses were added following Census 2000 to prepare the Puerto Rico MAF for the Puerto Rico Community Survey. U.S. Census Bureau, American Community Survey Office, team leaders meeting minutes, January 10, 2006, <<http://cwww.acs.census.gov/ACS%20Office/Leaders/2006/tldr011006.pdf>>, (accessed May 15, 2006).

<sup>28</sup> John H. Thompson, "Recommendation That the Census Bureau Use the Update/Leave Methodology for Data Collection During the Year 2000 Census of Puerto Rico," Census 2000 Decision Memorandum No. 6, signed by Robert W. Marx, August 12, 1996; Tracey McNally, "Operational Analysis of Enumeration in Puerto Rico, Final Report," Census 2000 Evaluation No. H.8., May 15, 2003, pp. 2–3.

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the enumerator's address list. An existing unit not listed on the address register received a hand-addressed questionnaire and was added to the address register. The respondent was instructed to fill out the questionnaire and mail it back using the envelope provided.

The workload for U/L in Puerto Rico included 1.5 million addresses. While in the field delivering the questionnaires, staff also made corrections, deletions, and additions on the address lists and maps. "Deletes" of addresses determined to be nonexistent or nonresidential accounted for 8.4 percent of the Puerto Rico workload, while "adds" accounted for 7.6 percent. Of the 111,787 adds, 93,607 were included in the final census counts. By the cutoff for nonresponse follow-up on April 18, 2000, the response rate for Puerto Rico was 48.4 percent. The final return rate (as of December 31, 2000) for Puerto Rico was 64.0 percent. Although somewhat lower than the state-side response and return rates—59.3 percent and 77.9 percent, respectively—these rates indicated a reasonable level of participation for Puerto Rico's first census for which respondents were required to return questionnaires by mail.<sup>29</sup>

Enumeration in Puerto Rico followed the same schedule as the stateside U/L and nonresponse follow-up (NRFU) operations. Housing units that did not return completed questionnaires by the cutoff date were assigned for NRFU. After NRFU, LCOs conducted a coverage improvement follow-up (CIFU) operation similar to the one used stateside.<sup>30</sup> The NRFU operation added 28,793 addresses and deleted 78,680.<sup>31</sup>

The LCOs encountered some operational difficulties during NRFU. Many addresses from which questionnaires had been mailed back were not recorded in the system. These addresses became part of the NRFU workload, resulting in enumerators making several unnecessary visits to housing units. Moreover, insufficient time for processing and printing map updates between U/L and NRFU meant that maps used by NRFU and CIFU enumerators had not been updated for these operations.<sup>32</sup>

### Quality Assurance

For the U/L operation in Puerto Rico, the Census Bureau used the same quality assurance (QA) procedures as stateside. This program was designed to assure that errors did not disproportionately affect specific communities. QA in Puerto Rico focused on three objectives:

- To prevent errors caused by lack of understanding on the part of the enumerator.
- To identify and correct significant coverage and content errors.
- To improve enumerator performance throughout the operation by providing performance information.

To accomplish the first objective, a crew leader or crew leader assistant conducted an initial review of the enumerator, covering ten housing units and/or special places, during the enumerator's first week on the job. LCOs achieved the second objective by identifying and correcting assignment areas with unacceptable levels of errors in a dependent review. Lastly, to accomplish the third objective, crew leaders provided enumerators with structured feedback regarding performance.<sup>33</sup>

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<sup>29</sup> Tracey McNally, "Operational Analysis of Enumeration in Puerto Rico, Final Report," Census 2000 Evaluation No. H.8., May 15, 2003, p. 1.

<sup>30</sup> For general information on U/L, NRFU, CIFU, and group quarters data collection operations, see Chapter 5, "Data Collection."

<sup>31</sup> Tracey McNally, "Operational Analysis of Enumeration in Puerto Rico, Final Report," Census 2000 Evaluation No. H.8., May 15, 2003, p. 1.

<sup>32</sup> Tracey McNally, "Operational Analysis of Enumeration in Puerto Rico, Final Report," Census 2000 Evaluation No. H.8., May 15, 2003. For more information on data collection activities stateside and in Puerto Rico, see also Darlene A. Moul, "Nonresponse Followup for Census 2000," Census 2000 Evaluation No. H.5., July 2002; Kimball Jonas, "Group Quarters Enumeration," Census 2000 Evaluation No. E.5., August 2003; and Julie Buckley-Ess and Idabelle Hovland, *Puerto Rico, Census 2000 Testing, Experimentation, and Evaluation Program Topic Report No. 14, TR-14* (Washington, DC: U.S. Census Bureau, 2004).

<sup>33</sup> Howard Hogan to Brian Monaghan, "Specifications for the Quality Assurance for Update/Leave," DSSD Census 2000 Procedures and Operations Memorandum Series No. N-1, undated, pp. 1–13.



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## Data Processing

Puerto Rico mail returns followed the same processing workflow as stateside U/L returns.<sup>34</sup> LCOs sent all Puerto Rico U/L and NRFU forms to the data capture center in Pomona, CA, for data capture. A U/L “add form”—unlike a standard U/L form—contained a handwritten address field in the form’s labeled area, next to a preprinted processing ID. An add form required wanding the bar code and keying the address information.<sup>35</sup> Puerto Rico LCOs sent Be Counted forms and all group quarters enumeration forms to the NPC for data capture.

## Data Products

For Census 2000, the Census Bureau used a variety of media and technologies to disseminate data to users. The primary method of dissemination employed a data retrieval system called American FactFinder (AFF).<sup>36</sup> AFF provided an interactive electronic system that enabled users to access data products, data documentation, and online help, as well as build custom data products on- and offline. First available in January 1999, AFF was updated with additional functions and data files by April 1999. By March 2001, AFF provided users with access to Census 2000 data products. In addition to AFF, the Census Bureau published data products using digital media, including CD-ROMs, DVDs, and portable document files of printed reports available on the Internet.

The Census Bureau published detailed results of Census 2000 for Puerto Rico in a series of files accessible through AFF on the Internet, as well as in printed reports available through the Government Printing Office (GPO).

- **Census 2000 Puerto Rico Redistricting Summary File**

Released on March 30, 2001, this was the first Census 2000 data file released for Puerto Rico. It provided information required for local redistricting. The data included tabulations of 63 race categories, cross-tabulated by Hispanic or Latino and not Hispanic or Latino for the total population and the population 18 years old and over. These tabulations were presented for areas as small as blocks, census tracts, and voting districts. They were available on the Internet (through American FactFinder) and on CD-ROM.

- **Summary File 1 (SF 1)**

SF 1 presented counts and basic cross-tabulations of information collected from all people and housing units (100 percent items). The file provided population counts for 63 race categories and Hispanic and Latino at the block level and was available on August 1, 2001. It also included population counts for detailed race and ethnicity categories at the census tract level. SF 1 also provided selected population and housing characteristics for both blocks and census tracts. In 2003, the Census Bureau also released a supplement to SF 1 that included population and housing counts for urban and rural areas.

- **Summary File 2 (SF 2)**

Released on March 27, 2002, this file also contained 100 percent population and housing characteristics iterated for a selected list of detailed race and Hispanic or Latino origin groups as well as American Indian and Alaska Native tribes. The lowest level of geography for this file was the census tract, with a population-size threshold required for information to be shown for a particular group. This file also included quick tables and geographic comparison tables.

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<sup>34</sup> See Chapter 6, “Data Capture and Processing” for information on data capture and headquarters processing. See also U.S. Census Bureau, “Program Master Plan for the Update/Leave Operation,” Census 2000 Informational Memorandum No. 89, December 7, 2000, p. 31.

<sup>35</sup> U.S. Census Bureau, “Program Master Plan: Data Capture Systems and Operations,” Census 2000 Informational Memorandum No. 107, March 30, 2001, p. 39.

<sup>36</sup> During its development, AFF was known as the data access and dissemination system (DADS). See Chapter 9, “Data Products and Dissemination,” for more information on Census 2000 data products.

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- **Summary File 3 (SF 3)**

Released on September 4, 2002, SF 3 contained information collected on a sample basis. It included data on income, educational attainment, poverty status, home value, and population totals for foreign-born and ancestry groups. Data were provided down to the block-group level for many tabulations, but only to the census-tract level for others. SF 3 also included data by Zip Code tabulation areas (ZCTAs). This file was available to users on the Internet (through AFF) and on CD-ROM and DVD.

- **Summary File 4 (SF 4)**

SF 4, which included tabulations of population and housing data collected from a sample of the population, was released on May 7, 2003. Just as in SF 2, the tables in SF 4 were iterated for a selected list of race and Hispanic or Latino origin groups and for American Indian and Alaska Native tribes. Tables were also iterated for 86 ancestry groups. This file was available on the Internet (through AFF) and on CD-ROM and DVD. AFF also offered various quick tables and geographic comparison tables derived from SF 4.

- **Microdata**

In addition to these files, the Census Bureau provided users with public use microdata sample (PUMS) files. The PUMS files allowed users to prepare their own tabulations and cross tabulations of most population and housing subjects. The PUMS files contained the actual responses to census questionnaires, with names and addresses removed and the geography sufficiently broad to protect confidentiality. The Census Bureau published two PUMS files on CD-ROM for Puerto Rico. On May 7, 2003, the Census Bureau released a 1 percent sample PUMS file, and on August 27, 2003, released a 5 percent sample PUMS file.

For the first time, the national summary volumes included Census 2000 data for Puerto Rico. The agency also published three state-level reports containing data for Puerto Rico available in both English and Spanish:

- **Summary Population and Housing Characteristics (PHC-1)**

PHC-1 contained information collected on a 100 percent basis. It presented information for Puerto Rico municipios, places, and other areas. It was released on November 29, 2002, on the Internet and through GPO in printed form.

- **Summary Social, Economic, and Housing Characteristics (PHC-2)**

This report contained information on the sample population and housing subjects for Puerto Rico municipios, places, and other areas. It was released on July 22, 2003, on the Internet and in printed form.

- **Population and Housing Unit Counts (PHC-3)**

PHC-3 contained population and housing unit totals for Census 2000 as well as for the 1990 and 1980 censuses. It was released on November 13, 2003, on the Internet and through GPO in printed form.

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## ISLAND AREAS

### Introduction

In the Island Areas (IAs), a memorandum of understanding provided the budget and logistics plan for the local census office (LCO) infrastructure and staffing. Responsibilities for Census 2000 operations in the IAs were divided among the Decennial Management Division (DMD), regional census centers (RCCs) which handled geographic programs, local IA governments, and the Census Bureau's National Processing Center (NPC). DMD provided guidance to the IAs regarding field office infrastructure and staffing. Working with IA liaisons, DMD provided assistance in the development of competitive pay rates, applicant tests, and background screening using the Decennial Automated Name Check system.<sup>37</sup>

DMD also worked with its contractor, Booz Allen Hamilton, to develop a Windows-based Island Areas Control System (called IACS) to manage and monitor operations in the IA LCOs. The IACS provided an employee subsystem to track employee hours and tasks and a questionnaire subsystem designed to allow LCO clerks to enter information from questionnaires and address listing pages that were checked into the LCO.<sup>38</sup>

DMD developed and distributed field and office forms, procedures, training materials, and other equipment and supplies. DMD also monitored all census operations with the help of census advisors assigned to each IA. Since 1980, the Census Bureau has appointed Census Bureau employees to serve as census advisors in each of the enumerated IAs. These employees act as liaisons between the agency and the LCOs. Census advisors performed the following functions:

- Administered the oath of office to the census manager and other office staff.
- Trained the assistant managers and assisted with the training of field and office staff.
- Monitored costs.
- Provided guidance and technical support.
- Ensured census procedures were followed.

During Census 2000, DMD encountered some difficulties in supplying IA LCOs with materials. Late shipments of supply kits delayed the start of some operations, prompting census advisors to purchase necessary supplies locally. In the U.S. Virgin Islands (USVI), inadequate supplies of office furniture delayed hiring for positions. Lastly, IA LCOs often received insufficient quantities of forms and address registers. Each of these issues, however, was addressed and resolved by the Census Bureau's Puerto Rico and Island Areas (PRIA) Branch and by census advisors.<sup>39</sup>

The Los Angeles RCC (for the Pacific IAs) and the Boston RCC (for the USVI) provided geographic support for data collection activities. RCC personnel conducted updates of the Census Bureau's Topologically Integrated Geographic Encoding and Referencing (TIGER®) database, produced enumerator maps, and reviewed and revised assignment area (AA) boundaries accordingly.

The Pacific island governments established an LCO in each area for the purpose of data collection. The government of the USVI established two LCOs, one in St. Thomas and one in St. Croix. These IA LCOs opened in December 1999. The IA governors, through the terms of the memorandum of agreement (MOA), selected the census manager for their areas. Census manager responsibilities included the following activities:<sup>40</sup>

- Obtaining space, furniture, equipment, and supplies for LCOs.
- Managing field-staff payroll and personnel systems.

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<sup>37</sup> Although DMD provided position descriptions, selection tests, and screening, matters of payroll and administration matters were the responsibility of the IA governments.

<sup>38</sup> Julie Buckley-Ess, "Assessment Report: Island Areas Enumeration," Census 2000 Informational Memorandum No. 133, February 11, 2003, pp. 26–27.

<sup>39</sup> *Ibid.*, p. 19.

<sup>40</sup> U.S. Census Bureau, "Program Master Plan: Census 2000 Island Areas," Census 2000 Informational Memorandum No. 109, March 2001, pp. 24–26.

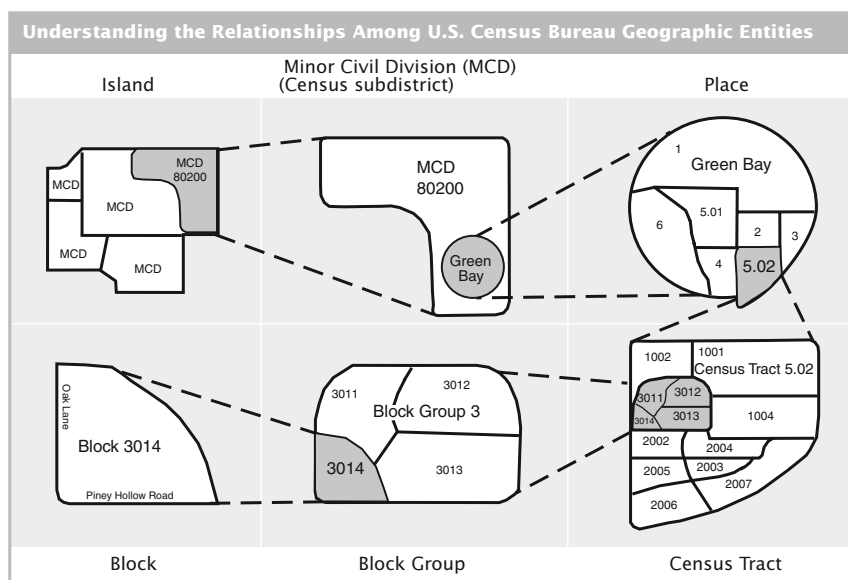
- Reporting to DMD on the progress of operations.
- Generating enumerator maps as needed.
- Conducting outreach and promotion; local recruiting; and data collection, follow-up and coverage improvement activities.
- Checking in questionnaires and address registers and conducting clerical coding operations.
- Performing address list review.

Once the LCOs closed in October 2000, census managers shipped IA address registers, maps, and questionnaires to the NPC in Jeffersonville, IN. There, NPC staff performed check-in of address registers, maps, and questionnaires, and data capture of questionnaires. The NPC staff also keyed address registers and digitized map spots and map features.

## Geography

For the purpose of data presentation, the Census Bureau treats each IA as the statistical equivalent of a state. Each entity is divided into first-order subdivisions (See Figure 12-2). These represent the highest-level legal subdivisions of state equivalents, similar to a county in most states.

Figure 12-2.  
**Census Small-Area Geography, Island Areas**



American Samoa is comprised of two islands—Rose and Swains—and three districts—Eastern, Manu’a, and Western. Rose and Swains islands are legally defined nonfunctioning geographic entities. The Eastern, Manu’a, and Western districts are functioning governmental units. The Commonwealth of the Northern Mariana Islands (CNMI) contains four municipalities—Northern Islands, Rota, Saipan, and Tinian. These municipalities are functioning governmental units. Guam has no separate county-level entities. Guam serves as both a state and county equivalent. In the USVI, each of the three major islands—St. Croix, St. Thomas, and St. John—serves as the statistical equivalent of a stateside county for census purposes.

For Census 2000, MCDs were legally-defined entities that subdivided the first-order subdivisions. For American Samoa, counties served as MCDs. In the CNMI, municipal districts were used, and election districts served as MCDs in Guam.

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The USVI established “census subdistricts” as the primary subdivisions of the islands for the reporting of decennial census data. Used by the Census Bureau since 1980, these 20 census subdistricts are legally established entities—MCD equivalents—intended to be permanent areas that reflect land-use planning districts.

Within MCDs are population centers without legally defined corporate limits or powers. Such entities are called census designated places (CDPs). CDPs are delineated by local officials in cooperation with the Census Bureau. Although in 1990 the Census Bureau required a CDP to have a population of at least 1,000 persons, for Census 2000 there was no minimum population threshold for CDPs. In American Samoa there are no CDPs. Instead, the Census Bureau treats the traditional villages as statistically equivalent to incorporated places. In the CNMI and Guam, all places are CDPs. The USVI has both CDPs and incorporated places.<sup>41</sup>

Each geographic subdivision is further divided into census tracts (called block numbering areas in 1990) which consist of block groups and blocks. Census tracts are small statistical subdivisions of counties or statistically equivalent areas. While in the USVI census tracts typically average 4,000 persons in size, in American Samoa, the CNMI, and Guam, the optimum size is 2,500 persons. Census tracts generally have stable boundaries, and when first established, they were designed to have relatively homogeneous demographic characteristics. Census tracts are further divided into block groups (BGs). BGs are a collection of census blocks within a census tract sharing the same first digit of their four-digit identifying numbers. Generally bounded by streets, legal boundaries, and other features, a block is the smallest geographic unit for which the Census Bureau tabulates data.

### Questionnaire Content

The Population Division (POP) and Housing and Household Economic Statistics Division (HHES) worked in consultation with the IA governments to develop questionnaire content that met the specific legislative and programmatic requirements of each IA. The IA section of the PRIA Branch coordinated communication between the subject-matter divisions and each area.

To determine the content for IA questionnaires, the Census Bureau first assessed the requirements of census data for both the federal and nonfederal sectors by requesting federal agencies to identify all legal mandates and programs requiring census data and by conducting a survey of nonfederal data users and their subject needs. In July 1996, DMD requested that each IA government organize an interagency committee (IC) to make recommendations on content and other issues. The ICs submitted their subject recommendations in late 1996 and early 1997. Subsequently, Census Bureau subject-matter divisions used these recommendations to prepare lists of subjects for inclusion. The content of the IA questionnaires was comparable to the stateside questionnaire, but with modifications based on recommendations from the IA. The Content Council, a Census Bureau interdivisional group at Census Bureau headquarters, reviewed and approved the list of subjects for the IAs. In October 1997, DMD forwarded the subject list to IA governments for review and concurrence.

POP and HHES used stateside questions and the subject recommendations to develop the specific wording of questions for the IAs. In July 1998, area ICs reviewed and commented on these draft questions. After POP and HHES made appropriate revisions based on IC input, the questionnaires were submitted to the U.S. Office of Management and Budget for clearance in January 1999.<sup>42</sup>

Questionnaires in the IAs incorporated the user-friendly features of stateside forms. These included large, easy-to-read fonts, instructions located on the form rather than in a separate guide, and navigational aids and graphics to direct respondents. Additionally, each area had its

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<sup>41</sup> Places, for the reporting of decennial census data, include CDPs, consolidated cities, and incorporated places. U.S. Census Bureau, *Summary Social, Economic, and Housing Characteristics*, PHC-2-A, “Appendix A: Census 2000 Geographic Terms and Concepts,” pp. A-17–A-18 <<http://www.census.gov/geo/www/tiger/glossry2.pdf>>, (accessed April 17, 2006).

<sup>42</sup> U.S. Census Bureau, “Program Master Plan: Census 2000 Island Areas,” Census 2000 Informational Memorandum No. 109, March 2001, pp. 12–16. As in previous IA censuses, there was no sampling for content.

own logo printed on the questionnaires and forms. The questionnaires used in American Samoa, the CNMI, and Guam contained 27 questions relating to housing characteristics and 37 questions relating to population characteristics. The USVI questionnaire included 24 housing questions and 36 population questions. (See Tables 12-1 and 12-2 for lists of subjects covered on the questionnaires.)<sup>43</sup>

Table 12-1.  
**Information Available From the Census of Population and Housing:  
 Pacific Island Areas<sup>44</sup>**

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**Basic Subjects**

Age  
 Household relationship  
 Race/ethnicity

Sex  
 Tenure  
 Vacancy characteristics

**Detailed Subjects**

**Population**

Disability  
 Fertility, including date of birth of last child  
 Frequency of English usage  
 Grandparents as caregivers  
 Income in 1999  
 Labor force status  
 Language spoken at home  
 Marital status  
 Migration (residence in 1995)  
 Military dependency  
 Occupation, industry, and class of worker  
 Parental birthplace  
 Place of birth, citizenship, and year of entry to Pacific Island Area  
 Place of work and journey to work  
 Reason for migration  
 School enrollment and educational attainment  
 Veteran status  
 Vocational training  
 Work status in 1999

**Housing**

Air conditioning  
 Battery operated radio  
 Business/medical office on property  
 Condominium status  
 Materials used for walls/roof/foundation  
 Number of rooms and number of bedrooms  
 Plumbing and kitchen facilities  
 Sewage disposal  
 Source of water  
 Telephone service  
 Units in structure  
 Utilities, mortgage, taxes, insurance and fuel  
 Value of home or monthly rent paid  
 Vehicles available  
 Year moved into residence  
 Year structure built

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<sup>43</sup> Julie Buckley-Ess, "Assessment Report: Island Areas Enumeration," Census 2000 Informational Memorandum No. 133, February 11, 2003, p. 7.

<sup>44</sup> U.S. Census Bureau, "Introduction to Census 2000 Data Products—Pacific Island Areas," DMD/01-ICDPPI, August 2001.

Table 12-2.  
**Information Available From the Census of Population and Housing:  
 U.S. Virgin Islands<sup>45</sup>**

**Basic Subjects**

Age	Sex
Hispanic or Latino origin	Tenure
Household relationship	Vacancy characteristics
Race	

**Detailed Subjects**

**Population**

Disability  
 Fertility  
 Grandparents as caregivers  
 Income in 1999  
 Labor force status  
 Language spoken at home and ability to speak English  
 Marital status  
 Migration (residence in 1995)  
 Occupation, industry, and class of worker  
 Parental birthplace  
 Place of birth, citizenship, and year of entry to the U.S. Virgin Islands  
 Place of work and journey to work  
 School enrollment and educational attainment  
 Veteran status  
 Vocational training  
 Work status in 1999

**Housing**

Condominium status  
 Cooking fuel  
 Farm residence  
 Number of rooms and number of bedrooms  
 Plumbing and kitchen facilities  
 Purchase of water from water vendor  
 Sewage disposal  
 Source of water  
 Telephone service  
 Units in structure  
 Utilities, mortgage, taxes, insurance and fuel costs  
 Value of home or monthly rent paid  
 Vehicles available  
 Year moved into residence  
 Year structure built

Census 2000 marked the first time an Advance Census Report (ACR) was used in the IAs. For these forms, the Census Bureau used a two-part mailing strategy. First was the blanket mailing of an advance notice letter to U.S. Postal Service residential customers alerting them that a census questionnaire would be arriving soon. The blanket mailing of the ACR questionnaire followed a few days later. Instructions called for the questionnaire to be completed and held until an enumerator came to pick it up. If the household did not complete the ACR, or did not receive it in the mail, enumerators conducted an interview at the household using the simplified enumerator questionnaire.

During Census 2000, the IA LCO staff encountered problems with the length of the questionnaire and the distribution of ACRs. First, although the use of the ACR often saved time and expense by eliminating the need for an interview, respondents still expressed frustration with the number of questions and felt that many of the questions, particularly those about income, were too personal. The distribution plan for the ACRs also excluded several IA residents who shared post office boxes with other households or user call boxes.

The Census Bureau adapted other types of forms to meet requirements of the IAs. These included Military Census Reports and Individual Census Reports used to enumerate people living in group quarters. The PRIA Branch also prepared Be Counted forms for those who believed they did not receive a questionnaire or were not included on a census form. Be Counted forms were placed at post offices and other community centers and were only available in English. Of the more than 53,000 Be Counted forms printed, however, only 108 were returned to the IA LCOs.<sup>46</sup>

<sup>45</sup> U.S. Census Bureau, "Introduction to Census 2000 Data Products—U.S. Virgin Islands," DMD/01-ICDPVI, August 2001.

<sup>46</sup> Julie Buckley-Ess, "Assessment Report: Island Areas Enumeration," Census 2000 Informational Memorandum No. 133, February 11, 2003, pp. 7–11.

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## Marketing and Promotion

In the IAs, residents' perceptions of the U.S. government and knowledge of the census and its purpose varied considerably. While many approved of the federal government's role in the IAs, some expressed ambivalence. And, while some were aware of the census, few understood its significance to the IAs.<sup>47</sup> In an effort to address these issues, the Census Bureau's partnership specialists worked with census managers and advisors to develop partnerships with community organizations and local governments. These partnerships helped to inform IA residents about Census 2000 and promote its value to them. Such groups supported Census 2000 promotional activities in a variety of ways: issuing endorsements, holding press conferences and special events, placing census articles in newsletters, distributing promotional materials, and so forth. Local organizations also aided in recruiting candidates for census office and field positions.

DMD and the Census 2000 Publicity Office also worked with the IA liaisons and the Census Bureau's contractor, Young & Rubicam Miami, to design and implement a print and radio advertising campaign using local media outlets. Since it was produced in English only, the campaign had limited impact in the IAs, although it did provide a head start in creating awareness about the census. In an effort to promote the census in the IAs more effectively, an addendum to the original MOA provided additional funds for LCO partnership specialists to contract for locally produced television ads, flyers, and fact sheets.

In addition to the advertising campaign, the Census Bureau developed two other programs: (1) a program in which the Census Bureau invited local artists to develop promotional posters that touched upon local traditions and cultural themes to promote census awareness and (2) the Census in Schools Project, in which the Census Bureau promoted awareness of the census and its significance in classroom lesson plans and workshops.<sup>48</sup> Despite the uneven distribution of limited quantities of materials, both the promotional posters and Census in Schools projects succeeded in promoting awareness.<sup>49</sup>

## Data Collection

The LCO staff used the list/enumerate (L/E) methodology to conduct Census 2000 in the IAs. All persons and housing units were enumerated with a long-form questionnaire. This was the same methodology used in 1990. However, L/E was enhanced for Census 2000 through the use of an advance notice letter and the use of Advance Census Reports (ACRs). In March 2000, the USPS delivered unaddressed advance notice letters, followed by ACRs to all housing units. During the L/E operation, enumerators visited every housing unit and either collected the completed ACR or conducted a personal interview at the household. Enumerators also developed address lists for their assigned area and map spotted each living quarters' location.

The Census Bureau used special procedures to enumerate people not living in traditional housing units. Persons living in group quarters (GQ)—such as nursing homes, group homes, and dormitories—as well as persons living on military installations, were enumerated on either Individual Census Reports (ICRs) or Military Census Reports (MCRs). When each IA LCO opened, its staff updated its inventory of special places by identifying persons to contact for collecting administrative information for a location, assigning GQ type codes, and identifying housing units associated with special places. IA LCOs completed this update in March 2000.

Concurrently with the L/E operation, the IA LCO staff conducted GQ enumeration. During this operation, crew leaders and leader assistants listed all the residents at each GQ. They distributed ICRs or MCRs and answered questions when necessary.

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<sup>47</sup> Penn, Schoen, and Berland Associates, "A Report on Census 2000 Advertising Concepts: South Pacific Focus Groups, American Samoa, Guam, Saipan," April 29, 1999, in "Census 2000 Qualitative and Quantitative Advertising Research, Volume 1 of 3."

<sup>48</sup> U.S. Census Bureau, "Program Master Plan: Census 2000 Island Areas," Census 2000 Informational Memorandum No. 109, March 2001, pp. 6–10. For more information on the Census in Schools Project, see Chapter 4, "The Partnership and Marketing Program."

<sup>49</sup> Julie Buckley-Ess, "Assessment Report: Island Areas Enumeration," Census 2000 Informational Memorandum No. 133, February 11, 2003, pp. 12–13.



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On March 31, enumerators conducted Transient Night (called T-Night), an operation to count persons of a highly transient nature. T-Night enumerators visited and interviewed people occupying commercial or public recreational vehicle campgrounds or parks, racetracks, fairs and carnivals, and marinas. Every person enumerated during T-Night had the opportunity to report a usual residence elsewhere. During T-Night, the crew leader and crew leader assistant visited each assigned place, met with a contact person at the site, offered the Privacy Act Notice, answered questions, and verified information about the site. The crew leader or crew leader assistant then interviewed each person at the assigned location using the enumerator questionnaire.

The Census Bureau worked with the U.S. Department of Defense and the U.S. Coast Guard to identify housing units and group quarters on military bases and used the L/E methodology to enumerate them. All military personnel were enumerated with MCRs at their operating unit or work station. To ensure that persons were enumerated at their usual residence, the LCO then conducted a merge operation to separate MCRs by group quarters and housing units. The clerical merge operation ensured that military personnel residing in housing units were enumerated on a household questionnaire and that military personnel residing in group quarters were enumerated there.<sup>50</sup>

In addition to the enumeration operations, IA LCOs carried out several reviews to ensure that questionnaires sent for processing were complete. After L/E concluded, IA LCOs conducted a vacant housing unit follow-up operation to verify the occupancy status reported by enumerators during the L/E operation. For this operation, enumerators revisited housing units listed as vacant during L/E to determine whether the housing units were truly vacant on Census Day. If a housing unit was incorrectly reported as vacant on Census Day, the enumerator conducted an interview and completed a questionnaire for the unit. If the housing unit was occupied but had been correctly listed as vacant on Census Day, the enumerator collected housing information from either the new occupant or a proxy respondent.

Following data collection activities, IA LCOs conducted a clerical edit to review questionnaires for completeness. IA LCO staff identified discrepancies between the number of persons reported and the number of persons for whom census information was provided. Clerical staff also reviewed questionnaires for missing or incomplete responses. IA LCO clerks telephoned the household that submitted a questionnaire that failed the edit to make needed corrections. LCO staff personally visited those households that could not be reached by telephone. Completed in July 2000, this telephone follow-up proved successful. Clerks were able to contact many housing units by phone, thereby decreasing the field follow-up workload and reducing costs.<sup>51</sup>

Census 2000 marked the first time questionnaire write-in entries were coded in the LCOs. After clerical edit, IA LCO staff batched questionnaires in groups of 100 for coding. Items included in the coding operation were ethnicity, race (for USVI only), language spoken at home, place of birth, place of work, migration, and industry and occupation.<sup>52</sup>

A lack of computer-assisted coding delayed completion of the coding operation and final field operations, but IA LCO staff resolved coding questions using local knowledge of locations and other concepts unique to the IAs.<sup>53</sup>

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<sup>50</sup> U.S. Census Bureau, "Program Master Plan: Census 2000 Island Areas," Census 2000 Informational Memorandum No. 109, March 2001, pp. 29–30. For general information on military enumeration, see Chapter 5, "Data Collection."

<sup>51</sup> Julie Buckley-Ess, "Assessment Report: Island Areas Enumeration," Census 2000 Informational Memorandum No. 133, February 11, 2003, pp. 23–25. For more information on quality assurance for IA field operations, see Howard Hogan to Susan Miskura, "Quality Assurance Specifications for the Census 2000 Island Areas List/Enumerate Operation," DSSD Census 2000 Procedures and Operations Memorandum Series #II-17, December 16, 1999.

<sup>52</sup> The International Programs Center produced the coding materials and provided on-site training and oversight for the coding operation. For more information on quality assurance for clerical coding in the IAs, see Howard Hogan to Susan Miskura, "Quality Assurance Specifications for the Census 2000 Clerical Coding Operation for the Pacific Islands," DSSD Census 2000 Procedures and Operations Memorandum Series #JJ-7, November 22, 1999, and Howard Hogan to Susan Miskura, "Quality Assurance Specifications for the Census 2000 Island Areas List/Enumerate Operation," DSSD Census 2000 Procedures and Operations Memorandum Series #II-17, December 16, 1999.

<sup>53</sup> Julie Buckley-Ess, "Assessment Report: Island Areas Enumeration," Census 2000 Informational Memorandum No. 133, February 11, 2003, p. 24.

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In an effort to avoid multiple responses from questionnaires used in L/E, special enumerations, and Be Counted, IA LCO clerks geocoded addresses and performed address matching to identify and remove duplicate responses. Clerks also verified that a questionnaire was present for every address listed on the address register. Once enumeration was complete, each IA conducted an address list review operation. Reviewers appointed by local governments received census listings—grouped by assignment area and block—showing the preliminary counts of housing units (both vacant and occupied) and group quarters population counts. When reviewers identified potential problems at the block level, they reviewed census maps and address listing pages and assisted LCO personnel in investigating reported problems and making necessary corrections.<sup>54</sup> After the clerical merge operation, questionnaires were shipped to the National Processing Center (NPC) in Jeffersonville, IN, for data capture.

### Quality Assurance

In the Island Areas, Decennial Statistical Studies Division (DSSD) established a quality assurance program based on that used for stateside L/E operations. Its primary objectives were:

- To ensure essential information on questionnaires was completed.
- To identify and correct clusters of completed work with significant errors.
- To ensure accurate completion of geographic information in the address registers and on the maps.
- To eliminate falsified data.

To accomplish the first objective, LCO staff performed an edit of all completed questionnaires. LCOs then conducted a review of a sample of the housing units in the L/E area and decided on the acceptance or rejection of the completed work. To achieve the third objective, LCOs performed an office review of all address registers and maps. Lastly, to identify and correct instances of fabrication, LCOs conducted a sample-basis reinterview operation and when necessary, reworked assignment areas.<sup>55</sup>

### Data Processing

In December 1998, after reviewing the requirements, workloads, and resources for the IAs data capture program, DMD and the Decennial Systems and Contracts Management Office determined a “key from paper” (KFP) approach, rather than using the Data Capture System 2000, to be the most timely and cost effective solution to IA data capture.<sup>56</sup> After office operations were completed in September, IA LCOs shipped questionnaires to the NPC for keying. The NPC completed check-in of IA questionnaires in November 2000, and by March 2001, NPC completed data capture for the IAs.

Once keying was complete, NPC staff transmitted the data capture files to the Population Division’s International Programs Center (IPC) at Census Bureau headquarters. The IPC staff edited the data files and prepared the edited detail files for tabulation using an integrated microcomputer processing system (IMPS). Developed by the Census Bureau’s IPC to process the Pacific Island data for the 1990 Census, IMPS consisted of several software modules designed for entering, editing, tabulating, analyzing, and managing census data. The Census Bureau decided to use IMPS to process IA data so that the IAs were not competing for stateside processing resources.<sup>57</sup>

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<sup>54</sup> *Ibid.*, p. 14.

<sup>55</sup> Howard Hogan to Susan Miskura, “Quality Assurance Specifications for the Census 2000 Island Areas List/Enumerate Operation,” DSSD Census 2000 Procedures and Operations Memorandum Series #II-17, December 16, 1999, pp. 1–13.

<sup>56</sup> Carol Van Horn to John Thompson, “Recommendation on Strategy for Processing the Island Areas’ Census 2000—REVISED,” Census 2000 Decision Memorandum No. 68, December 14, 1998.

<sup>57</sup> U.S. Census Bureau, “Program Master Plan: Census 2000 Island Areas,” Census 2000 Informational Memorandum No. 109, March 2001, pp. 36–37.

## Data Products

Using the IMPS to tabulate Census 2000 data for the IAs, the Census Bureau published a variety of data products through American FactFinder (AFF) and traditional media. For each of the IAs, the agency published the following (see Table 12-3 for the release schedule of IA data products):

- **Demographic Profile**

The demographic profile provided a snapshot of the demographic, social, economic, and housing characteristics for each county equivalent and place. Demographic profiles for the IAs were published online through AFF, on CD-ROM, and as paper tables.

- **Summary Files**

Summary files for the IAs presented data for basic subjects at the block level and data for detailed subjects at the block group level and census tract level (see Tables 12-1 and 12-2 for IA subjects.) These files were made available through AFF and the Internet and on CD-ROM.

- **Census 2000 Social, Economic, and Housing Characteristics (PHC-4)**

This published report included information on detailed population and housing characteristics to the place level and was made available for purchase through the Government Printing Office and as a portable document file (PDF) on the Census Bureau Internet.

- **Microdata (Guam and USVI)**

The Census Bureau also published microdata for Guam and the USVI. The two public use microdata sample (PUMS) files were released on April 30, 2003, and May 30, 2003, respectively. These PUMS files provide a 10 percent sample of the entire area and were available through AFF or on CD-ROM.

Table 12-3.  
**Island Area Data Products Release Schedule**

Area	Data product	Release date
American Samoa	Demographic profile	2/19/2002
	Summary file	2/28/2003
	<i>Census 2000 Social, Economic, and Housing Characteristics Report (PHC-4)</i>	6/13/2003
CNMI	Demographic profile	2/20/2002
	Summary file	4/29/2003
	<i>Census 2000 Social, Economic, and Housing Characteristics Report (PHC-4)</i>	6/19/2003
Guam	Demographic profile	2/7/2002
	Summary file	12/20/2002
	Public use microdata sample file	4/30/2003
	<i>Census 2000 Social, Economic, and Housing Characteristics Report (PHC-4)</i>	5/27/2003
USVI	Demographic profile	2/25/2002
	Summary file	10/9/2002
	Public use microdata sample file	5/30/2003
	<i>Census 2000 Social, Economic, and Housing Characteristics Report (PHC-4)</i>	6/4/2003



# Appendix F: Overview of Congressional Hearings on Census 2000 Issues Held by Oversight Committees and Subcommittees

Date and committee or subcommittee <sup>1</sup>	Topic	Department of Commerce/ Census Bureau witnesses	Other federal government witnesses <sup>2</sup>
March 12, 1991	Fiscal year 1992 budget initiatives and Census 2000 planning	Dr. Michael R. Darby, Under Secretary for Economic Affairs; Dr. Barbara E. Bryant, Census Bureau Director	General Accounting Office (GAO) <sup>3</sup>
June 15, 1991	Role of local governments in 1990 census and plans for Census 2000	Roland H. Moore, Associate Director for Field Operations; John E. Reeder, Los Angeles Regional Office Director	GAO
August 1, 1991	Major design alternatives for Census 2000	Director Bryant	Reps. Schumer (D-NY) and Rogers (R-KY); Dr. Daniel Melnick, National Science Foundation
October 29–30, 1991	Role of nongovernmental organizations in 1990 census and plans for Census 2000	Peter Bounpane, Assistant Director for Decennial Census	None
June 10, 1992	GAO report, “Decennial Census—1990 Results Show Need for Fundamental Reform”	None	GAO
June 26, 1992 Senate Subcommittee on Government Information and Regulation (of the Committee on Governmental Affairs)	Use of administrative records in Census 2000	Director Bryant	GAO
July 1, 1992	Results and implications of 1992 Simplified Questionnaire Test	Director Bryant	GAO
October 1, 1992	Questionnaire content	None	None
March 2, 1993	Progress of Census 2000 research and development efforts	Dr. Harry A. Scarr, Acting Director, Census Bureau	GAO
April 14, 1993	Federal standards for the collection of data on race and ethnicity	Acting Director Scarr	GAO; Dr. Manning Feinleib, Director, National Center for Health Statistics; Emerson Elliott, Commissioner, National Center for Education Statistics
May 27, 1993	Progress of 2000 planning; interim report of the National Academy of Sciences (NAS) Panel on Census Requirements in the Year 2000 and Beyond	Acting Director Scarr	GAO

See footnotes at end of table.

Date and committee or subcommittee <sup>1</sup>	Topic	Department of Commerce/ Census Bureau witnesses	Other federal government witnesses <sup>2</sup>
June 30, 1993	Federal standards for the collection of data on race and ethnicity	None	None
July 29, 1993	Federal standards for the collection of data on race and ethnicity	None	Reps. Mineta (D-CA) and Frank (D-MA); Sen. Akaka (D-HI); Sally Katzen, Administrator, Office of Information and Regulatory Affairs in the Office of Management and Budget (OMB)
October 7, 1993	Status of Census 2000 plans; interim report of the NAS Panel to Evaluate Alternative Census Methods	Acting Director Scarr	GAO
November 3, 1993	Federal standards for the collection of data on race and ethnicity	None	Arthur Fletcher, Chairman, U.S. Commission on Civil Rights; Norma Cantu, Assistant Secretary for Civil Rights, Department of Education; Paul Williams, General Deputy Assistant Secretary, Department of Housing and Urban Development
January 26, 1994	Census Bureau's report to Congress on the status of Census 2000 planning efforts	Acting Director Scarr	GAO
July 21, 1994	Administration's proposed legislation to permit address list-sharing	Acting Director Scarr	U.S. Postal Service
September 27, 1994	Preparations for the 1995 Census Test; final report of the NAS Panel to Evaluate Alternative Census Methods ( <i>Counting People in the Information Age</i> )	Acting Director Scarr	GAO
October 25, 1995 House Subcommittee on National Security, International Affairs, and Criminal Justice (of the Committee on Government Reform and Oversight)	Status of Census 2000 plans; Census Bureau report, "The Reengineered 2000 Census"	Francis D. DeGeorge, Inspector General; Dr. Martha Farnsworth Riche, Census Bureau Director	GAO
February 29, 1996 House Committee on Government Reform and Oversight	Census Bureau report, "The Plan for Census 2000"	None	Sen. Kohl (D-WI); Reps. Petri (R-WI) and Sawyer (D-OH)
June 6, 1996 House Committee on Government Reform and Oversight	Census 2000 methodological plans	Dr. Everett M. Ehrlich, Under Secretary for Economic Affairs; Director Riche	None
March 11, 1997 Senate Committee on Governmental Affairs	Refinements to the Census 2000 plan	William M. Daley, Secretary; Under Secretary Ehrlich; Director Riche	None
April 16, 1997 Senate Committee on Governmental Affairs	Use of sampling and statistical adjustment in Census 2000	None	None

See footnotes at end of table.

Date and committee or subcommittee <sup>1</sup>	Topic	Department of Commerce/ Census Bureau witnesses	Other federal government witnesses <sup>2</sup>
April 23, 1997 House Subcommittee on Government Management, Information, and Technology (of the Committee on Government Reform and Oversight)	Federal standards for the collection of data on race and ethnicity	Director Riche, accompanied by Dr. Nancy M. Gordon, Associate Director for Demographic Programs	GAO; Reps. Meek (D-FL), Petri (R-WI), Sawyer (D-OH), and Waters (D-CA); Sally Katzen, OMB; Norma Cantu, Department of Education; Edward Sondik, Director, National Center for Health Statistics, Department of Health and Human Services
April 24, 1997 House Subcommittee on the Civil Service (of the Committee on Government Reform and Oversight)	Hiring welfare recipients for federal jobs (Director Riche's statement pertained to Census 2000 employment opportunities for welfare recipients)	Director Riche (submitted written statement only—did not testify)	Rep. Eddie Johnson (D-TX); John Koskinen, Deputy Director for Management, OMB; James King, Director, Office of Personnel Management; Diane Disney, Deputy Assistant Secretary of Defense, Department of Defense; Eugene Brickhouse, Assistant Secretary for Administration, Department of Veterans Affairs
April 29, 1997 House Subcommittee on National Security, International Affairs, and Criminal Justice	Promotion and outreach efforts for Census 2000	None	None
May 14, 1997 Senate Committee on Commerce, Science, and Transportation	Management challenges at the Department of Commerce (including Census 2000 management issues)	Ray Kammer, Acting Assistant Secretary for Administration and Chief Financial Officer; Inspector General DeGeorge	GAO
May 22 1997 House Subcommittee on Government Management, Information, and Technology	Federal standards for the collection of data on race and ethnicity	None	Sen. Akaka (D-HI)
July 25, 1997 House Subcommittee on Government Management, Information, and Technology	Federal standards for the collection of data on race and ethnicity (report of the Interagency Committee for the Review of Racial and Ethnic Standards)	Dr. Gordon, Associate Director for Demographic Programs	Reps. Gingrich (Speaker of the House) (R-GA), Sawyer (D-OH), Petri (R-WI), Waters (D-CA), Meek (D-FL), and Conyers (D-MI); Sally Katzen, OMB; Isabelle Katz Pinzler, Acting Assistant Attorney General for Civil Rights, Department of Justice
July 29, 1997 House Subcommittee on Government Management, Information, and Technology	Review of metropolitan statistical area standards	Dr. James D. Fitzsimmons, Chief, Population Distribution Branch, Population Division, accompanied Ms. Katzen of OMB	Reps. Holden (D-PA), Mink (D-HI), Hinchey (D-NY), Hunter (R-CA), and Redmond (R-NM); Sally Katzen, OMB
March 26, 1998 <sup>4</sup>	GAO report, "Decennial Census: Preparations for Dress Rehearsal Underscore the Challenges for 2000"	James Holmes, Acting Director, Census Bureau; Paula Schneider, Principal Associate Director for Programs; John Thompson, Associate Director for Decennial Census	GAO

See footnotes at end of table.

Date and committee or subcommittee <sup>1</sup>	Topic	Department of Commerce/ Census Bureau witnesses	Other federal government witnesses <sup>2</sup>
May 5, 1998	Revisiting the 1990 census	None	Reps. Sawyer (D-OH) and Petri (R-WI)
May 21, 1998	Census 2000 long- and short-form questionnaires		Reps. Morella (R-MD) and Canady (R-FL)
July 30, 1998 Senate Committee on Governmental Affairs	GAO report, "Decennial Census: Preliminary Observations on the Results to Date of the Dress Rehearsal and the Census Bureau's Readiness for 2000"	None	GAO
September 9, 1998	Review of Census Bureau planning and preparations in response to the federal court ruling that sampling is illegal	Dr. Robert J. Shapiro, Under Secretary for Economic Affairs; Acting Director Holmes	None
September 17, 1998	Serious problems with statistical adjustment remain	None	None
December 10, 1998	Field hearing (held in Dade County community chambers, Miami, FL)	None	Rep. Meek (D-FL)
January 29, 1999 House Committee on Government Reform	Field hearing (held in Phoenix city council chambers, Phoenix, AZ)	None	Rep. Hayworth (R-AZ)
February 11, 1999	Examining the benefits of postcensus local review	Census Bureau officials were not invited to testify, but Director Prewitt provided a written letter to the subcommittee.	Reps. Petri (R-WI) and Sawyer (D-OH); Kenneth Blackwell, Cochair, and Dr. Everett M. Ehrlich, member, Census Monitoring Board (CMB)
March 2, 1999	Examining the America Counts Today (ACT) initiative to enhance traditional enumeration methods	Director Kenneth Prewitt, Census Bureau	Reps. Myrick (R-NC) and Meek (D-FL)
May 4, 1999 Senate Committee on Indian Affairs	Census 2000 implementation in Indian country	Director Prewitt, accompanied by Belva Morrison, Team Leader, Denver Region, Census Bureau Tribal Partnership Program	None
June 9, 1999	Examining the Census Bureau's policy to count prisoners, military personnel, and Americans residing overseas	Director Prewitt	Reps. Gilman (R-NY) and Mark Green (R-WI)
June 28, 1999	Field hearing (held in Racine city council chambers, Racine, WI)	None	None
July 27, 1999	Examining the Census Bureau's paid advertising campaign	Director Prewitt	None
September 22, 1999	Discussion of the effects of including Puerto Rico in the 2000 U.S. population totals	Director Prewitt	Rep. Jose Serrano (D-NY); Resident Commissioner Carlos Romero-Barcelo (PR); Del. Eni Faleomavaega (D-American Samoa)

See footnotes at end of table.



Date and committee or subcommittee <sup>1</sup>	Topic	Department of Commerce/ Census Bureau witnesses	Other federal government witnesses <sup>2</sup>
September 29, 1999	A midterm evaluation of the Local Update of Census Addresses Program	Director Prewitt; John Thompson, Associate Director for Decennial Census; Preston J. Waite, Assistant Director for Decennial Census	GAO
February 8, 2000	Examining the Status of Key Census 2000 Operations	Director Prewitt	None
February 15, 2000	Examining the GAO's Census 2000 oversight activities	None	GAO
March 8, 2000	Status of Census Bureau operations and activities	Director Prewitt	None
March 14, 2000	Status of key operations	None	GAO
April 5, 2000	Mailback response rates and status of key operations	Director Prewitt	GAO
May 5, 2000	Nonresponse follow-up and status of key operations	Director Prewitt	None
May 11, 2000	Status of nonresponse follow-up	None	GAO
May 19, 2000	Accuracy and Coverage Evaluation (A.C.E.): Still more questions than answers	Director Prewitt	None
June 22, 2000	Status of nonresponse follow-up and closeout	Director Prewitt	None
February 14, 2001	Release of preliminary A.C.E. estimates of net coverage in Census 2000	William Barron, Acting Director, Census Bureau, accompanied by John Thompson, Associate Director	None
March 28, 2001 Senate Committee on Commerce, Science, and Transportation	Review of the Secretary's redistricting data adjustment decision	Donald L. Evans, Secretary; Acting Director Barron	Reps. Dan Miller (R-FL), William Clay (D-MO), Henry Gonzalez (D-TX), and Carolyn Maloney (D-NY); Dr. David Murray, member, CMB

<sup>1</sup> Except as otherwise noted, all of the listed hearings between 1991 and 1994 (inclusive) were held by the Subcommittee on Census and Population of the House Committee on Post Office and Civil Service. The subcommittee was renamed the Subcommittee on Census, Statistics, and Postal Personnel in 1993.

<sup>2</sup> For purpose of brevity, only those witnesses affiliated with the federal government are listed here. Thus, for any given hearing, there may have been additional witnesses who testified.

<sup>3</sup> In July 2004, Public Law 108-271 formally changed the name to Government Accountability Office.

<sup>4</sup> Except as otherwise noted, all of the listed hearings between March 1998 and March 2001 (inclusive) were held by the House Subcommittee on the Census of the Committee on Government Reform and Oversight, renamed the Committee on Government Reform in the 106th Congress.



# Appendix G: American Samoa Census Form

**Census  
2000**  
American  
Samoa

U.S. Department of Commerce  
Bureau of the Census



This is the official form for all the people at this address. It is quick and easy, and your answers are protected by law. Complete the Census and help your community get what it needs — today and in the future!

**Start Here**  Please use a black or blue pen. Do NOT mail this form, your completed form will be picked up by a census worker.

**1** How many people were living or staying in this house, apartment, or mobile home on April 1, 2000?

<input type="text"/>	Number of people
----------------------	------------------

**INCLUDE** in this number:

- foster children, roomers, or housemates
- people staying here on April 1, 2000 who have no other permanent place to stay
- people living here most of the time while working, even if they have another place to live

**DO NOT INCLUDE** in this number:

- college students living away while attending college
- people in a correctional facility, nursing home, or mental hospital on April 1, 2000
- Armed Forces personnel living somewhere else
- people who live or stay at another place most of the time

**➔** Please turn the page and print the names of all the people living or staying here on April 1, 2000.

**Please fill out your form promptly. A census worker will visit your home to pick up your completed questionnaire or assist you if you have questions.**

The Census Bureau estimates that, for the average household, this form will take about 62 minutes to complete, including the time for reviewing the instructions and answers. Comments about the estimate should be directed to the Associate Director for Finance and Administration, Attn: Paperwork Reduction Project 0607-0860, Room 3104, Federal Building 3, Bureau of the Census, Washington, DC 20233.

Respondents are not required to respond to any information collection unless it displays a valid approval number from the Office of Management and Budget.

Form **D-13 AS**

OMB No. 0607-0860: Approval Expires 12/31/2000

# List of Persons

➔ Please be sure you answered question 1 on the front page before continuing.

2 Please print the names of all the people who you indicated in question 1 were living or staying here on April 1, 2000.

**Example** — Last Name

J O H N S O N

First Name MI

R O B I N J

**Start with the person, or one of the people living here who owns, is buying, or rents this house, apartment, or mobile home. If there is no such person, start with any adult living or staying here.**

**Person 1** — Last Name

\_\_\_\_\_

First Name MI

\_\_\_\_\_

**Person 2** — Last Name

\_\_\_\_\_

First Name MI

\_\_\_\_\_

**Person 3** — Last Name

\_\_\_\_\_

First Name MI

\_\_\_\_\_

**Person 4** — Last Name

\_\_\_\_\_

First Name MI

\_\_\_\_\_

**Person 5** — Last Name

\_\_\_\_\_

First Name MI

\_\_\_\_\_

**Person 6** — Last Name

\_\_\_\_\_

First Name MI

\_\_\_\_\_

**Person 7** — Last Name

\_\_\_\_\_

First Name MI

\_\_\_\_\_

**Person 8** — Last Name

\_\_\_\_\_

First Name MI

\_\_\_\_\_

**Person 9** — Last Name

\_\_\_\_\_

First Name MI

\_\_\_\_\_

**Person 10** — Last Name

\_\_\_\_\_

First Name MI

\_\_\_\_\_

**Person 11** — Last Name

\_\_\_\_\_

First Name MI

\_\_\_\_\_

**Person 12** — Last Name

\_\_\_\_\_

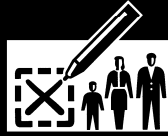
First Name MI

\_\_\_\_\_

➔ **Next, answer questions about Person 1. If you didn't have room to list everyone who lives in this house or apartment, please tell this to the census worker when you are visited. The census worker will complete a census form for the additional people.**

# Person

# 1



Your answers are important!  
Every person in the Census counts.

**1** What is this person's name? Print the name of Person 1 from page 2.

Last Name

First Name

MI

**2** What is this person's telephone number? We may contact this person if we don't understand an answer. Area Code + Number

**3** What is this person's sex? Mark  ONE box.

- Male  
 Female

**4** What is this person's age and what is this person's date of birth?

Age on April 1, 2000

Print numbers in boxes.

Month Day Year of birth

**5** What is this person's ethnic origin or race?

(For example: Chamorro, Samoan, White, Black, Carolinian, Filipino, Japanese, Korean, Palauan, Tongan, and so on.)

FOR OFFICE  
USE ONLY

**6** What is this person's marital status?

- Now married  
 Widowed  
 Divorced  
 Separated  
 Never married

**7** a. At any time since February 1, 2000, has this person attended regular school or college? Include only pre-kindergarten, kindergarten, elementary school, and schooling which leads to a high school diploma or a college degree.

- No, has not attended since February 1 → Skip to 8a  
 Yes, public school, public college  
 Yes, private school, private college

b. What grade or level was this person attending? Mark  ONE box.

- Pre-kindergarten  
 Kindergarten  
 Grade 1 to grade 4  
 Grade 5 to grade 8  
 Grade 9 to grade 12  
 College undergraduate years (freshman to senior)  
 Graduate or professional school (for example: medical, dental, or law school)

**8** a. What is the highest degree or level of school this person has COMPLETED? Mark  ONE box. If currently enrolled, mark the previous grade or highest degree received.

- No schooling completed  
 Pre-kindergarten to 4th grade  
 5th grade or 6th grade  
 7th grade or 8th grade  
 9th grade  
 10th grade  
 11th grade  
 12th grade, **NO DIPLOMA**  
 **HIGH SCHOOL GRADUATE** — high school DIPLOMA or the equivalent (for example: GED)  
 Some college credit, but less than 1 year  
 1 or more years of college, no degree  
 Associate degree (for example: AA, AS)  
 Bachelor's degree (for example: BA, AB, BS)  
 Master's degree (for example: MA, MS, MEng, MEd, MSW, MBA)  
 Professional degree (for example: MD, DDS, DVM, LLB, JD)  
 Doctorate degree (for example: PhD, EdD)

b. Has this person completed the requirements for a vocational training program at a trade school, business school, hospital, some other kind of school for occupational training, or place of work? Do not include academic college courses.

- No  
 Yes, in this Area  
 Yes, not in this Area

9243



Form D-13 AS

3

**Person 1 (continued)**

**9 a. Does this person speak a language other than English at home?**

- Yes
- No → Skip to 10

**b. What is this language?**

(For example: Chamorro, Samoan, Carolinian, Tongan)

FOR OFFICE USE ONLY

**c. Does this person speak this language at home more frequently than English?**

- Yes, more frequently than English
- Both equally often
- No, less frequently than English
- Does not speak English

**10 Where was this person born? Print the name of the island (village in American Samoa), U.S. state, commonwealth, territory, or foreign country.**

FOR OFFICE USE ONLY

**11 Is this person a CITIZEN or NATIONAL of the United States?**

- Yes, born in this Area → Skip to 14a
- Yes, born in the United States or another U.S. territory or commonwealth
- Yes, born elsewhere of U.S. parent or parents
- Yes, a U.S. citizen by naturalization
- No, not a U.S. citizen or national (permanent resident)
- No, not a U.S. citizen or national (temporary resident)

**12 When did this person come to this Area to stay? If this person has entered the Area more than once, what is the latest year? Print numbers in boxes.**

Year

**13 What was this person's main reason for moving to this Area?**

- Employment
- Military
- Subsistence activities
- Missionary activities
- Moved with spouse or parent
- To attend school
- Medical
- Housing
- Other

**14 a. Where was this person's mother born? Print the name of the island (village in American Samoa), U.S. state, commonwealth, territory, or foreign country.**

FOR OFFICE USE ONLY

**b. Where was this person's father born? Print the name of the island (village in American Samoa), U.S. state, commonwealth, territory, or foreign country.**

FOR OFFICE USE ONLY

**15 Is this person a dependent of an active-duty or retired member of the Armed Forces of the United States or of the full-time military Reserves or National Guard? "Active duty" does NOT include training for the military Reserves or National Guard.**

- Yes, dependent of an active-duty member of the Armed Forces
- Yes, dependent of retired member of the Armed Forces, or dependent of an active-duty or retired member of full-time National Guard or Armed Forces Reserve
- No

**16 a. Did this person live in this house or apartment 5 years ago (on April 1, 1995)?**

- Person is under 5 years old → Skip to 35
- Yes, this house → Skip to 17
- No, different house

**b. Where did this person live 5 years ago?**

Name of the island, U.S. state, commonwealth, territory, or foreign country. If outside this Area, print the answer below and skip to 17.

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**c. Name of city, town, or village**

FOR OFFICE USE ONLY

**17 Does this person have any of the following long-lasting conditions:**

- |  |                          |                          |
|--|--------------------------|--------------------------|
|  | Yes                      | No                       |
| a. Blindness, deafness, or a severe vision or hearing impairment?  | <input type="checkbox"/> | <input type="checkbox"/> |
| b. A condition that substantially limits one or more basic physical activities such as walking, climbing stairs, reaching, lifting, or carrying? | <input type="checkbox"/> | <input type="checkbox"/> |

**Person 1 (continued)**

- 18** Because of a physical, mental, or emotional condition lasting 6 months or more, does this person have any difficulty in doing any of the following activities:
- |  |                          |                          |
|--|--------------------------|--------------------------|
|  | Yes                      | No                       |
| a. Learning, remembering, or concentrating?  | <input type="checkbox"/> | <input type="checkbox"/> |
| b. Dressing, bathing, or getting around inside the home?   | <input type="checkbox"/> | <input type="checkbox"/> |
| c. (Answer if this person is 16 YEARS OLD OR OVER.) Going outside the home alone to shop or visit a doctor's office? | <input type="checkbox"/> | <input type="checkbox"/> |
| d. (Answer if this person is 16 YEARS OLD OR OVER.) Working at a job or business?                                    | <input type="checkbox"/> | <input type="checkbox"/> |

- 19** Was this person under 15 years of age on April 1, 2000?
- Yes → Skip to 35
- No

- 20** a. If this person is female, how many babies has she ever had, not counting stillbirths? Do not count stepchildren or children she has adopted.
- None → Skip to 21a
- |                            |                             |                                     |
|----------------------------|-----------------------------|-------------------------------------|
| <input type="checkbox"/> 1 | <input type="checkbox"/> 6  | <input type="checkbox"/> 11         |
| <input type="checkbox"/> 2 | <input type="checkbox"/> 7  | <input type="checkbox"/> 12         |
| <input type="checkbox"/> 3 | <input type="checkbox"/> 8  | <input type="checkbox"/> 13         |
| <input type="checkbox"/> 4 | <input type="checkbox"/> 9  | <input type="checkbox"/> 14         |
| <input type="checkbox"/> 5 | <input type="checkbox"/> 10 | <input type="checkbox"/> 15 or more |

**b.** What was the date of birth of the last child born to this person? Print numbers in boxes.

Month	Day	Year of birth
<input type="text"/>	<input type="text"/>	<input type="text"/>

- 21** a. Does this person have any of his/her own grandchildren under the age of 18 living in this house or apartment?
- Yes
- No → Skip to 22a

**b.** Is this grandparent currently responsible for most of the basic needs of any grandchild(ren) under the age of 18 who live(s) in this house or apartment?

Yes

No → Skip to 22a

**c.** How long has this grandparent been responsible for the(se) grandchild(ren)? If the grandparent is financially responsible for more than one grandchild, answer the question for the grandchild for whom the grandparent has been responsible for the longest period of time.

Less than 6 months

6 to 11 months

1 or 2 years

3 or 4 years

5 years or more

- 22** a. Has this person ever served on active duty in the U.S. Armed Forces, military Reserves, or National Guard? Active duty does not include training for the Reserves or National Guard, but DOES include activation, for example, for the Persian Gulf War.
- Yes, now on active duty
- Yes, on active duty in past, but not now
- No, training for Reserves or National Guard only → Skip to 23
- No, never served in the military → Skip to 23

- b.** When did this person serve on active duty in the U.S. Armed Forces? Mark  a box for EACH period in which this person served.
- April 1995 or later
- August 1990 to March 1995 (including Persian Gulf War)
- September 1980 to July 1990
- May 1975 to August 1980
- Vietnam era (August 1964—April 1975)
- February 1955 to July 1964
- Korean conflict (June 1950—January 1955)
- World War II (September 1940—July 1947)
- Some other time

**c.** In total, how many years of active-duty military service has this person had?

Less than 2 years

2 years or more

- 23** LAST WEEK, did this person do ANY work for either pay or profit? Answer "Yes" even if the person worked only 1 hour, or helped without pay in a family business or farm for 15 hours or more, or was on active duty in the Armed Forces. Also indicate whether the person did subsistence activity last week, such as fishing, growing crops, etc., NOT primarily for commercial purposes. Mark  ONE box.
- Yes, worked for pay or profit; did NO subsistence activity
- Yes, worked for pay or profit AND did subsistence activity
- No, did NOT work for pay or profit; did subsistence activity → Skip to 27a
- No, did NOT work for pay or profit; did NO subsistence activity → Skip to 27a

**24** At what location did this person work LAST WEEK? Do not include subsistence activity. If this person worked at more than one location, print where he or she worked most last week.

**a.** Name of island, U.S. state, commonwealth, territory, or foreign country

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
									FOR OFFICE USE ONLY <input type="text"/>

**b.** Name of city, town, or village

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
									FOR OFFICE USE ONLY <input type="text"/>



**Person 1 (continued)**

- 25 a. How did this person usually get to work LAST WEEK?** *Do not include transportation to subsistence activity. If this person usually used more than one method of transportation during the trip, mark (X) the box of the one used for most of the distance.*
- Car, truck, or private van/bus
  - Public van/bus
  - Boat
  - Taxicab
  - Motorcycle
  - Bicycle
  - Walked
  - Worked at home → *Skip to 29*
  - Other method

→ **If "Car, truck, or private van/bus" is marked in 25a, go to 25b. Otherwise, skip to 26a.**

- 25 b. How many people, including this person, usually rode to work in the car, truck, or private van/bus LAST WEEK?**
- Drove alone
  - 2 people
  - 3 people
  - 4 people
  - 5 or 6 people
  - 7 or more people

- 26 a. What time did this person usually leave home to go to work LAST WEEK?**

:   a.m.  p.m.

- b. How many minutes did it usually take this person to get from home to work LAST WEEK?**

Minutes

→ **Answer questions 27–28 for persons who did not work for pay or profit last week. Others skip to 29.**

- 27 a. LAST WEEK, was this person on layoff from a job?**

- Yes → *Skip to 27c*
- No

- b. LAST WEEK, was this person TEMPORARILY absent from a job or business?**

- Yes, on vacation, temporary illness, labor dispute, etc. → *Skip to 28*
- No → *Skip to 27d*

- c. Has this person been informed that he or she will be recalled to work within the next 6 months OR been given a date to return to work?**

- Yes → *Skip to 27e*
- No

- 27 d. Has this person been looking for work during the last 4 weeks?**

- Yes
- No → *Skip to 28*

- e. LAST WEEK, could this person have started a job if offered one, or returned to work if recalled?**

- Yes, could have gone to work
- No, because of own temporary illness
- No, because of all other reasons (*in school, etc.*)

- 28 When did this person last work, even for a few days?** *Do not include subsistence activity.*

- 2000
- 1999
- 1998
- 1995 to 1997
- 1990 to 1994 → *Skip to 33*
- 1989 or earlier → *Skip to 33*
- Never worked; or did subsistence only → *Skip to 33*

- 29 Industry or Employer** — *Describe clearly this person's chief job activity or business last week. If this person had more than one job, describe the one at which this person worked the most hours. If this person had no job or business last week, give the information for his/her last job or business since 1995.*

- a. For whom did this person work?** *If now on active duty in the Armed Forces, mark (X) this box →  and print the branch of the Armed Forces.*

Name of company, business, or other employer

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- b. What kind of business or industry was this?**

*Describe the activity at location where employed. (For example: hospital, fish cannery, watchmaker, auto repair shop, bank)*

- c. Is this mainly** — *Mark (X) ONE box.*

- Manufacturing?
- Wholesale trade?
- Retail trade?
- Other (*agriculture, construction, service, government, etc.*)?





**Person 1 (continued)**

**33 g. Retirement, survivor, or disability pensions —**  
Do NOT include Social Security.

- Yes Annual amount — Dollars  
\$    ,    .00
- No

**h. Any remittances —** Include money from relatives outside the household or in the military.

- Yes Annual amount — Dollars  
\$    ,    .00
- No

**i. Any other sources of income received regularly such as Veterans' (VA) payments, unemployment compensation, child support, or alimony —** Do NOT include lump-sum payments such as money from an inheritance or sale of a home.

- Yes Annual amount — Dollars  
\$    ,    .00
- No

**34 What was this person's total income in 1999?** Add entries in questions 33a—33i; subtract any losses. If net income was a loss, enter the amount and mark  the "Loss" box next to the dollar amount.

- Annual amount — Dollars  
 None OR \$    ,    .00  Loss

**→ Now, please answer questions 35—61 about your household.**

**35 Is this living quarters —**

- Owned by you or someone in this household with a mortgage or loan?  
 Owned by you or someone in this household free and clear (without a mortgage or loan)?  
 Rented for cash rent?  
 Occupied without payment of cash rent?

**36 Which best describes this building?** Include all apartments, flats, etc., even if vacant.

- A mobile home  
 A one-family house detached from any other house  
 A one-family house attached to one or more houses  
 Two houses — **Applies only in American Samoa**  
 Three or more houses — **Applies only in American Samoa**  
 A building with 2 apartments  
 A building with 3 or 4 apartments  
 A building with 5 to 9 apartments  
 A building with 10 to 19 apartments  
 A building with 20 to 49 apartments  
 A building with 50 or more apartments  
 A container  
 Boat, RV, van, etc.

**37 About when was this building first built?**

- 1999 or 2000  1960 to 1969  
 1995 to 1998  1950 to 1959  
 1990 to 1994  1940 to 1949  
 1980 to 1989  1939 or earlier  
 1970 to 1979

**38 When did this person move into this living quarters?**

- 1999 or 2000  
 1995 to 1998  
 1990 to 1994  
 1980 to 1989  
 1970 to 1979  
 1969 or earlier

**39 How many rooms do you have in this living quarters?** Do NOT count bathrooms, porches, balconies, foyers, halls, or half-rooms.

- 1 room  6 rooms  
 2 rooms  7 rooms  
 3 rooms  8 rooms  
 4 rooms  9 or more rooms  
 5 rooms

**40 How many bedrooms do you have; that is, how many bedrooms would you list if this living quarters were on the market for sale or rent?**

- No bedroom  
 1 bedroom  
 2 bedrooms  
 3 bedrooms  
 4 bedrooms  
 5 or more bedrooms

**41 a. Do you have hot and cold piped water?**

- Yes, in this unit  
 Yes, in this building, not in unit  
 No, only cold piped water in this unit  
 No, only cold piped water in this building  
 No, only cold piped water outside this building  
 No piped water

**b. Do you have a bathtub or shower?**

- Yes, in this unit  
 Yes, in this building, not in unit  
 Yes, outside this building  
 No

**Person 1 (continued)**

- 41 c. Do you have a flush toilet?**  
 Yes, in this unit → *Skip to 42a*  
 Yes, in this building, not in unit → *Skip to 42a*  
 Yes, outside this building → *Skip to 42a*  
 No

- d. What type of toilet facilities do you have?**  
 Outhouse or privy  
 Other or none

- 42 a. Are your MAIN cooking facilities located inside or outside this building?**  
 Inside this building  
 Outside this building  
 No cooking facilities → *Skip to 42c*

- b. What type of cooking facilities are these?**  
 Electric stove  
 Kerosene stove  
 Gas stove  
 Microwave oven and non-portable burners  
 Microwave oven only  
 Other (fireplace, hotplate, etc.)

- c. Do you have a refrigerator in this building?**  
 Yes  
 No

- d. Do you have a sink with piped water in this building?**  
 Yes  
 No

- 43 Is there telephone service available in this living quarters from which you can both make and receive calls?**  
 Yes  
 No

- 44 Do you have air conditioning?**  
 Yes, a central air-conditioning system (includes split-type)  
 Yes, 1 individual room unit  
 Yes, 2 or more individual room units  
 No

- 45 How many automobiles, vans, and trucks of one-ton capacity or less are kept at home for use by members of your household?**
- |                               |                                    |
|-------------------------------|------------------------------------|
| <input type="checkbox"/> None | <input type="checkbox"/> 4         |
| <input type="checkbox"/> 1    | <input type="checkbox"/> 5         |
| <input type="checkbox"/> 2    | <input type="checkbox"/> 6 or more |
| <input type="checkbox"/> 3    |                                    |

- 46 Do you have a battery operated radio? Count car radios, transistors, and other battery operated sets in working order or needing only a new battery for operation.**  
 Yes, 1 or more  
 No

- 47 Do you get water from —**  
 A public system only?  
 A public system and catchment?  
 A village water system only? — *Applies only in American Samoa*  
 An individual well?  
 A catchment, tanks, or drums only?  
 Some other source such as a standpipe, spring, river, creek, etc.?

- 48 Is this building connected to a public sewer?**  
 Yes, connected to public sewer  
 No, connected to septic tank or cesspool  
 No, use other means

- 49 Is this living quarters part of a condominium?**  
 Yes  
 No

- 50 What is the MAIN type of material used for the outside walls of this building?**  
 Poured concrete  
 Concrete blocks  
 Metal  
 Wood  
 Other

- 51 What is the MAIN type of material used for the roof of this building?**  
 Poured concrete  
 Metal  
 Wood  
 Other

- 52 What is the MAIN type of material used for the foundation of this building?**  
 Concrete  
 Wood pier or pilings  
 Other

- 53 Answer ONLY if this is a ONE-FAMILY HOUSE OR MOBILE HOME — All others skip to 54a.**  
**Is there a business (such as a store or shop) or a medical office on THIS property?**  
 Yes  
 No

- 54 a. What is the average monthly cost for electricity for this living quarters?**

Average monthly cost — *Dollars*

\$ | , | | .00  
OR

- Included in rent or in condominium fee  
 No charge or electricity not used



**Person 1 (continued)**

**54** b. What is the average monthly cost for gas for this living quarters?

Average monthly cost — Dollars

\$ | | | | .00

OR

- Included in rent or in condominium fee
- No charge or gas not used

**c. What is the average monthly cost for water and sewer for this living quarters?**

Average monthly cost — Dollars

\$ | | | | .00

OR

- Included in rent or in condominium fee
- No charge

**d. What is the average monthly cost for oil, coal, kerosene, wood, etc. for this living quarters?**

Average monthly cost — Dollars

\$ | | | | .00

OR

- Included in rent or in condominium fee
- No charge or these fuels not used

**55** a. Answer 55b ONLY if RENT IS PAID for this living quarters — All others skip to 56.

**b. What is the monthly rent?**

Monthly amount — Dollars

\$ | | | | .00

**56** Answer questions 56a—61 if you or someone in this household owns or is buying this living quarters; otherwise, skip to questions for Person 2.

**a. Do you have a mortgage, deed of trust, contract to purchase, or similar debt on THIS property?**

- Yes, mortgage, deed of trust, or similar debt
- Yes, contract to purchase
- No → Skip to 57a

**b. How much is your regular monthly mortgage payment on THIS property? Include payment only on first mortgage or contract to purchase.**

Monthly amount — Dollars

\$ | | | | .00

OR

- No regular payment required → Skip to 57a

**c. Does your regular monthly mortgage payment include payments for real estate taxes on THIS property?**

- Yes, taxes included in mortgage payment
- No, taxes paid separately or taxes not required

**56** d. Does your regular monthly mortgage payment include payments for fire, hazard, typhoon, or flood insurance on THIS property?

- Yes, insurance included in mortgage payment
- No, insurance paid separately or no insurance

**57** a. Do you have a second mortgage or a home equity loan on THIS property? Mark  all boxes that apply.

- Yes, a second mortgage
- Yes, a home equity loan
- No → Skip to 58

**b. How much is your regular monthly payment on all second or junior mortgages and all home equity loans on THIS property?**

Monthly amount — Dollars

\$ | | | | .00

OR

- No regular payment required

**58** What were the real estate taxes on THIS property last year?

Yearly amount — Dollars

\$ | | | | .00

OR

- None

**59** What was the annual payment for fire, hazard, typhoon, and flood insurance on THIS property?

Annual amount — Dollars

\$ | | | | .00

OR

- None

**60** What is the value of this property; that is, how much do you think this house and lot, apartment, or mobile home and lot would sell for if it were for sale?

Value of property — Dollars

\$ | | | | | | | .00

**61** Answer ONLY if this is a CONDOMINIUM — What is the monthly condominium fee?

Monthly amount — Dollars

\$ | | | | .00

**→** Are there more people living here? If yes, continue with Person 2.

# Appendix H: Commonwealth of the Northern Mariana Islands Census Form

**Census  
2000**  
Commonwealth of the  
Northern Mariana Islands

U.S. Department of Commerce  
Bureau of the Census



This is the official form for all the people at this address. It is quick and easy, and your answers are protected by law. Complete the Census and help your community get what it needs — today and in the future!

**Start Here**  Please use a black or blue pen. Do NOT mail this form, your completed form will be picked up by a census worker.

**1** How many people were living or staying in this house, apartment, or mobile home on April 1, 2000?

Number of people

**INCLUDE** in this number:

- foster children, roomers, or housemates
- people staying here on April 1, 2000 who have no other permanent place to stay
- people living here most of the time while working, even if they have another place to live

**DO NOT INCLUDE** in this number:

- college students living away while attending college
- people in a correctional facility, nursing home, or mental hospital on April 1, 2000
- Armed Forces personnel living somewhere else
- people who live or stay at another place most of the time

**➔** Please turn the page and print the names of all the people living or staying here on April 1, 2000.

Please fill out your form promptly. A census worker will visit your home to pick up your completed questionnaire or assist you if you have questions.

The Census Bureau estimates that, for the average household, this form will take about 45 minutes to complete, including the time for reviewing the instructions and answers. Comments about the estimate should be directed to the Associate Director for Finance and Administration, Attn: Paperwork Reduction Project 0607-0860, Room 3104, Federal Building 3, Bureau of the Census, Washington, DC 20233.

Respondents are not required to respond to any information collection unless it displays a valid approval number from the Office of Management and Budget.

Form **D-13 CNMI**

OMB No. 0607-0860: Approval Expires 12/31/2000

# List of Persons

➔ Please be sure you answered question 1 on the front page before continuing.

2 Please print the names of all the people who you indicated in question 1 were living or staying here on April 1, 2000.

Example — Last Name

J O H N S O N

First Name MI

R O B I N J

Start with the person, or one of the people living here who owns, is buying, or rents this house, apartment, or mobile home. If there is no such person, start with any adult living or staying here.

Person 1 — Last Name

First Name MI

Person 2 — Last Name

First Name MI

Person 3 — Last Name

First Name MI

Person 4 — Last Name

First Name MI

Person 5 — Last Name

First Name MI

Person 6 — Last Name

First Name MI

Person 7 — Last Name

First Name MI

Person 8 — Last Name

First Name MI

Person 9 — Last Name

First Name MI

Person 10 — Last Name

First Name MI

Person 11 — Last Name

First Name MI

Person 12 — Last Name

First Name MI

➔ Next, answer questions about Person 1. If you didn't have room to list everyone who lives in this house or apartment, please tell this to the census worker when you are visited. The census worker will complete a census form for the additional people.

# Person

# 1



Your answers are important!  
Every person in the Census counts.

**1** What is this person's name? Print the name of Person 1 from page 2.

Last Name

First Name

MI

**2** What is this person's telephone number? We may contact this person if we don't understand an answer. Area Code + Number

**3** What is this person's sex? Mark  ONE box.

- Male  
 Female

**4** What is this person's age and what is this person's date of birth?

Age on April 1, 2000

Print numbers in boxes.

Month Day Year of birth

**5** What is this person's ethnic origin or race?

(For example: Chamorro, Samoan, White, Black, Carolinian, Filipino, Japanese, Korean, Palauan, Tongan, and so on.)

FOR OFFICE  
USE ONLY

**6** What is this person's marital status?

- Now married  
 Widowed  
 Divorced  
 Separated  
 Never married

**7** a. At any time since February 1, 2000, has this person attended regular school or college? Include only pre-kindergarten, kindergarten, elementary school, and schooling which leads to a high school diploma or a college degree.

- No, has not attended since February 1 → Skip to 8a  
 Yes, public school, public college  
 Yes, private school, private college

b. What grade or level was this person attending? Mark  ONE box.

- Pre-kindergarten  
 Kindergarten  
 Grade 1 to grade 4  
 Grade 5 to grade 8  
 Grade 9 to grade 12  
 College undergraduate years (freshman to senior)  
 Graduate or professional school (for example: medical, dental, or law school)

**8** a. What is the highest degree or level of school this person has COMPLETED? Mark  ONE box. If currently enrolled, mark the previous grade or highest degree received.

- No schooling completed  
 Pre-kindergarten to 4th grade  
 5th grade or 6th grade  
 7th grade or 8th grade  
 9th grade  
 10th grade  
 11th grade  
 12th grade, **NO DIPLOMA**  
 **HIGH SCHOOL GRADUATE** — high school DIPLOMA or the equivalent (for example: GED)  
 Some college credit, but less than 1 year  
 1 or more years of college, no degree  
 Associate degree (for example: AA, AS)  
 Bachelor's degree (for example: BA, AB, BS)  
 Master's degree (for example: MA, MS, MEng, MEd, MSW, MBA)  
 Professional degree (for example: MD, DDS, DVM, LLB, JD)  
 Doctorate degree (for example: PhD, EdD)

b. Has this person completed the requirements for a vocational training program at a trade school, business school, hospital, some other kind of school for occupational training, or place of work? Do not include academic college courses.

- No  
 Yes, in this Area  
 Yes, not in this Area

9343



Form D-13 CNMI

3

**Person 1 (continued)**

**9 a. Does this person speak a language other than English at home?**

- Yes
- No → *Skip to 10*

**b. What is this language?**

(For example: Chamorro, Samoan, Carolinian, Tongan)

FOR OFFICE USE ONLY

**c. Does this person speak this language at home more frequently than English?**

- Yes, more frequently than English
- Both equally often
- No, less frequently than English
- Does not speak English

**10 Where was this person born? Print the name of the island (village in American Samoa), U.S. state, commonwealth, territory, or foreign country.**

FOR OFFICE USE ONLY

**11 Is this person a CITIZEN or NATIONAL of the United States?**

- Yes, born in this Area → *Skip to 14a*
- Yes, born in the United States or another U.S. territory or commonwealth
- Yes, born elsewhere of U.S. parent or parents
- Yes, a U.S. citizen by naturalization
- No, not a U.S. citizen or national (permanent resident)
- No, not a U.S. citizen or national (temporary resident)

**12 When did this person come to this Area to stay? If this person has entered the Area more than once, what is the latest year? Print numbers in boxes.**

Year

**13 What was this person's main reason for moving to this Area?**

- Employment
- Military
- Subsistence activities
- Missionary activities
- Moved with spouse or parent
- To attend school
- Medical
- Housing
- Other

**14 a. Where was this person's mother born? Print the name of the island (village in American Samoa), U.S. state, commonwealth, territory, or foreign country.**

FOR OFFICE USE ONLY

**b. Where was this person's father born? Print the name of the island (village in American Samoa), U.S. state, commonwealth, territory, or foreign country.**

FOR OFFICE USE ONLY

**15 Is this person a dependent of an active-duty or retired member of the Armed Forces of the United States or of the full-time military Reserves or National Guard? "Active duty" does NOT include training for the military Reserves or National Guard.**

- Yes, dependent of an active-duty member of the Armed Forces
- Yes, dependent of retired member of the Armed Forces, or dependent of an active-duty or retired member of full-time National Guard or Armed Forces Reserve
- No

**16 a. Did this person live in this house or apartment 5 years ago (on April 1, 1995)?**

- Person is under 5 years old → *Skip to 35*
- Yes, this house → *Skip to 17*
- No, different house

**b. Where did this person live 5 years ago?**

Name of the island, U.S. state, commonwealth, territory, or foreign country. If outside this Area, print the answer below and skip to 17.

FOR OFFICE USE ONLY

**c. Name of city, town, or village**

FOR OFFICE USE ONLY

**17 Does this person have any of the following long-lasting conditions:**

- |  |                          |                          |
|--|--------------------------|--------------------------|
|  | Yes                      | No                       |
| a. Blindness, deafness, or a severe vision or hearing impairment?  | <input type="checkbox"/> | <input type="checkbox"/> |
| b. A condition that substantially limits one or more basic physical activities such as walking, climbing stairs, reaching, lifting, or carrying? | <input type="checkbox"/> | <input type="checkbox"/> |



**Person 1 (continued)**

- 18** Because of a physical, mental, or emotional condition lasting 6 months or more, does this person have any difficulty in doing any of the following activities:
- |  |                          |                          |
|--|--------------------------|--------------------------|
|  | Yes                      | No                       |
| a. Learning, remembering, or concentrating?  | <input type="checkbox"/> | <input type="checkbox"/> |
| b. Dressing, bathing, or getting around inside the home?   | <input type="checkbox"/> | <input type="checkbox"/> |
| c. (Answer if this person is 16 YEARS OLD OR OVER.) Going outside the home alone to shop or visit a doctor's office? | <input type="checkbox"/> | <input type="checkbox"/> |
| d. (Answer if this person is 16 YEARS OLD OR OVER.) Working at a job or business?                                    | <input type="checkbox"/> | <input type="checkbox"/> |

- 19** Was this person under 15 years of age on April 1, 2000?
- Yes → Skip to 35
- No

- 20** a. If this person is female, how many babies has she ever had, not counting stillbirths? Do not count stepchildren or children she has adopted.
- None → Skip to 21a
- |                            |                             |                                     |
|----------------------------|-----------------------------|-------------------------------------|
| <input type="checkbox"/> 1 | <input type="checkbox"/> 6  | <input type="checkbox"/> 11         |
| <input type="checkbox"/> 2 | <input type="checkbox"/> 7  | <input type="checkbox"/> 12         |
| <input type="checkbox"/> 3 | <input type="checkbox"/> 8  | <input type="checkbox"/> 13         |
| <input type="checkbox"/> 4 | <input type="checkbox"/> 9  | <input type="checkbox"/> 14         |
| <input type="checkbox"/> 5 | <input type="checkbox"/> 10 | <input type="checkbox"/> 15 or more |

**b. What was the date of birth of the last child born to this person?** Print numbers in boxes.

Month	Day	Year of birth
<input type="text"/>	<input type="text"/>	<input type="text"/>

- 21** a. Does this person have any of his/her own grandchildren under the age of 18 living in this house or apartment?
- Yes
- No → Skip to 22a

**b. Is this grandparent currently responsible for most of the basic needs of any grandchild(ren) under the age of 18 who live(s) in this house or apartment?**

Yes

No → Skip to 22a

**c. How long has this grandparent been responsible for the(se) grandchild(ren)?** If the grandparent is financially responsible for more than one grandchild, answer the question for the grandchild for whom the grandparent has been responsible for the longest period of time.

Less than 6 months

6 to 11 months

1 or 2 years

3 or 4 years

5 years or more

- 22** a. Has this person ever served on active duty in the U.S. Armed Forces, military Reserves, or National Guard? Active duty does not include training for the Reserves or National Guard, but DOES include activation, for example, for the Persian Gulf War.
- Yes, now on active duty
- Yes, on active duty in past, but not now
- No, training for Reserves or National Guard only → Skip to 23
- No, never served in the military → Skip to 23
- b. When did this person serve on active duty in the U.S. Armed Forces?** Mark  a box for EACH period in which this person served.
- April 1995 or later
- August 1990 to March 1995 (including Persian Gulf War)
- September 1980 to July 1990
- May 1975 to August 1980
- Vietnam era (August 1964—April 1975)
- February 1955 to July 1964
- Korean conflict (June 1950—January 1955)
- World War II (September 1940—July 1947)
- Some other time

**c. In total, how many years of active-duty military service has this person had?**

Less than 2 years

2 years or more

**23** **LAST WEEK, did this person do ANY work for either pay or profit?** Answer "Yes" even if the person worked only 1 hour, or helped without pay in a family business or farm for 15 hours or more, or was on active duty in the Armed Forces. Also indicate whether the person did subsistence activity last week, such as fishing, growing crops, etc., NOT primarily for commercial purposes. Mark  ONE box.

Yes, worked for pay or profit; did NO subsistence activity

Yes, worked for pay or profit AND did subsistence activity

No, did NOT work for pay or profit; did subsistence activity → Skip to 27a

No, did NOT work for pay or profit; did NO subsistence activity → Skip to 27a

**24** **At what location did this person work LAST WEEK?** Do not include subsistence activity. If this person worked at more than one location, print where he or she worked most last week.

**a. Name of island, U.S. state, commonwealth, territory, or foreign country**

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
									FOR OFFICE USE ONLY	<input type="text"/>

**b. Name of city, town, or village**

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
									FOR OFFICE USE ONLY	<input type="text"/>

**Person 1 (continued)**

- 25 a. How did this person usually get to work LAST WEEK?** *Do not include transportation to subsistence activity. If this person usually used more than one method of transportation during the trip, mark (X) the box of the one used for most of the distance.*
- Car, truck, or private van/bus
  - Public van/bus
  - Boat
  - Taxicab
  - Motorcycle
  - Bicycle
  - Walked
  - Worked at home → *Skip to 29*
  - Other method

→ **If "Car, truck, or private van/bus" is marked in 25a, go to 25b. Otherwise, skip to 26a.**

- 25 b. How many people, including this person, usually rode to work in the car, truck, or private van/bus LAST WEEK?**
- Drove alone
  - 2 people
  - 3 people
  - 4 people
  - 5 or 6 people
  - 7 or more people

- 26 a. What time did this person usually leave home to go to work LAST WEEK?**

:   a.m.  p.m.

- b. How many minutes did it usually take this person to get from home to work LAST WEEK?**

Minutes

→ **Answer questions 27–28 for persons who did not work for pay or profit last week. Others skip to 29.**

- 27 a. LAST WEEK, was this person on layoff from a job?**

- Yes → *Skip to 27c*
- No

- b. LAST WEEK, was this person TEMPORARILY absent from a job or business?**

- Yes, on vacation, temporary illness, labor dispute, etc. → *Skip to 28*
- No → *Skip to 27d*

- c. Has this person been informed that he or she will be recalled to work within the next 6 months OR been given a date to return to work?**

- Yes → *Skip to 27e*
- No

- 27 d. Has this person been looking for work during the last 4 weeks?**

- Yes
- No → *Skip to 28*

- e. LAST WEEK, could this person have started a job if offered one, or returned to work if recalled?**

- Yes, could have gone to work
- No, because of own temporary illness
- No, because of all other reasons (*in school, etc.*)

- 28 When did this person last work, even for a few days?** *Do not include subsistence activity.*

- 2000
- 1999
- 1998
- 1995 to 1997
- 1990 to 1994 → *Skip to 33*
- 1989 or earlier → *Skip to 33*
- Never worked; or did subsistence only → *Skip to 33*

- 29 Industry or Employer** — *Describe clearly this person's chief job activity or business last week. If this person had more than one job, describe the one at which this person worked the most hours. If this person had no job or business last week, give the information for his/her last job or business since 1995.*

- a. For whom did this person work?** *If now on active duty in the Armed Forces, mark (X) this box →  and print the branch of the Armed Forces.*

Name of company, business, or other employer

FOR OFFICE USE ONLY

- b. What kind of business or industry was this?**

*Describe the activity at location where employed. (For example: hospital, fish cannery, watchmaker, auto repair shop, bank)*

- c. Is this mainly** — *Mark (X) ONE box.*

- Manufacturing?
- Wholesale trade?
- Retail trade?
- Other (*agriculture, construction, service, government, etc.*)?



**Person 1 (continued)**

**33 g. Retirement, survivor, or disability pensions —**  
Do NOT include Social Security.

- Yes Annual amount — Dollars  
\$    ,    .00
- No

**h. Any remittances —** Include money from relatives outside the household or in the military.

- Yes Annual amount — Dollars  
\$    ,    .00
- No

**i. Any other sources of income received regularly such as Veterans' (VA) payments, unemployment compensation, child support, or alimony —** Do NOT include lump-sum payments such as money from an inheritance or sale of a home.

- Yes Annual amount — Dollars  
\$    ,    .00
- No

**34 What was this person's total income in 1999?** Add entries in questions 33a—33i; subtract any losses. If net income was a loss, enter the amount and mark  the "Loss" box next to the dollar amount.

- Annual amount — Dollars  
 None OR \$    ,    .00  Loss

**→ Now, please answer questions 35—61 about your household.**

**35 Is this living quarters —**

- Owned by you or someone in this household with a mortgage or loan?  
 Owned by you or someone in this household free and clear (without a mortgage or loan)?  
 Rented for cash rent?  
 Occupied without payment of cash rent?

**36 Which best describes this building?** Include all apartments, flats, etc., even if vacant.

- A mobile home  
 A one-family house detached from any other house  
 A one-family house attached to one or more houses  
 Two houses — **Applies only in American Samoa**  
 Three or more houses — **Applies only in American Samoa**  
 A building with 2 apartments  
 A building with 3 or 4 apartments  
 A building with 5 to 9 apartments  
 A building with 10 to 19 apartments  
 A building with 20 to 49 apartments  
 A building with 50 or more apartments  
 A container  
 Boat, RV, van, etc.

**37 About when was this building first built?**

- 1999 or 2000  1960 to 1969  
 1995 to 1998  1950 to 1959  
 1990 to 1994  1940 to 1949  
 1980 to 1989  1939 or earlier  
 1970 to 1979

**38 When did this person move into this living quarters?**

- 1999 or 2000  
 1995 to 1998  
 1990 to 1994  
 1980 to 1989  
 1970 to 1979  
 1969 or earlier

**39 How many rooms do you have in this living quarters?** Do NOT count bathrooms, porches, balconies, foyers, halls, or half-rooms.

- 1 room  6 rooms  
 2 rooms  7 rooms  
 3 rooms  8 rooms  
 4 rooms  9 or more rooms  
 5 rooms

**40 How many bedrooms do you have; that is, how many bedrooms would you list if this living quarters were on the market for sale or rent?**

- No bedroom  
 1 bedroom  
 2 bedrooms  
 3 bedrooms  
 4 bedrooms  
 5 or more bedrooms

**41 a. Do you have hot and cold piped water?**

- Yes, in this unit  
 Yes, in this building, not in unit  
 No, only cold piped water in this unit  
 No, only cold piped water in this building  
 No, only cold piped water outside this building  
 No piped water

**b. Do you have a bathtub or shower?**

- Yes, in this unit  
 Yes, in this building, not in unit  
 Yes, outside this building  
 No

**Person 1 (continued)**

- 41 c. Do you have a flush toilet?**
- Yes, in this unit → *Skip to 42a*
  - Yes, in this building, not in unit → *Skip to 42a*
  - Yes, outside this building → *Skip to 42a*
  - No

- d. What type of toilet facilities do you have?**
- Outhouse or privy
  - Other or none

- 42 a. Are your MAIN cooking facilities located inside or outside this building?**
- Inside this building
  - Outside this building
  - No cooking facilities → *Skip to 42c*

- b. What type of cooking facilities are these?**
- Electric stove
  - Kerosene stove
  - Gas stove
  - Microwave oven and non-portable burners
  - Microwave oven only
  - Other (fireplace, hotplate, etc.)

- c. Do you have a refrigerator in this building?**
- Yes
  - No

- d. Do you have a sink with piped water in this building?**
- Yes
  - No

- 43 Is there telephone service available in this living quarters from which you can both make and receive calls?**
- Yes
  - No

- 44 Do you have air conditioning?**
- Yes, a central air-conditioning system (includes split-type)
  - Yes, 1 individual room unit
  - Yes, 2 or more individual room units
  - No

- 45 How many automobiles, vans, and trucks of one-ton capacity or less are kept at home for use by members of your household?**
- |                               |                                    |
|-------------------------------|------------------------------------|
| <input type="checkbox"/> None | <input type="checkbox"/> 4         |
| <input type="checkbox"/> 1    | <input type="checkbox"/> 5         |
| <input type="checkbox"/> 2    | <input type="checkbox"/> 6 or more |
| <input type="checkbox"/> 3    |                                    |

- 46 Do you have a battery operated radio? Count car radios, transistors, and other battery operated sets in working order or needing only a new battery for operation.**
- Yes, 1 or more
  - No

- 47 Do you get water from —**
- A public system only?
  - A public system and catchment?
  - A village water system only? — *Applies only in American Samoa*
  - An individual well?
  - A catchment, tanks, or drums only?
  - Some other source such as a standpipe, spring, river, creek, etc.?

- 48 Is this building connected to a public sewer?**
- Yes, connected to public sewer
  - No, connected to septic tank or cesspool
  - No, use other means

- 49 Is this living quarters part of a condominium?**
- Yes
  - No

- 50 What is the MAIN type of material used for the outside walls of this building?**
- Poured concrete
  - Concrete blocks
  - Metal
  - Wood
  - Other

- 51 What is the MAIN type of material used for the roof of this building?**
- Poured concrete
  - Metal
  - Wood
  - Other

- 52 What is the MAIN type of material used for the foundation of this building?**
- Concrete
  - Wood pier or pilings
  - Other

- 53 Answer ONLY if this is a ONE-FAMILY HOUSE OR MOBILE HOME — All others skip to 54a.**
- Is there a business (such as a store or shop) or a medical office on THIS property?**
- Yes
  - No

- 54 a. What is the average monthly cost for electricity for this living quarters?**
- Average monthly cost — *Dollars*
- \$ | , | | .00
- OR
- Included in rent or in condominium fee
  - No charge or electricity not used



**Person 1 (continued)**

**54** b. What is the average monthly cost for gas for this living quarters?

Average monthly cost — Dollars

\$ | | , | | .00

OR

- Included in rent or in condominium fee
- No charge or gas not used

**c. What is the average monthly cost for water and sewer for this living quarters?**

Average monthly cost — Dollars

\$ | | , | | .00

OR

- Included in rent or in condominium fee
- No charge

**d. What is the average monthly cost for oil, coal, kerosene, wood, etc. for this living quarters?**

Average monthly cost — Dollars

\$ | | , | | .00

OR

- Included in rent or in condominium fee
- No charge or these fuels not used

**55** a. Answer 55b ONLY if RENT IS PAID for this living quarters — All others skip to 56.

**b. What is the monthly rent?**

Monthly amount — Dollars

\$ | | , | | .00

**56** Answer questions 56a—61 if you or someone in this household owns or is buying this living quarters; otherwise, skip to questions for Person 2.

**a. Do you have a mortgage, deed of trust, contract to purchase, or similar debt on THIS property?**

- Yes, mortgage, deed of trust, or similar debt
- Yes, contract to purchase
- No → Skip to 57a

**b. How much is your regular monthly mortgage payment on THIS property? Include payment only on first mortgage or contract to purchase.**

Monthly amount — Dollars

\$ | | , | | .00

OR

- No regular payment required → Skip to 57a

**c. Does your regular monthly mortgage payment include payments for real estate taxes on THIS property?**

- Yes, taxes included in mortgage payment
- No, taxes paid separately or taxes not required

**56** d. Does your regular monthly mortgage payment include payments for fire, hazard, typhoon, or flood insurance on THIS property?

- Yes, insurance included in mortgage payment
- No, insurance paid separately or no insurance

**57** a. Do you have a second mortgage or a home equity loan on THIS property? Mark  all boxes that apply.

- Yes, a second mortgage
- Yes, a home equity loan
- No → Skip to 58

**b. How much is your regular monthly payment on all second or junior mortgages and all home equity loans on THIS property?**

Monthly amount — Dollars

\$ | | , | | .00

OR

- No regular payment required

**58** What were the real estate taxes on THIS property last year?

Yearly amount — Dollars

\$ | | , | | .00

OR

- None

**59** What was the annual payment for fire, hazard, typhoon, and flood insurance on THIS property?

Annual amount — Dollars

\$ | | , | | .00

OR

- None

**60** What is the value of this property; that is, how much do you think this house and lot, apartment, or mobile home and lot would sell for if it were for sale?

Value of property — Dollars

\$ | | , | | , | | .00

**61** Answer ONLY if this is a CONDOMINIUM — What is the monthly condominium fee?

Monthly amount — Dollars


\$ | | , | | .00

**→** Are there more people living here? If yes, continue with Person 2.

# Appendix I: Guam Census Form

**Census  
2000  
Guam**

U.S. Department of Commerce  
Bureau of the Census



This is the official form for all the people at this address. It is quick and easy, and your answers are protected by law. Complete the Census and help your community get what it needs — today and in the future!

**Start Here**  Please use a black or blue pen. Do NOT mail this form, your completed form will be picked up by a census worker.

**1** How many people were living or staying in this house, apartment, or mobile home on April 1, 2000?

Number of people

**INCLUDE** in this number:

- foster children, roomers, or housemates
- people staying here on April 1, 2000 who have no other permanent place to stay
- people living here most of the time while working, even if they have another place to live

**DO NOT INCLUDE** in this number:

- college students living away while attending college
- people in a correctional facility, nursing home, or mental hospital on April 1, 2000
- Armed Forces personnel living somewhere else
- people who live or stay at another place most of the time

**➔** Please turn the page and print the names of all the people living or staying here on April 1, 2000.

**Please fill out your form promptly. A census worker will visit your home to pick up your completed questionnaire or assist you if you have questions.**

The Census Bureau estimates that, for the average household, this form will take about 41 minutes to complete, including the time for reviewing the instructions and answers. Comments about the estimate should be directed to the Associate Director for Finance and Administration, Attn: Paperwork Reduction Project 0607-0860, Room 3104, Federal Building 3, Bureau of the Census, Washington, DC 20233.

Respondents are not required to respond to any information collection unless it displays a valid approval number from the Office of Management and Budget.

Form **D-13 G**

OMB No. 0607-0860: Approval Expires 12/31/2000

# List of Persons

➔ Please be sure you answered question 1 on the front page before continuing.

2 Please print the names of all the people who you indicated in question 1 were living or staying here on April 1, 2000.

Example — Last Name

J O H N S O N

First Name MI

R O B I N J

Start with the person, or one of the people living here who owns, is buying, or rents this house, apartment, or mobile home. If there is no such person, start with any adult living or staying here.

Person 1 — Last Name

First Name MI

Person 2 — Last Name

First Name MI

Person 3 — Last Name

First Name MI

Person 4 — Last Name

First Name MI

Person 5 — Last Name

First Name MI

Person 6 — Last Name

First Name MI

Person 7 — Last Name

First Name MI

Person 8 — Last Name

First Name MI

Person 9 — Last Name

First Name MI

Person 10 — Last Name

First Name MI

Person 11 — Last Name

First Name MI

Person 12 — Last Name

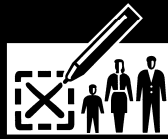
First Name MI

➔ Next, answer questions about Person 1. If you didn't have room to list everyone who lives in this house or apartment, please tell this to the census worker when you are visited. The census worker will complete a census form for the additional people.



# Person

# 1



Your answers are important! Every person in the Census counts.

**1** What is this person's name? Print the name of Person 1 from page 2.

Last Name

First Name  MI

**2** What is this person's telephone number? We may contact this person if we don't understand an answer. Area Code + Number

-  -

**3** What is this person's sex? Mark  ONE box.

- Male  
 Female

**4** What is this person's age and what is this person's date of birth?

Age on April 1, 2000

Print numbers in boxes.  
Month  Day  Year of birth

**5** What is this person's ethnic origin or race?

(For example: Chamorro, Samoan, White, Black, Carolinian, Filipino, Japanese, Korean, Palauan, Tongan, and so on.)

FOR OFFICE USE ONLY

**6** What is this person's marital status?

- Now married  
 Widowed  
 Divorced  
 Separated  
 Never married

**7** a. At any time since February 1, 2000, has this person attended regular school or college? Include only pre-kindergarten, kindergarten, elementary school, and schooling which leads to a high school diploma or a college degree.

- No, has not attended since February 1 → Skip to 8a  
 Yes, public school, public college  
 Yes, private school, private college

b. What grade or level was this person attending? Mark  ONE box.

- Pre-kindergarten  
 Kindergarten  
 Grade 1 to grade 4  
 Grade 5 to grade 8  
 Grade 9 to grade 12  
 College undergraduate years (freshman to senior)  
 Graduate or professional school (for example: medical, dental, or law school)

**8** a. What is the highest degree or level of school this person has COMPLETED? Mark  ONE box. If currently enrolled, mark the previous grade or highest degree received.

- No schooling completed  
 Pre-kindergarten to 4th grade  
 5th grade or 6th grade  
 7th grade or 8th grade  
 9th grade  
 10th grade  
 11th grade  
 12th grade, **NO DIPLOMA**  
 **HIGH SCHOOL GRADUATE** — high school DIPLOMA or the equivalent (for example: GED)  
 Some college credit, but less than 1 year  
 1 or more years of college, no degree  
 Associate degree (for example: AA, AS)  
 Bachelor's degree (for example: BA, AB, BS)  
 Master's degree (for example: MA, MS, MEng, MEd, MSW, MBA)  
 Professional degree (for example: MD, DDS, DVM, LLB, JD)  
 Doctorate degree (for example: PhD, EdD)

b. Has this person completed the requirements for a vocational training program at a trade school, business school, hospital, some other kind of school for occupational training, or place of work? Do not include academic college courses.

- No  
 Yes, in this Area  
 Yes, not in this Area

9443



Form D-13 G

**3**

**Person 1 (continued)**

**9 a. Does this person speak a language other than English at home?**

- Yes
- No → Skip to 10

**b. What is this language?**

(For example: Chamorro, Samoan, Carolinian, Tongan)

FOR OFFICE USE ONLY

**c. Does this person speak this language at home more frequently than English?**

- Yes, more frequently than English
- Both equally often
- No, less frequently than English
- Does not speak English

**10 Where was this person born? Print the name of the island (village in American Samoa), U.S. state, commonwealth, territory, or foreign country.**

FOR OFFICE USE ONLY

**11 Is this person a CITIZEN or NATIONAL of the United States?**

- Yes, born in this Area → Skip to 14a
- Yes, born in the United States or another U.S. territory or commonwealth
- Yes, born elsewhere of U.S. parent or parents
- Yes, a U.S. citizen by naturalization
- No, not a U.S. citizen or national (permanent resident)
- No, not a U.S. citizen or national (temporary resident)

**12 When did this person come to this Area to stay? If this person has entered the Area more than once, what is the latest year? Print numbers in boxes.**

Year

**13 What was this person's main reason for moving to this Area?**

- Employment
- Military
- Subsistence activities
- Missionary activities
- Moved with spouse or parent
- To attend school
- Medical
- Housing
- Other

**14 a. Where was this person's mother born? Print the name of the island (village in American Samoa), U.S. state, commonwealth, territory, or foreign country.**

FOR OFFICE USE ONLY

**b. Where was this person's father born? Print the name of the island (village in American Samoa), U.S. state, commonwealth, territory, or foreign country.**

FOR OFFICE USE ONLY

**15 Is this person a dependent of an active-duty or retired member of the Armed Forces of the United States or of the full-time military Reserves or National Guard? "Active duty" does NOT include training for the military Reserves or National Guard.**

- Yes, dependent of an active-duty member of the Armed Forces
- Yes, dependent of retired member of the Armed Forces, or dependent of an active-duty or retired member of full-time National Guard or Armed Forces Reserve
- No

**16 a. Did this person live in this house or apartment 5 years ago (on April 1, 1995)?**

- Person is under 5 years old → Skip to 35
- Yes, this house → Skip to 17
- No, different house

**b. Where did this person live 5 years ago?**

Name of the island, U.S. state, commonwealth, territory, or foreign country. If outside this Area, print the answer below and skip to 17.

FOR OFFICE USE ONLY

**c. Name of city, town, or village**

FOR OFFICE USE ONLY

**17 Does this person have any of the following long-lasting conditions:**

- |  |                          |                          |
|--|--------------------------|--------------------------|
|  | Yes                      | No                       |
| a. Blindness, deafness, or a severe vision or hearing impairment?  | <input type="checkbox"/> | <input type="checkbox"/> |
| b. A condition that substantially limits one or more basic physical activities such as walking, climbing stairs, reaching, lifting, or carrying? | <input type="checkbox"/> | <input type="checkbox"/> |

**Person 1 (continued)**

- 18** Because of a physical, mental, or emotional condition lasting 6 months or more, does this person have any difficulty in doing any of the following activities:
- |  |                          |                          |
|--|--------------------------|--------------------------|
|  | Yes                      | No                       |
| a. Learning, remembering, or concentrating?  | <input type="checkbox"/> | <input type="checkbox"/> |
| b. Dressing, bathing, or getting around inside the home?   | <input type="checkbox"/> | <input type="checkbox"/> |
| c. (Answer if this person is 16 YEARS OLD OR OVER.) Going outside the home alone to shop or visit a doctor's office? | <input type="checkbox"/> | <input type="checkbox"/> |
| d. (Answer if this person is 16 YEARS OLD OR OVER.) Working at a job or business?                                    | <input type="checkbox"/> | <input type="checkbox"/> |

- 19** Was this person under 15 years of age on April 1, 2000?
- Yes → Skip to 35
- No

- 20** a. If this person is female, how many babies has she ever had, not counting stillbirths? Do not count stepchildren or children she has adopted.
- None → Skip to 21a
- |                            |                             |                                     |
|----------------------------|-----------------------------|-------------------------------------|
| <input type="checkbox"/> 1 | <input type="checkbox"/> 6  | <input type="checkbox"/> 11         |
| <input type="checkbox"/> 2 | <input type="checkbox"/> 7  | <input type="checkbox"/> 12         |
| <input type="checkbox"/> 3 | <input type="checkbox"/> 8  | <input type="checkbox"/> 13         |
| <input type="checkbox"/> 4 | <input type="checkbox"/> 9  | <input type="checkbox"/> 14         |
| <input type="checkbox"/> 5 | <input type="checkbox"/> 10 | <input type="checkbox"/> 15 or more |

**b.** What was the date of birth of the last child born to this person? Print numbers in boxes.

Month	Day	Year of birth
<input type="text"/>	<input type="text"/>	<input type="text"/>

- 21** a. Does this person have any of his/her own grandchildren under the age of 18 living in this house or apartment?
- Yes
- No → Skip to 22a

**b.** Is this grandparent currently responsible for most of the basic needs of any grandchild(ren) under the age of 18 who live(s) in this house or apartment?

Yes

No → Skip to 22a

**c.** How long has this grandparent been responsible for the(se) grandchild(ren)? If the grandparent is financially responsible for more than one grandchild, answer the question for the grandchild for whom the grandparent has been responsible for the longest period of time.

Less than 6 months

6 to 11 months

1 or 2 years

3 or 4 years

5 years or more

- 22** a. Has this person ever served on active duty in the U.S. Armed Forces, military Reserves, or National Guard? Active duty does not include training for the Reserves or National Guard, but DOES include activation, for example, for the Persian Gulf War.
- Yes, now on active duty
- Yes, on active duty in past, but not now
- No, training for Reserves or National Guard only → Skip to 23
- No, never served in the military → Skip to 23
- b.** When did this person serve on active duty in the U.S. Armed Forces? Mark  a box for EACH period in which this person served.
- April 1995 or later
- August 1990 to March 1995 (including Persian Gulf War)
- September 1980 to July 1990
- May 1975 to August 1980
- Vietnam era (August 1964—April 1975)
- February 1955 to July 1964
- Korean conflict (June 1950—January 1955)
- World War II (September 1940—July 1947)
- Some other time

**c.** In total, how many years of active-duty military service has this person had?

Less than 2 years

2 years or more

- 23** LAST WEEK, did this person do ANY work for either pay or profit? Answer "Yes" even if the person worked only 1 hour, or helped without pay in a family business or farm for 15 hours or more, or was on active duty in the Armed Forces. Also indicate whether the person did subsistence activity last week, such as fishing, growing crops, etc., NOT primarily for commercial purposes. Mark  ONE box.
- Yes, worked for pay or profit; did NO subsistence activity
- Yes, worked for pay or profit AND did subsistence activity
- No, did NOT work for pay or profit; did subsistence activity → Skip to 27a
- No, did NOT work for pay or profit; did NO subsistence activity → Skip to 27a

**24** At what location did this person work LAST WEEK? Do not include subsistence activity. If this person worked at more than one location, print where he or she worked most last week.

**a.** Name of island, U.S. state, commonwealth, territory, or foreign country

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
									FOR OFFICE USE ONLY <input type="text"/>

**b.** Name of city, town, or village

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
									FOR OFFICE USE ONLY <input type="text"/>



**Person 1 (continued)**

- 25 a. How did this person usually get to work LAST WEEK?** *Do not include transportation to subsistence activity. If this person usually used more than one method of transportation during the trip, mark (X) the box of the one used for most of the distance.*
- Car, truck, or private van/bus
  - Public van/bus
  - Boat
  - Taxicab
  - Motorcycle
  - Bicycle
  - Walked
  - Worked at home → *Skip to 29*
  - Other method

→ **If "Car, truck, or private van/bus" is marked in 25a, go to 25b. Otherwise, skip to 26a.**

- 25 b. How many people, including this person, usually rode to work in the car, truck, or private van/bus LAST WEEK?**
- Drove alone
  - 2 people
  - 3 people
  - 4 people
  - 5 or 6 people
  - 7 or more people

- 26 a. What time did this person usually leave home to go to work LAST WEEK?**

:   a.m.  p.m.

- b. How many minutes did it usually take this person to get from home to work LAST WEEK?**

Minutes

→ **Answer questions 27–28 for persons who did not work for pay or profit last week. Others skip to 29.**

- 27 a. LAST WEEK, was this person on layoff from a job?**

- Yes → *Skip to 27c*
- No

- b. LAST WEEK, was this person TEMPORARILY absent from a job or business?**

- Yes, on vacation, temporary illness, labor dispute, etc. → *Skip to 28*
- No → *Skip to 27d*

- c. Has this person been informed that he or she will be recalled to work within the next 6 months OR been given a date to return to work?**

- Yes → *Skip to 27e*
- No

- 27 d. Has this person been looking for work during the last 4 weeks?**

- Yes
- No → *Skip to 28*

- e. LAST WEEK, could this person have started a job if offered one, or returned to work if recalled?**

- Yes, could have gone to work
- No, because of own temporary illness
- No, because of all other reasons (*in school, etc.*)

- 28 When did this person last work, even for a few days?** *Do not include subsistence activity.*

- 2000
- 1999
- 1998
- 1995 to 1997
- 1990 to 1994 → *Skip to 33*
- 1989 or earlier → *Skip to 33*
- Never worked; or did subsistence only → *Skip to 33*

- 29 Industry or Employer** — *Describe clearly this person's chief job activity or business last week. If this person had more than one job, describe the one at which this person worked the most hours. If this person had no job or business last week, give the information for his/her last job or business since 1995.*

- a. For whom did this person work?** *If now on active duty in the Armed Forces, mark (X) this box →  and print the branch of the Armed Forces.*

Name of company, business, or other employer

FOR OFFICE USE ONLY

- b. What kind of business or industry was this?**

*Describe the activity at location where employed. (For example: hospital, fish cannery, watchmaker, auto repair shop, bank)*

- c. Is this mainly** — *Mark (X) ONE box.*

- Manufacturing?
- Wholesale trade?
- Retail trade?
- Other (*agriculture, construction, service, government, etc.*)?



**Person 1 (continued)**

**33 g. Retirement, survivor, or disability pensions —**  
Do NOT include Social Security.

- Yes Annual amount — Dollars  
\$    ,    .00
- No

**h. Any remittances —** Include money from relatives outside the household or in the military.

- Yes Annual amount — Dollars  
\$    ,    .00
- No

**i. Any other sources of income received regularly such as Veterans' (VA) payments, unemployment compensation, child support, or alimony —** Do NOT include lump-sum payments such as money from an inheritance or sale of a home.

- Yes Annual amount — Dollars  
\$    ,    .00
- No

**34 What was this person's total income in 1999?** Add entries in questions 33a—33i; subtract any losses. If net income was a loss, enter the amount and mark  the "Loss" box next to the dollar amount.

- Annual amount — Dollars  
 None OR \$    ,    .00  Loss

**→ Now, please answer questions 35—61 about your household.**

**35 Is this living quarters —**

- Owned by you or someone in this household with a mortgage or loan?  
 Owned by you or someone in this household free and clear (without a mortgage or loan)?  
 Rented for cash rent?  
 Occupied without payment of cash rent?

**36 Which best describes this building?** Include all apartments, flats, etc., even if vacant.

- A mobile home  
 A one-family house detached from any other house  
 A one-family house attached to one or more houses  
 Two houses — **Applies only in American Samoa**  
 Three or more houses — **Applies only in American Samoa**  
 A building with 2 apartments  
 A building with 3 or 4 apartments  
 A building with 5 to 9 apartments  
 A building with 10 to 19 apartments  
 A building with 20 to 49 apartments  
 A building with 50 or more apartments  
 A container  
 Boat, RV, van, etc.

**37 About when was this building first built?**

- 1999 or 2000  1960 to 1969  
 1995 to 1998  1950 to 1959  
 1990 to 1994  1940 to 1949  
 1980 to 1989  1939 or earlier  
 1970 to 1979

**38 When did this person move into this living quarters?**

- 1999 or 2000  
 1995 to 1998  
 1990 to 1994  
 1980 to 1989  
 1970 to 1979  
 1969 or earlier

**39 How many rooms do you have in this living quarters?** Do NOT count bathrooms, porches, balconies, foyers, halls, or half-rooms.

- 1 room  6 rooms  
 2 rooms  7 rooms  
 3 rooms  8 rooms  
 4 rooms  9 or more rooms  
 5 rooms

**40 How many bedrooms do you have; that is, how many bedrooms would you list if this living quarters were on the market for sale or rent?**

- No bedroom  
 1 bedroom  
 2 bedrooms  
 3 bedrooms  
 4 bedrooms  
 5 or more bedrooms

**41 a. Do you have hot and cold piped water?**

- Yes, in this unit  
 Yes, in this building, not in unit  
 No, only cold piped water in this unit  
 No, only cold piped water in this building  
 No, only cold piped water outside this building  
 No piped water

**b. Do you have a bathtub or shower?**

- Yes, in this unit  
 Yes, in this building, not in unit  
 Yes, outside this building  
 No

**Person 1 (continued)**

- 41 c. Do you have a flush toilet?**
- Yes, in this unit → *Skip to 42a*
  - Yes, in this building, not in unit → *Skip to 42a*
  - Yes, outside this building → *Skip to 42a*
  - No

- d. What type of toilet facilities do you have?**
- Outhouse or privy
  - Other or none

- 42 a. Are your MAIN cooking facilities located inside or outside this building?**
- Inside this building
  - Outside this building
  - No cooking facilities → *Skip to 42c*

- b. What type of cooking facilities are these?**
- Electric stove
  - Kerosene stove
  - Gas stove
  - Microwave oven and non-portable burners
  - Microwave oven only
  - Other (fireplace, hotplate, etc.)

- c. Do you have a refrigerator in this building?**
- Yes
  - No

- d. Do you have a sink with piped water in this building?**
- Yes
  - No

- 43 Is there telephone service available in this living quarters from which you can both make and receive calls?**
- Yes
  - No

- 44 Do you have air conditioning?**
- Yes, a central air-conditioning system (includes split-type)
  - Yes, 1 individual room unit
  - Yes, 2 or more individual room units
  - No

- 45 How many automobiles, vans, and trucks of one-ton capacity or less are kept at home for use by members of your household?**
- |                               |                                    |
|-------------------------------|------------------------------------|
| <input type="checkbox"/> None | <input type="checkbox"/> 4         |
| <input type="checkbox"/> 1    | <input type="checkbox"/> 5         |
| <input type="checkbox"/> 2    | <input type="checkbox"/> 6 or more |
| <input type="checkbox"/> 3    |                                    |

- 46 Do you have a battery operated radio? Count car radios, transistors, and other battery operated sets in working order or needing only a new battery for operation.**
- Yes, 1 or more
  - No

- 47 Do you get water from —**
- A public system only?
  - A public system and catchment?
  - A village water system only? — *Applies only in American Samoa*
  - An individual well?
  - A catchment, tanks, or drums only?
  - Some other source such as a standpipe, spring, river, creek, etc.?

- 48 Is this building connected to a public sewer?**
- Yes, connected to public sewer
  - No, connected to septic tank or cesspool
  - No, use other means

- 49 Is this living quarters part of a condominium?**
- Yes
  - No

- 50 What is the MAIN type of material used for the outside walls of this building?**
- Poured concrete
  - Concrete blocks
  - Metal
  - Wood
  - Other

- 51 What is the MAIN type of material used for the roof of this building?**
- Poured concrete
  - Metal
  - Wood
  - Other

- 52 What is the MAIN type of material used for the foundation of this building?**
- Concrete
  - Wood pier or pilings
  - Other

- 53 Answer ONLY if this is a ONE-FAMILY HOUSE OR MOBILE HOME — All others skip to 54a.**
- Is there a business (such as a store or shop) or a medical office on THIS property?**
- Yes
  - No

- 54 a. What is the average monthly cost for electricity for this living quarters?**

Average monthly cost — *Dollars*

\$ | , | | .00

OR

- Included in rent or in condominium fee
- No charge or electricity not used



**Person 1 (continued)**

**54 b. What is the average monthly cost for gas for this living quarters?**

Average monthly cost — Dollars

\$ | | , | | .00

OR

- Included in rent or in condominium fee
- No charge or gas not used

**c. What is the average monthly cost for water and sewer for this living quarters?**

Average monthly cost — Dollars

\$ | | , | | .00

OR

- Included in rent or in condominium fee
- No charge

**d. What is the average monthly cost for oil, coal, kerosene, wood, etc. for this living quarters?**

Average monthly cost — Dollars

\$ | | , | | .00

OR

- Included in rent or in condominium fee
- No charge or these fuels not used

**55 a. Answer 55b ONLY if RENT IS PAID for this living quarters — All others skip to 56.**

**b. What is the monthly rent?**

Monthly amount — Dollars

\$ | | , | | .00

**56 Answer questions 56a—61 if you or someone in this household owns or is buying this living quarters; otherwise, skip to questions for Person 2.**

**a. Do you have a mortgage, deed of trust, contract to purchase, or similar debt on THIS property?**

- Yes, mortgage, deed of trust, or similar debt
- Yes, contract to purchase
- No → Skip to 57a

**b. How much is your regular monthly mortgage payment on THIS property? Include payment only on first mortgage or contract to purchase.**

Monthly amount — Dollars

\$ | | , | | .00

OR

- No regular payment required → Skip to 57a

**c. Does your regular monthly mortgage payment include payments for real estate taxes on THIS property?**

- Yes, taxes included in mortgage payment
- No, taxes paid separately or taxes not required

**56 d. Does your regular monthly mortgage payment include payments for fire, hazard, typhoon, or flood insurance on THIS property?**

- Yes, insurance included in mortgage payment
- No, insurance paid separately or no insurance

**57 a. Do you have a second mortgage or a home equity loan on THIS property? Mark  all boxes that apply.**

- Yes, a second mortgage
- Yes, a home equity loan
- No → Skip to 58

**b. How much is your regular monthly payment on all second or junior mortgages and all home equity loans on THIS property?**

Monthly amount — Dollars

\$ | | , | | .00

OR

- No regular payment required

**58 What were the real estate taxes on THIS property last year?**

Yearly amount — Dollars

\$ | | , | | .00

OR

- None

**59 What was the annual payment for fire, hazard, typhoon, and flood insurance on THIS property?**

Annual amount — Dollars

\$ | | , | | .00

OR

- None

**60 What is the value of this property; that is, how much do you think this house and lot, apartment, or mobile home and lot would sell for if it were for sale?**

Value of property — Dollars

\$ | | , | | , | | .00

**61 Answer ONLY if this is a CONDOMINIUM — What is the monthly condominium fee?**

Monthly amount — Dollars

\$ | | , | | .00

**→ Are there more people living here? If yes, continue with Person 2.**



# Appendix J: U.S. Virgin Islands Census Form

**Census  
2000**  
U.S. Virgin  
Islands

U.S. Department of Commerce  
Bureau of the Census



This is the official form for all the people at this address. It is quick and easy, and your answers are protected by law. Complete the Census and help your community get what it needs — today and in the future!

**Start Here**  Please use a black or blue pen. Do NOT mail this form, your completed form will be picked up by a census worker.

**1** How many people were living or staying in this house, apartment, or mobile home on April 1, 2000?

Number of people

**INCLUDE** in this number:

- foster children, roomers, or housemates
- people staying here on April 1, 2000 who have no other permanent place to stay
- people living here most of the time while working, even if they have another place to live

**DO NOT INCLUDE** in this number:

- college students living away while attending college
- people in a correctional facility, nursing home, or mental hospital on April 1, 2000
- Armed Forces personnel living somewhere else
- people who live or stay at another place most of the time

**➔** Please turn the page and print the names of all the people living or staying here on April 1, 2000.

Please fill out your form promptly. A census worker will visit your home to pick up your completed questionnaire or assist you if you have questions.

The Census Bureau estimates that, for the average household, this form will take about 40 minutes to complete, including the time for reviewing the instructions and answers. Comments about the estimate should be directed to the Associate Director for Finance and Administration, Attn: Paperwork Reduction Project 0607-0860, Room 3104, Federal Building 3, Bureau of the Census, Washington, DC 20233.

Respondents are not required to respond to any information collection unless it displays a valid approval number from the Office of Management and Budget.

Form **D-13 VI**

OMB No. 0607-0860: Approval Expires 12/31/2000

# List of Persons

➔ Please be sure you answered question 1 on the front page before continuing.

2 Please print the names of all the people who you indicated in question 1 were living or staying here on April 1, 2000.

Example — Last Name

J O H N S O N MI

First Name

R O B I N J

Start with the person, or one of the people living here who owns, is buying, or rents this house, apartment, or mobile home. If there is no such person, start with any adult living or staying here.

Person 1 — Last Name

MI

First Name

MI

Person 2 — Last Name

MI

First Name

MI

Person 3 — Last Name

MI

First Name

MI

Person 4 — Last Name

MI

First Name

MI

Person 5 — Last Name

MI

First Name

MI

Person 6 — Last Name

MI

First Name

MI

Person 7 — Last Name

MI

First Name

MI

Person 8 — Last Name

MI

First Name

MI

Person 9 — Last Name

MI

First Name

MI

Person 10 — Last Name

MI

First Name

MI

Person 11 — Last Name

MI

First Name

MI

Person 12 — Last Name

MI

First Name

MI

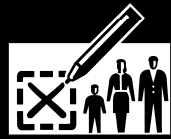
➔ Next, answer questions about Person 1.

Form D-13 VI

2

# Person

# 1



Your answers are important! Every person in the Census counts.

**1** What is this person's name? Print the name of Person 1 from page 2.

Last Name

First Name MI

**2** What is this person's telephone number? We may contact this person if we don't understand an answer. Area Code + Number

**3** What is this person's sex? Mark  ONE box.

- Male
- Female

**4** What is this person's age and what is this person's date of birth?

Age on April 1, 2000

Print numbers in boxes.

Month Day Year of birth

→ **NOTE:** Please answer BOTH Questions 5 and 6.

**5** Is this person Spanish/Hispanic/Latino? Mark  the "No" box if not Spanish/Hispanic/Latino.

- No, not Spanish/Hispanic/Latino
- Yes, Mexican, Mexican Am., Chicano
- Yes, Puerto Rican
- Yes, Cuban
- Yes, other Spanish/Hispanic/Latino — Print group. ↘

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**6** What is this person's race? Mark  one or more races to indicate what this person considers himself/herself to be.

- White
- Black, African Am., or Negro
- American Indian or Alaska Native — Print name of enrolled or principal tribe. ↘

- Asian Indian
- Chinese
- Filipino
- Japanese
- Korean
- Vietnamese
- Other Asian — Print race. ↘
- Native Hawaiian
- Guamanian or Chamorro
- Samoan
- Other Pacific Islander — Print race. ↘

- Some other race — Print race. ↘

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**7** What is this person's marital status?

- Now married
- Widowed
- Divorced
- Separated
- Never married

**8 a.** At any time since February 1, 2000, has this person attended regular school or college? Include only nursery school or preschool, kindergarten, elementary school, and schooling which leads to a high school diploma or a college degree.

- No, has not attended since February 1 → Skip to 9a
- Yes, public school, public college
- Yes, private school, private college



**Person 1 (continued)**

- 8 b. What grade or level was this person attending?** Mark  ONE box.
- Nursery school, preschool
  - Kindergarten
  - Grade 1 to grade 4
  - Grade 5 to grade 8
  - Grade 9 to grade 12
  - College undergraduate years (freshman to senior)
  - Graduate or professional school (for example: medical, dental, or law school)

- 9 a. What is the highest degree or level of school this person has COMPLETED?** Mark  ONE box. If currently enrolled, mark the previous grade or highest degree received.

- No schooling completed
- Nursery school to 4th grade
- 5th grade or 6th grade
- 7th grade or 8th grade
- 9th grade
- 10th grade
- 11th grade
- 12th grade, **NO DIPLOMA**
- HIGH SCHOOL GRADUATE** — high school DIPLOMA or the equivalent (for example: GED)
- Some college credit, but less than 1 year
- 1 or more years of college, no degree
- Associate degree (for example: AA, AS)
- Bachelor's degree (for example: BA, AB, BS)
- Master's degree (for example: MA, MS, MEng, MEd, MSW, MBA)
- Professional degree (for example: MD, DDS, DVM, LLB, JD)
- Doctorate degree (for example: PhD, EdD)

- b. Has this person completed the requirements for a vocational training program at a trade school, business school, hospital, some other kind of school for occupational training, or place of work?** Do not include academic college courses.

- No
- Yes, in the U.S. Virgin Islands
- Yes, not in the U.S. Virgin Islands

- 10 a. Does this person speak a language other than English at home?**

- Yes
- No → Skip to 11

- b. What is this language?**

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

(For example: French, Spanish, Chinese, Italian)

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- 10 c. How well does this person speak English?**

- Very well
- Well
- Not well
- Not at all

- 11 Where was this person born?** Print St. Croix, St. John, or St. Thomas if in the U.S. Virgin Islands, or the name of the U.S. state, commonwealth, territory, or foreign country.

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

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- 12 Is this person a CITIZEN of the United States?**

- Yes, born in the U.S. Virgin Islands → Skip to 14a
- Yes, born in the United States, Puerto Rico, Guam, or Northern Mariana Islands
- Yes, born abroad of U.S. parent or parents
- Yes, a U.S. citizen by naturalization
- No, not a U.S. citizen (permanent resident)
- No, not a U.S. citizen (temporary resident)

- 13 When did this person come to the U.S. Virgin Islands to stay? If this person has entered the area more than once, what is the latest year?** Print numbers in boxes.

Year

--	--	--	--	--

- 14 a. Where was this person's mother born?** Print St. Croix, St. John, or St. Thomas if in the U.S. Virgin Islands, or the name of the U.S. state, commonwealth, territory, or foreign country.

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

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- b. Where was this person's father born?** Print St. Croix, St. John, or St. Thomas if in the U.S. Virgin Islands, or the name of the U.S. state, commonwealth, territory, or foreign country.

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

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- 15 a. Did this person live in this house or apartment 5 years ago (on April 1, 1995)?**

- Person is under 5 years old → Skip to 34
- Yes, this house → Skip to 16
- No, different house

**Person 1 (continued)**

**15 b. Where did this person live 5 years ago?** *Print St. Croix, St. John, or St. Thomas if in the U.S. Virgin Islands, or the name of the U.S. state, commonwealth, territory, or foreign country. If outside the U.S. Virgin Islands, print the answer below and skip to 16.*

\_\_\_\_\_|\_\_\_\_\_|\_\_\_\_\_|\_\_\_\_\_|\_\_\_\_\_|\_\_\_\_\_|\_\_\_\_\_|\_\_\_\_\_|\_\_\_\_\_|\_\_\_\_\_|

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USE ONLY

**c. Name of city, town, or village**

\_\_\_\_\_|\_\_\_\_\_|\_\_\_\_\_|\_\_\_\_\_|\_\_\_\_\_|\_\_\_\_\_|\_\_\_\_\_|\_\_\_\_\_|\_\_\_\_\_|\_\_\_\_\_|

FOR OFFICE  
USE ONLY

**16 Does this person have any of the following long-lasting conditions:**

- |  | Yes                      | No                       |
|--|--------------------------|--------------------------|
| a. Blindness, deafness, or a severe vision or hearing impairment?  | <input type="checkbox"/> | <input type="checkbox"/> |
| b. A condition that substantially limits one or more basic physical activities such as walking, climbing stairs, reaching, lifting, or carrying? | <input type="checkbox"/> | <input type="checkbox"/> |

**17 Because of a physical, mental, or emotional condition lasting 6 months or more, does this person have any difficulty in doing any of the following activities:**

- |  | Yes                      | No                       |
|--|--------------------------|--------------------------|
| a. Learning, remembering, or concentrating?  | <input type="checkbox"/> | <input type="checkbox"/> |
| b. Dressing, bathing, or getting around inside the home?   | <input type="checkbox"/> | <input type="checkbox"/> |
| c. (Answer if this person is 16 YEARS OLD OR OVER.) Going outside the home alone to shop or visit a doctor's office? | <input type="checkbox"/> | <input type="checkbox"/> |
| d. (Answer if this person is 16 YEARS OLD OR OVER.) Working at a job or business?                                    | <input type="checkbox"/> | <input type="checkbox"/> |

**18 Was this person under 15 years of age on April 1, 2000?**

- Yes → Skip to 34  
 No

**19 If this person is female, how many babies has she ever had, not counting stillbirths?** *Do not count stepchildren or children this person has adopted.*

- |                               |                            |                             |                                     |
|-------------------------------|----------------------------|-----------------------------|-------------------------------------|
| <input type="checkbox"/> None | <input type="checkbox"/> 1 | <input type="checkbox"/> 6  | <input type="checkbox"/> 11         |
|                               | <input type="checkbox"/> 2 | <input type="checkbox"/> 7  | <input type="checkbox"/> 12         |
|                               | <input type="checkbox"/> 3 | <input type="checkbox"/> 8  | <input type="checkbox"/> 13         |
|                               | <input type="checkbox"/> 4 | <input type="checkbox"/> 9  | <input type="checkbox"/> 14         |
|                               | <input type="checkbox"/> 5 | <input type="checkbox"/> 10 | <input type="checkbox"/> 15 or more |

**20 a. Does this person have any of his/her own grandchildren under the age of 18 living in this house or apartment?**

- Yes  
 No → Skip to 21a

**20 b. Is this grandparent currently responsible for most of the basic needs of any grandchild(ren) under the age of 18 who live(s) in this house or apartment?**

- Yes  
 No → Skip to 21a

**c. How long has this grandparent been responsible for the(se) grandchild(ren)?** *If the grandparent is financially responsible for more than one grandchild, answer the question for the grandchild for whom the grandparent has been responsible for the longest period of time.*

- Less than 6 months  
 6 to 11 months  
 1 or 2 years  
 3 or 4 years  
 5 years or more

**21 a. Has this person ever served on active duty in the U.S. Armed Forces, military Reserves, or National Guard?** *Active duty does not include training for the Reserves or National Guard, but DOES include activation, for example, for the Persian Gulf War.*

- Yes, now on active duty  
 Yes, on active duty in past, but not now  
 No, training for Reserves or National Guard only → Skip to 22  
 No, never served in the military → Skip to 22

**b. When did this person serve on active duty in the U.S. Armed Forces?** *Mark (X) a box for EACH period in which this person served.*

- April 1995 or later  
 August 1990 to March 1995 (including Persian Gulf War)  
 September 1980 to July 1990  
 May 1975 to August 1980  
 Vietnam era (August 1964—April 1975)  
 February 1955 to July 1964  
 Korean conflict (June 1950—January 1955)  
 World War II (September 1940—July 1947)  
 Some other time

**c. In total, how many years of active-duty military service has this person had?**

- Less than 2 years  
 2 years or more

**22 LAST WEEK, did this person do ANY work for either pay or profit?** *Mark (X) the "Yes" box even if the person worked only 1 hour, or helped without pay in a family business or farm for 15 hours or more, or was on active duty in the Armed Forces.*

- Yes  
 No → Skip to 26a



**Person 1 (continued)**

**23** At what location did this person work LAST WEEK? If this person worked at more than one location, print where he or she worked most last week.

a. Name of the island in the U.S. Virgin Islands, or name of U.S. state, commonwealth, territory, or foreign country

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

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b. Name of city, town, or village

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

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**24** a. How did this person usually get to work LAST WEEK? If this person usually used more than one method of transportation during the trip, mark (X) the box of the one used for most of the distance.

- Car, truck, or van
- Bus
- Taxicab
- Motorcycle
- Safari or taxi bus
- Ferryboat or water taxi
- Walked
- Worked at home → Skip to 28
- Other method

→ If "Car, truck, or van" is marked in 24a, go to 24b. Otherwise, skip to 25a.

**24** b. How many people, including this person, usually rode to work in the car, truck, or van LAST WEEK?

- Drove alone
- 2 people
- 3 people
- 4 people
- 5 or 6 people
- 7 or more people

**25** a. What time did this person usually leave home to go to work LAST WEEK?

	:		
--	---	--	--

a.m.    p.m.

b. How many minutes did it usually take this person to get from home to work LAST WEEK?

Minutes

--	--	--	--	--

→ Answer questions 26–27 for persons who did not work for pay or profit last week. Others skip to 28.

**26** a. LAST WEEK, was this person on layoff from a job?

- Yes → Skip to 26c
- No

b. LAST WEEK, was this person TEMPORARILY absent from a job or business?

- Yes, on vacation, temporary illness, labor dispute, etc. → Skip to 27
- No → Skip to 26d

c. Has this person been informed that he or she will be recalled to work within the next 6 months OR been given a date to return to work?

- Yes → Skip to 26e
- No

d. Has this person been looking for work during the last 4 weeks?

- Yes
- No → Skip to 27

e. LAST WEEK, could this person have started a job if offered one, or returned to work if recalled?

- Yes, could have gone to work
- No, because of own temporary illness
- No, because of all other reasons (in school, etc.)

**27** When did this person last work, even for a few days?

- 1995 to 2000
- 1994 or earlier, or never worked → Skip to 32

**28** Industry or Employer — Describe clearly this person's chief job activity or business last week. If this person had more than one job, describe the one at which this person worked the most hours. If this person had no job or business last week, give the information for his/her last job or business since 1995.

a. For whom did this person work? If now on active duty in the Armed Forces, mark (X) this box →

Name of company, business, or other employer


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--	--	--	--	--



**Person 1 (continued)**

- 32 d. Social Security or Railroad Retirement**  
 Yes Annual amount — Dollars  
 \$ | | | , | | | .00  
 No
- e. Supplemental Security Income (SSI)**  
 Yes Annual amount — Dollars  
 \$ | | | , | | | .00  
 No
- f. Any public assistance or welfare payments from the state or local welfare office**  
 Yes Annual amount — Dollars  
 \$ | | | , | | | .00  
 No
- g. Retirement, survivor, or disability pensions — Do NOT include Social Security.**  
 Yes Annual amount — Dollars  
 \$ | | | , | | | .00  
 No
- h. Any other sources of income received regularly such as Veterans' (VA) payments, unemployment compensation, child support, or alimony — Do NOT include lump-sum payments such as money from an inheritance or sale of a home.**  
 Yes Annual amount — Dollars  
 \$ | | | , | | | .00  
 No

- 33 What was this person's total income in 1999? Add entries in questions 32a—32h; subtract any losses. If net income was a loss, enter the amount and mark  the "Loss" box next to the dollar amount.**  
 Annual amount — Dollars  
 None OR \$ | | | , | | | .00  Loss

**→ Now, please answer questions 34—57 about your household.**

- 34 Is this house, apartment, or mobile home —**  
 Owned by you or someone in this household with a mortgage or loan?  
 Owned by you or someone in this household free and clear (without a mortgage or loan)?  
 Rented for cash rent?  
 Occupied without payment of cash rent?

- 35 Which best describes this building? Include all apartments, flats, etc., even if vacant.**  
 A mobile home  
 A one-family house detached from any other house  
 A one-family house attached to one or more houses  
 A building with 2 apartments  
 A building with 3 or 4 apartments  
 A building with 5 to 9 apartments  
 A building with 10 to 19 apartments  
 A building with 20 or more apartments  
 A boat or houseboat  
 RV, van, tent, etc.

- 36 About when was this building first built?**  
 1999 or 2000  
 1995 to 1998  
 1990 to 1994  
 1980 to 1989  
 1970 to 1979  
 1960 to 1969  
 1950 to 1959  
 1940 to 1949  
 1939 or earlier

- 37 When did this person move into this house, apartment, or mobile home?**  
 1999 or 2000  
 1995 to 1998  
 1990 to 1994  
 1980 to 1989  
 1970 to 1979  
 1969 or earlier

- 38 How many rooms do you have in this house, apartment, or mobile home? Do NOT count bathrooms, porches, balconies, foyers, halls, or half-rooms.**  
 1 room  6 rooms  
 2 rooms  7 rooms  
 3 rooms  8 rooms  
 4 rooms  9 or more rooms  
 5 rooms

- 39 How many bedrooms do you have; that is, how many bedrooms would you list if this house, apartment, or mobile home were on the market for sale or rent?**  
 No bedroom  
 1 bedroom  
 2 bedrooms  
 3 bedrooms  
 4 bedrooms  
 5 or more bedrooms



**Person 1 (continued)**

**40** Do you have COMPLETE plumbing facilities in this house, apartment, or mobile home; that is, 1) hot and cold piped water, 2) a flush toilet, and 3) a bathtub or shower?

- Yes, have all three facilities
- No

**41** Do you have COMPLETE kitchen facilities in this house, apartment, or mobile home; that is, 1) a sink with piped water, 2) a range or stove, and 3) a refrigerator?

- Yes, have all three facilities
- No

**42** Is there telephone service available in this house, apartment, or mobile home from which you can both make and receive calls?

- Yes
- No

**43** Which FUEL is used MOST for cooking in this house, apartment, or mobile home?

- Gas: bottled or tank
- Electricity
- Fuel oil, kerosene, etc.
- Wood or charcoal
- Other fuel
- No fuel used

**44** How many automobiles, vans, and trucks of one-ton capacity or less are kept at home for use by members of your household?

- None
- 1
- 2
- 3
- 4
- 5
- 6 or more

**45** a. Do you get water from —

- A public system only?
- A public system and cistern?
- A cistern, tanks, or drums only?
- A public standpipe?
- Some other source such as an individual well or a spring?

b. Did you purchase any water from a water vendor during the past year?

- Yes
- No

**46** Is this building connected to a public sewer?

- Yes, connected to public sewer
- No, connected to septic tank or cesspool
- No, use other means

**47** Is this house, apartment, or mobile home part of a condominium?

- Yes
- No

**48** Answer ONLY if this is a ONE-FAMILY HOUSE OR MOBILE HOME — All others skip to 49.

a. Is there a business (such as a store or barber shop) or a medical office on this property?

- Yes
- No

b. How many acres is this house or mobile home on?

- Less than 1 acre
- 1 to 9.9 acres
- 10 or more acres

c. In 1999, what were the actual sales of all agricultural products from this property?

- None
- \$1 to \$99
- \$100 to \$499
- \$500 to \$999
- \$1,000 to \$2,499
- \$2,500 or more

**49** a. What is the average monthly cost for electricity for this house, apartment, or mobile home?

Average monthly cost — Dollars

\$ | , | | .00

OR

- Included in rent or in condominium fee
- No charge or electricity not used

b. What is the average monthly cost for gas for this house, apartment, or mobile home?

Average monthly cost — Dollars

\$ | , | | .00

OR

- Included in rent or in condominium fee
- No charge or gas not used

c. What is the average monthly cost for water and sewer for this house, apartment, or mobile home?

Average monthly cost — Dollars

\$ | , | | .00

OR

- Included in rent or in condominium fee
- No charge

d. What is the average monthly cost for oil, coal, kerosene, wood, etc. for this house, apartment, or mobile home?

Average monthly cost — Dollars

\$ | , | | .00

OR

- Included in rent or in condominium fee
- No charge or these fuels not used



**Person 1 (continued)**

**50** Answer **ONLY** if you **PAY RENT** for this house, apartment, or mobile home — All others skip to 51.

**a. What is the monthly rent?**

Monthly amount — *Dollars*

\$ | | , | | .00

**b. Does the monthly rent include any meals?**

- Yes
- No

**51** Answer questions 51a—57 if you or someone in this household owns or is buying this house, apartment, or mobile home; otherwise, skip to questions for Person 2.

**a. Do you have a mortgage, deed of trust, contract to purchase, or similar debt on THIS property?**

- Yes, mortgage, deed of trust, or similar debt
- Yes, contract to purchase
- No → *Skip to 52a*

**b. How much is your regular monthly mortgage payment on THIS property? Include payment only on first mortgage or contract to purchase.**

Monthly amount — *Dollars*

\$ | | , | | .00

OR

- No regular payment required → *Skip to 52a*

**c. Does your regular monthly mortgage payment include payments for real estate taxes on THIS property?**

- Yes, taxes included in mortgage payment
- No, taxes paid separately or taxes not required

**d. Does your regular monthly mortgage payment include payments for fire, hazard, or flood insurance on THIS property?**

- Yes, insurance included in mortgage payment
- No, insurance paid separately or no insurance

**52** **a. Do you have a second mortgage or a home equity loan on THIS property? Mark (X) all boxes that apply.**

- Yes, a second mortgage
- Yes, a home equity loan
- No → *Skip to 53*

**b. How much is your regular monthly payment on all second or junior mortgages and all home equity loans on THIS property?**

Monthly amount — *Dollars*

\$ | | , | | .00

OR

- No regular payment required

**53** What were the real estate taxes on THIS property last year?

Yearly amount — *Dollars*

\$ | | , | | .00

OR

- None

**54** What was the annual payment for fire, hazard, and flood insurance on THIS property?

Annual amount — *Dollars*

\$ | | , | | .00

OR

- None

**55** What is the value of this property; that is, how much do you think this house and lot, apartment, or mobile home and lot would sell for if it were for sale?

- |   |   |
|---|---|
| <input type="checkbox"/> Less than \$10,000   | <input type="checkbox"/> \$90,000 to \$99,999   |
| <input type="checkbox"/> \$10,000 to \$14,999 | <input type="checkbox"/> \$100,000 to \$124,999 |
| <input type="checkbox"/> \$15,000 to \$19,999 | <input type="checkbox"/> \$125,000 to \$149,999 |
| <input type="checkbox"/> \$20,000 to \$24,999 | <input type="checkbox"/> \$150,000 to \$174,999 |
| <input type="checkbox"/> \$25,000 to \$29,999 | <input type="checkbox"/> \$175,000 to \$199,999 |
| <input type="checkbox"/> \$30,000 to \$34,999 | <input type="checkbox"/> \$200,000 to \$249,999 |
| <input type="checkbox"/> \$35,000 to \$39,999 | <input type="checkbox"/> \$250,000 to \$299,999 |
| <input type="checkbox"/> \$40,000 to \$49,999 | <input type="checkbox"/> \$300,000 to \$399,999 |
| <input type="checkbox"/> \$50,000 to \$59,999 | <input type="checkbox"/> \$400,000 to \$499,999 |
| <input type="checkbox"/> \$60,000 to \$69,999 | <input type="checkbox"/> \$500,000 to \$749,999 |
| <input type="checkbox"/> \$70,000 to \$79,999 | <input type="checkbox"/> \$750,000 to \$999,999 |
| <input type="checkbox"/> \$80,000 to \$89,999 | <input type="checkbox"/> \$1,000,000 or more    |

**56** Answer **ONLY** if this is a **CONDOMINIUM** — What is the monthly condominium fee?

Monthly amount — *Dollars*

\$ | | , | | .00

**57** Answer **ONLY** if this is a **MOBILE HOME** or a **BOAT** —

**a. Do you have an installment loan or contract on THIS mobile home or boat?**

- Yes
- No

**b. What was the total cost for installment loan payments, personal property taxes, site rent, marina fee, registration fees, and license fees on THIS mobile home or boat and its site/slip last year? Exclude real estate taxes.**

Yearly amount — *Dollars*

\$ | | , | | .00

→ Are there more people living here? If yes, continue with Person 2.

# Appendix K: Puerto Rico Census Form

# Censo 2000 Puerto Rico

Departamento de Comercio de los EE.UU.  
Negociado del Censo



Este es el cuestionario oficial para todas las personas en esta dirección. Es rápido y fácil de contestar, y la ley protege sus respuestas. ¡Complete el censo y ayude a su comunidad a conseguir lo que necesita, hoy y en el futuro!

## Comience Aquí

Por favor, utilice un bolígrafo de tinta negra o azul.

- 1 ¿Cuántas personas vivían o se quedaban en esta casa, apartamento o casa móvil el 1 de abril del 2000?

Número de personas

**INCLUYA** en este número:

- hijos de crianza, inquilinos o compañeros de casa
- personas que se estén quedando aquí el 1 de abril del 2000, y no tienen otro lugar permanente donde quedarse
- personas que se estén quedando aquí la mayor parte del tiempo mientras trabajan aunque tengan otro lugar donde vivir

**NO INCLUYA** en este número:

- estudiantes universitarios que viven fuera del hogar mientras asisten a la universidad
- personas que estaban en una facilidad de corrección, hogar para personas de edad avanzada, u hospital para enfermos mentales el 1 de abril del 2000
- personal de las Fuerzas Armadas que vive en otro lugar
- personas que viven o se quedan en otro lugar la mayor parte del tiempo

- 2 Refiérase a la etiqueta de dirección en esta página. Si esa dirección NO es la dirección POSTAL de esta residencia, escriba a continuación la dirección postal en letra de molde.

Número de casa

Nombre de urbanización o condominio

Nombre de calle o carretera/ruta y buzón rural o apartado postal

Número de apartamento

Ciudad

Estado Código Postal (ZIP Code)

- ➔ Por favor, pase la página y escriba en letra de molde los nombres de todas las personas que estén viviendo o quedándose aquí el 1 de abril del 2000.

Si necesita ayuda para completar este cuestionario, llame al 1-800-471-8642 entre las 8:00 a.m. y las 9:00 p.m., 7 días a la semana. La llamada telefónica es gratis.

TDD - Aparato telefónico para las personas con impedimentos auditivos. Llame al 1-800-582-8330 entre las 8:00 a.m. y las 9:00 p.m., 7 días a la semana. La llamada telefónica es gratis.

NEED HELP? If you need help completing this form, call 1-800-471-9424 between 8:00 a.m. and 9:00 p.m., 7 days a week. The telephone call is free.

Forma **D-2(UL)PR(S)**

Núm. de OMB 0607-0858: Aprobado Hasta 12/31/2000

# Lista de Personas

➔ Por favor, asegúrese de que contestó la pregunta en la primera página antes de continuar.

**3** Por favor, anote los nombres de todas las personas que usted indicó en la pregunta 2 que vivían o se quedaban aquí el 1 de abril del 2000.

Ejemplo — Apellido

J I M E N E Z

Nombre Inicial

E N R I Q U E J

Comience con la persona, o una de las personas, que vive aquí que es dueña, está comprando o alquila esta casa apartamento, o casa móvil. Si no hay tal persona, comience con un adulto que vive o se queda aquí.

Persona 1 — Apellido

Nombre Inicial

Nombre Inicial

Persona 2 — Apellido

Nombre Inicial

Nombre Inicial

Persona 3 — Apellido

Nombre Inicial

Nombre Inicial

Persona 4 — Apellido

Nombre Inicial

Nombre Inicial

Persona 5 — Apellido

Nombre Inicial

Nombre Inicial

Persona 6 — Apellido

Nombre Inicial

Nombre Inicial

Persona 7 — Apellido

Nombre Inicial

Nombre Inicial

Persona 8 — Apellido

Nombre Inicial

Nombre Inicial

Persona 9 — Apellido

Nombre Inicial

Nombre Inicial

Persona 10 — Apellido

Nombre Inicial

Nombre Inicial

Persona 11 — Apellido

Nombre Inicial

Nombre Inicial

Persona 12 — Apellido

Nombre Inicial

Nombre Inicial

➔ Ahora, conteste las preguntas sobre la Persona 1.

PARA USO DEL CENSO SOLAMENTE

A. JIC1

B. JIC2

C. JIC3

D. JIC4

El Negociado del Censo estima que al hogar típico en Puerto Rico le tomará aproximadamente 48 minutos completar este cuestionario, incluyendo el tiempo para repasar las instrucciones y respuestas. Los comentarios sobre el estimado deben dirigirse a: Associate Director for Finance and Administration, Attn: Paperwork Reduction Project 0607-0858, Room 3104, Federal Building 3, Bureau of the Census, Washington, DC 20233.

No se requiere que las personas respondan a ninguna recopilación de información a menos que ésta tenga un número de aprobación válido de la Oficina de Administración y Presupuesto (OMB).

Forma D-2(UL)PR(S)

# Persona

# 1



**¡Sus respuestas son importantes!  
Cada persona cuenta en el censo.**

**1** ¿Cuál es el nombre de esta persona? *Escriba en letra de molde el nombre de la Persona 1 que aparece en la página 2.*

Apellido

Nombre  Inicial

**2** ¿Cuál es el número de teléfono de esta persona? *Puede que llamemos a esta persona si no entendemos una respuesta.*

Código de Área + Número

**3** ¿Cuál es el sexo de esta persona? Marque  UN cuadrado.

Masculino  
 Femenino

**4** ¿Cuál es la edad de esta persona y cuál es su fecha de nacimiento?

Edad el 1 de abril del 2000

*Escriba los números en los cuadrados.*

Mes  Día  Año de nacimiento

➔ **NOTA:** Por favor conteste las DOS Preguntas 5 y 6.

**5** ¿Es esta persona de origen español/hispano/latino? Marque  el cuadrado "No" si **no** es de origen español/hispano/latino.

No, ni español/hispano/latino  
 Sí, mexicano, mexicano-americano, chicano  
 Sí, puertorriqueño  
 Sí, cubano  
 Sí, otro grupo español/hispano/latino — *Escriba el grupo en letra de molde.* ↘

**6** ¿Cuál es la raza de esta persona? Marque  una o más razas para indicar de qué raza se considera esta persona.

Blanca  
 Negra, africana americana  
 India americana o nativa de Alaska — *Escriba en letra de molde el nombre de la tribu en la cual está inscrita o la tribu principal.* ↘

India asiática  
 China  
 Filipina  
 Japonesa  
 Coreana  
 Vietnamita  
 Otra asiática — *Escriba la raza en letra de molde.* ↘

Nativa de Hawaii  
 Guameña o Chamorro  
 Samoana  
 Otra de las islas del Pacífico — *Escriba la raza en letra de molde.* ↘

Alguna otra raza — *Escriba la raza en letra de molde.* ↘

**7** ¿Cuál es el estado civil de esta persona?

Casada actualmente  
 Viuda  
 Divorciada  
 Separada  
 Nunca se ha casado

**8** a. En cualquier momento desde el 1 de febrero del 2000, ¿ha asistido esta persona a una escuela regular o universidad? *Incluya sólo guardería infantil (nursery school) o prekindergarten, kindergarten, escuela primaria o educación que conduce a un diploma de escuela secundaria (high school) o título universitario.*

No, no ha asistido desde el 1ro. de febrero — *Pase a la pregunta 9*  
 Sí, escuela pública, universidad pública  
 Sí, escuela privada, universidad privada



**Persona 1 (continuación)**

- 8 b. ¿A qué grado o nivel escolar asistía esta persona?**  
 Marque  UN cuadrado.
- Guardería infantil (nursery school), prekindergarten
  - Kindergarten
  - Grado 1 al 4
  - Grado 5 al 8
  - Grado 9 al 12
  - Estudios universitarios a nivel de bachillerato (freshman a senior)
  - Escuela graduada o profesional (por ejemplo, escuela de medicina, de odontología, o de leyes)

- 9 ¿Cuál es el título o nivel escolar más alto que esta persona ha COMPLETADO? Marque  UN cuadrado. Si está matriculada actualmente, marque el grado escolar anterior o el título más alto recibido.**
- No ha completado ningún grado
  - Guardería infantil (nursery school) a 4to. grado
  - 5to. ó 6to. grado
  - 7mo. u 8vo. grado
  - 9no. grado
  - 10mo. grado
  - 11mo. grado
  - 12mo. grado, **SIN DIPLOMA**
  - GRADUADA DE ESCUELA SECUNDARIA (HIGH SCHOOL)** — DIPLOMA de escuela secundaria o su equivalente (por ejemplo: GED)
  - Algunos créditos universitarios, pero menos de 1 año
  - 1 año o más de universidad, sin título
  - Título asociado universitario (por ejemplo: AA, AS)
  - Título de bachiller universitario (por ejemplo: BA, AB, BS)
  - Título de maestría (por ejemplo: MA, MS, MEng, MEd, MSW, MBA)
  - Título profesional (por ejemplo: MD, DDS, DVM, LLB, JD)
  - Título de doctorado (por ejemplo: PhD, EdD)

**10 ¿Cuál es la ascendencia u origen étnico de esta persona?**


*(Por ejemplo: italiana, jamaicana, africana americana, camboyana, de Cabo Verde, noruega, dominicana, franco-canadiense, haitiana, coreana, libanesa, polaca, nigeriana, mexicana, taiwanesa, ucraniana, y así por el estilo.)*

**11 a. ¿Habla esta persona en su hogar un idioma que no sea inglés?**

- Sí
- No → Pase a la pregunta 12

**b. ¿Qué idioma es ese?**

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

*(Por ejemplo: coreano, italiano, español, vietnamés)*

**c. ¿Cuán bien habla esta persona el inglés?**

- Muy bien
- Bien
- No bien
- No habla inglés

**12 ¿Dónde nació esta persona?**

- En los Estados Unidos — *Escriba en letra de molde el nombre del estado.*

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

- Fuera de los Estados Unidos — *Escriba en letra de molde Puerto Rico o el nombre del país extranjero, de las Islas Vírgenes de los EE.UU., Guam, etc.*

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

**13 ¿Es esta persona CIUDADANA de los Estados Unidos?**

- Sí, nació en Puerto Rico → *Pase a la pregunta 15a*
- Sí, nació en un estado de los Estados Unidos, el Distrito de Columbia, Guam, las Islas Vírgenes de los Estados Unidos, o las Islas Marianas del Norte
- Sí, nació en el extranjero de padre o madre americano(a)
- Sí, es ciudadana de los Estados Unidos por naturalización
- No, no es ciudadana de los Estados Unidos

**14 ¿Cuándo vino esta persona a vivir a Puerto Rico?**

*Escriba los números en los cuadrados.*

Año

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

**15 a. ¿Vivía esta persona en esta casa o apartamento hace 5 años (el 1 de abril de 1995)?**

- Persona es menor de 5 años de edad — *Pase a la pregunta 33*
- Sí, en esta casa → *Pase a la pregunta 16*
- No, fuera de Puerto Rico o los Estados Unidos — *Escriba en letra de molde a continuación el nombre del país extranjero, o las Islas Vírgenes de los Estados Unidos, Guam, etc.; luego pase a la pregunta 16.*

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

- No, en casa diferente en Puerto Rico o en los Estados Unidos

**Persona 1 (continuación)**

**15** b. ¿Dónde vivía esta persona hace 5 años?

Nombre de la ciudad, pueblo, u oficina postal

\_\_\_\_\_

¿Vivía esta persona dentro de los límites de esta ciudad o pueblo?

- Sí  
 No, fuera de los límites de la ciudad/pueblo

Nombre del municipio o condado de los Estados Unidos

\_\_\_\_\_

Anote Puerto Rico o el nombre del estado de los Estados Unidos

\_\_\_\_\_

Código Postal (ZIP Code)

\_\_\_\_\_

**16** ¿Tiene esta persona algunas de las siguientes condiciones de larga duración —

- |   |                          |                          |
|---|--------------------------|--------------------------|
|   | Sí                       | No                       |
| a. Ceguera, sordera, o impedimento visual o auditivo grave?   | <input type="checkbox"/> | <input type="checkbox"/> |
| b. Una condición que limita sustancialmente una o más actividades físicas básicas tales como caminar, subir escaleras, estirarse, levantar, o cargar? | <input type="checkbox"/> | <input type="checkbox"/> |

**17** Debido a una condición física, mental o emocional que ha durado 6 meses o más, ¿tiene esta persona alguna dificultad en llevar a cabo algunas de las siguientes actividades —

- |   |                          |                          |
|---|--------------------------|--------------------------|
|   | Sí                       | No                       |
| a. Aprender, recordar, o concentrarse?  | <input type="checkbox"/> | <input type="checkbox"/> |
| b. Vestirse, bañarse, y caminar por la casa sin ayuda de otra persona?                        | <input type="checkbox"/> | <input type="checkbox"/> |
| c. (Conteste si la persona tiene 16 AÑOS O MÁS)<br>Salir sola de compras o ir sola al médico? | <input type="checkbox"/> | <input type="checkbox"/> |
| d. (Conteste si la persona tiene 16 AÑOS O MÁS)<br>Trabajar en un empleo o negocio?           | <input type="checkbox"/> | <input type="checkbox"/> |

**18** ¿Era esta persona menor de 15 años el 1 de abril del 2000?

- Sí → Pase a la pregunta 33  
 No

**19** a. ¿Tiene esta persona algún nieto menor de 18 años que viva en esta casa o apartamento?

- Sí  
 No → Pase a la pregunta 20a

b. ¿Es este(a) abuelo(a) actualmente responsable de la mayoría de las necesidades básicas de algunos de sus nietos menores de 18 años que viven en esta casa o apartamento?

- Sí  
 No → Pase a la pregunta 20a

c. ¿Cuánto tiempo hace que este(a) abuelo(a) es responsable de este(os) nieto(s)? Si este(a) abuelo(a) es responsable económicamente de más de un nieto, conteste la pregunta para el nieto del cual haya sido responsable por más tiempo.

- Menos de 6 meses  
 6 a 11 meses  
 1 ó 2 años  
 3 ó 4 años  
 5 años o más

**20** a. ¿Ha estado esta persona alguna vez en servicio militar activo en las Fuerzas Armadas, la Reserva militar, o la Guardia Nacional de los Estados Unidos? El servicio activo no incluye adiestramiento para la Reserva militar, o la Guardia Nacional, pero Sí incluye servicio activo, por ejemplo, en la Guerra del Golfo Pérsico.

- Sí, ahora en servicio activo  
 Sí, en servicio activo en el pasado, pero no ahora  
 No, adiestramiento para la Reserva o la Guardia Nacional solamente → Pase a la pregunta 21  
 No, nunca estuvo en servicio militar → Pase a la pregunta 21

b. ¿Cuándo estuvo esta persona en servicio activo en las Fuerzas Armadas de los Estados Unidos? Marque  un cuadrado por CADA período durante el cual esta persona estuvo en servicio militar.

- Abril del 1995 o después  
 Agosto del 1990 a marzo del 1995 (incluyendo la Guerra del Golfo Pérsico)  
 Septiembre del 1980 a julio del 1990  
 Mayo del 1975 a agosto del 1980  
 Época de Vietnam (agosto del 1964–abril del 1975)  
 Febrero del 1955 a julio del 1964  
 Conflicto de Corea (junio del 1950–enero del 1955)  
 Segunda Guerra Mundial (septiembre del 1940–julio del 1947)  
 Algún otro período

c. En total, ¿cuántos años estuvo esta persona en servicio militar activo?

- Menos de 2 años  
 2 años o más



Persona 1 (continuación)

21 LA SEMANA PASADA, ¿hizo esta persona ALGÚN trabajo por paga o lucro? Marque (X) el cuadrado "Sí" aun si la persona trabajó sólo 1 hora, o ayudó sin paga en el negocio o finca de la familia por 15 horas o más, o estuvo en servicio activo en las Fuerzas Armadas.
 Sí
 No → Pase a la pregunta 25a

22 ¿En qué lugar trabajó esta persona LA SEMANA PASADA? Si esta persona trabajó en más de un lugar, escriba en letra de molde la dirección donde él o ella trabajó la mayor parte de la semana.

a. Nombre de urbanización o condominio
Dirección (Número y nombre de la calle)

Grid for address information

(Si no sabe la dirección exacta, dé una descripción de la localización, tal como el nombre del edificio, calle o intersección más cercana.)

b. Nombre de la ciudad, pueblo, u oficina postal

Grid for city name

c. ¿Está localizado el lugar de trabajo dentro de los límites de esa ciudad o pueblo?

- Sí
 No, fuera de los límites de la ciudad/pueblo

d. Nombre del municipio o condado de los Estados Unidos

Grid for municipality name

e. Anote Puerto Rico o el nombre del estado de los Estados Unidos o país extranjero

Grid for location

f. Código Postal (ZIP Code)

Grid for ZIP code

23 a. ¿Cómo llegó usualmente esta persona al trabajo LA SEMANA PASADA? Si esta persona usualmente utilizó más de un medio de transporte durante el viaje, marque (X) el cuadrado correspondiente al que utilizó por más distancia.

- Automóvil, camión, o van
 Autobús o trolebús
 Carro público
 Tren subterráneo o elevado
 Ferrocarril
 Lancha (ferry)
 Taxi
 Motocicleta
 Bicicleta
 Caminó
 Trabajó en el hogar → Pase a la pregunta 27
 Otro método

→ Si marcó "Automóvil, camión, o van" en la pregunta 23a pase a la pregunta 23b. De lo contrario, pase a la pregunta 24a.

23 b. ¿Cuántas personas, incluyendo a esta persona, usualmente viajaron al trabajo en el automóvil, camión, o van LA SEMANA PASADA?

- Viajó sola  4 personas
 2 personas  5 ó 6 personas
 3 personas  7 personas o más

24 a. ¿A qué hora usualmente salía esta persona de su hogar para ir al trabajo LA SEMANA PASADA?

Grid for time and a.m./p.m. selection

b. ¿Cuántos minutos le tomó a esta persona usualmente ir de su hogar al trabajo LA SEMANA PASADA?

Minutos

Grid for minutes

→ Conteste preguntas 25—26 para personas que no trabajaron por paga o lucro la semana pasada. De lo contrario, pase a la pregunta 27.

25 a. LA SEMANA PASADA, ¿estuvo esta persona suspendida (on layoff) de un empleo?

- Sí → Pase a la pregunta 25c
 No

b. LA SEMANA PASADA, ¿estuvo esta persona ausente TEMPORERAMENTE de su empleo o negocio?

- Sí, de vacaciones, por enfermedad temporera, disputa laboral, etc. → Pase a la pregunta 26
 No → Pase a la pregunta 25d

c. ¿Se le ha informado a esta persona que será llamada de nuevo a trabajar dentro de los próximos 6 meses o se le ha dado una fecha para regresar al trabajo?

- Sí → Pase a la pregunta 25e
 No

d. ¿Ha estado esta persona buscando trabajo durante las últimas 4 semanas?

- Sí
 No → Pase a la pregunta 26

e. LA SEMANA PASADA, ¿hubiera podido esta persona comenzar un empleo si se le hubiera ofrecido uno, o hubiera podido regresar al trabajo si se le hubiera llamado de nuevo?

- Sí, hubiera podido ir a trabajar
 No, debido a una enfermedad temporera propia
 No, debido a otras razones (en la escuela, etc.)

26 ¿Cuándo trabajó esta persona por última vez, aunque fuera por unos pocos días?

- 1995 a 2000
 1994 ó antes, o nunca ha trabajado → Pase a la pregunta 31





**Persona 1 (continuación)**

**31** c. Intereses, dividendos, ingreso neto por rentas, ingreso por derechos de autor, o ingreso por herencias y fideicomisos. — Informe aun cantidades pequeñas acreditadas a una cuenta.

Sí Cantidad anual — Dólares  
 \$ | | | , | | | .00  Pérdida

No

d. Seguro Social o Retiro Ferroviario

Sí Cantidad anual — Dólares  
 \$ | | | , | | | .00

No

e. Seguridad de Ingreso Suplemental (SSI)

Sí Cantidad anual — Dólares  
 \$ | | | , | | | .00

No

f. Cualquier pago de asistencia o bienestar público de la oficina de bienestar estatal o local

Sí Cantidad anual — Dólares  
 \$ | | | , | | | .00

No

g. Pensión por retiro, para sobrevivientes, o por incapacidad — NO incluya Seguro Social.

Sí Cantidad anual — Dólares  
 \$ | | | , | | | .00

No

h. Alguna otra fuente de ingreso recibido regularmente, tal como pagos de la Administración de Veteranos (VA), compensación por desempleo, pensión para hijos menores, o pensión alimenticia — NO incluya pagos globales tales como dinero de una herencia o venta de una casa.

Sí Cantidad anual — Dólares  
 \$ | | | , | | | .00

No

**32** ¿Cuál fue el ingreso total de esta persona en 1999? Sume las cantidades anotadas en las preguntas 31a—31h; reste cualquier pérdida. Si el ingreso neto fue una pérdida, anote la cantidad y marque  el cuadrado "Pérdida" al lado de la cantidad.

Cantidad anual — Dólares  
 Ninguno ó \$ | | | , | | | .00  Pérdida

➔ Ahora, por favor, conteste las preguntas 33—53 para su hogar.

**33** ¿Es esta casa, apartamento, o casa móvil —

- Propiedad suya o de alguien en este hogar con una hipoteca o préstamo?
- Propiedad suya o de alguien en este hogar libre y sin deuda (sin una hipoteca o préstamo)?
- Alquilada por pago de alquiler en efectivo?
- Ocupada sin pago de alquiler en efectivo?

**34** ¿Cuál describe mejor este edificio? Incluya todos los apartamentos, pisos, etc. aunque estén desocupados.

- Una casa móvil
- Una casa para una sola familia separada de cualquier otra casa
- Una casa para una sola familia unida a una o más casas
- Un edificio con 2 apartamentos
- Un edificio con 3 ó 4 apartamentos
- Un edificio con 5 a 9 apartamentos
- Un edificio con 10 a 19 apartamentos
- Un edificio con 20 a 49 apartamentos
- Un edificio con 50 apartamentos o más
- Bote, vehículo recreativo, van, etc

**35** Aproximadamente, ¿cuándo se construyó originalmente este edificio?

- 1999 ó 2000
- 1995 a 1998
- 1990 a 1994
- 1980 a 1989
- 1970 a 1979
- 1960 a 1969
- 1950 a 1959
- 1940 a 1949
- 1939 ó antes

**36** ¿Cuándo se mudó esta persona a esta casa, apartamento, o casa móvil?

- 1999 ó 2000
- 1995 a 1998
- 1990 a 1994
- 1980 a 1989
- 1970 a 1979
- 1969 ó antes

**37** ¿Cuántos cuartos hay en esta casa, apartamento, o casa móvil? NO cuente baños, terrazas, balcones, entradas, pasillos, o medios cuartos.

- |                                    |  |
|------------------------------------|--|
| <input type="checkbox"/> 1 cuarto  | <input type="checkbox"/> 6 cuartos       |
| <input type="checkbox"/> 2 cuartos | <input type="checkbox"/> 7 cuartos       |
| <input type="checkbox"/> 3 cuartos | <input type="checkbox"/> 8 cuartos       |
| <input type="checkbox"/> 4 cuartos | <input type="checkbox"/> 9 cuartos o más |
| <input type="checkbox"/> 5 cuartos |  |

**Persona 1 (continuación)**

**38** ¿Cuántos dormitorios hay, es decir, cuántos dormitorios indicaría que tiene esta casa, apartamento, o casa móvil si estuviera para el alquiler o la venta?

- Ningún dormitorio
- 1 dormitorio
- 2 dormitorios
- 3 dormitorios
- 4 dormitorios
- 5 dormitorios o más

**39** ¿Tiene usted facilidades sanitarias COMPLETAS en esta casa, apartamento, o casa móvil; es decir, 1) agua caliente y fría por tubería, 2) un inodoro, y 3) una bañera o ducha?

- Sí, tiene las tres facilidades
- No

**40** ¿Tiene usted facilidades COMPLETAS de cocina en esta casa, apartamento, o casa móvil; es decir, 1) un fregadero con agua por tubería, 2) una estufa, y 3) un refrigerador?

- Sí, tiene las tres facilidades
- No

**41** ¿Hay servicio telefónico disponible en esta casa, apartamento, o casa móvil del cual usted puede hacer y recibir llamadas?

- Sí
- No

**42** ¿Cuál COMBUSTIBLE es el que MÁS se utiliza para calentar esta casa, apartamento, o casa móvil?

- Gas de una tubería subterránea que sirve al vecindario
- Gas embotellado, en tanque, o LP
- Electricidad
- Aceite combustible, queroseno, etc.
- Carbón o coque
- Leña
- Energía solar
- Otro combustible
- No se utiliza combustible

**43** ¿Cuántos automóviles, vans o camiones con capacidad para una carga de una tonelada o menos se guardan en la casa para uso de los miembros de su hogar?

- Ninguno
- 1
- 2
- 3
- 4
- 5
- 6 ó más

**44** Conteste SÓLO si ésta es UNA CASA PARA UNA SOLA FAMILIA O CASA MÓVIL — Todos los otros pasen a la pregunta 45.

a. ¿Hay un negocio (tal como una tienda o barbería) u oficina médica en esta propiedad?

- Sí
- No

b. ¿En cuántas cuerdas está situada esta casa o casa móvil?

- Menos de una cuerda → Pase a la pregunta 45
- 1 a 9.9 cuerdas
- 10 cuerdas o más

c. En 1999, ¿cuánto fue el total de las ventas realizadas de todos los productos agrícolas de esta propiedad?

- Cero
- \$1 a \$999
- \$1,000 a \$2,499
- \$2,500 a \$4,999
- \$5,000 a \$9,999
- \$10,000 ó más

**45** ¿Cuántos son los costos anuales de los servicios públicos y combustible para esta casa, apartamento, o casa móvil? Si usted ha vivido aquí menos de un año, estime el costo anual.

a. Electricidad

Costo anual — Dólares

\$ | , | | | .00

ó

- Incluido en el alquiler o cuota de condominio
- No hay cargo o no se utiliza electricidad

b. Gas

Costo anual — Dólares

\$ | , | | | .00

ó

- Incluido en el alquiler o cuota de condominio
- No hay cargo o no se utiliza gas

c. Agua y alcantarillado

Costo anual — Dólares

\$ | , | | | .00

ó

- Incluido en el alquiler o cuota de condominio
- No hay cargo

d. Aceite, coque, queroseno, leña, etc.

Costo anual — Dólares

\$ | , | | | .00

ó

- Incluido en el alquiler o cuota de condominio
- No hay cargo o no se utilizan estos combustibles



**Persona 1 (continuación)**

**46** Conteste **SÓLO** si **PAGA ALQUILER** por esta casa, apartamento, o casa móvil — De lo contrario, pase a la Pregunta 47.

a. ¿Cuál es el alquiler mensual?

Cantidad mensual — Dólares

\$ | | , | | .00

b. ¿Incluye el alquiler mensual algunas comidas?

- Sí
- No

**47** Conteste las preguntas 47a—53 si usted o alguien en este hogar es dueño o está comprando esta casa, apartamento, o casa móvil; de lo contrario, pase a las preguntas para la Persona 2.

a. ¿Tiene usted una hipoteca, contrato de compra, escritura de fideicomiso o deuda similar sobre ESTA propiedad?

- Sí, hipoteca, escritura de fideicomiso, o deuda similar
- Sí, contrato de compra
- No → Pase a la pregunta 48a

b. ¿Cuánto es su pago mensual regular de la hipoteca sobre ESTA propiedad? Incluya sólo el pago de la primera hipoteca o contrato de compra.

Cantidad mensual — Dólares

\$ | | , | | .00  
ó

- No se requiere ningún pago regular → Pase a la pregunta 48a

c. ¿Incluye su pago mensual regular de la hipoteca los pagos de impuestos sobre bienes raíces para ESTA propiedad?

- Sí, se incluyen los impuestos en el pago de la hipoteca
- No, los impuestos se pagan por separado o no se requieren impuestos

d. ¿Incluye su pago mensual regular de la hipoteca los pagos de la prima por concepto de seguro contra incendios, riesgos, e inundaciones para ESTA propiedad?

- Sí, se incluye el seguro en el pago de la hipoteca
- No, el seguro se paga por separado, o no se tiene seguro

**48** a. ¿Tiene usted una segunda hipoteca o un préstamo sobre el valor líquido de ESTA propiedad (Home Equity Loan)? Marque (X) todos los cuadrados que aplican.

- Sí, una segunda hipoteca
- Sí, un préstamo sobre el valor líquido de esta propiedad
- No → Pase a la pregunta 49

b. ¿Cuánto es su pago mensual regular de todas las segundas hipotecas y todos los préstamos sobre el valor líquido de ESTA propiedad?

Cantidad mensual — Dólares

\$ | | , | | .00  
ó

- No se requiere ningún pago regular

**49** ¿Cuánto fue el total de los impuestos de bienes raíces sobre ESTA propiedad el año pasado?

Cantidad anual — Dólares

\$ | | , | | .00  
ó

- Nada

**50** ¿Cuánto fue el pago anual de la prima por concepto de seguro contra incendios, riesgos, e inundaciones para ESTA propiedad?

Cantidad anual — Dólares

\$ | | , | | .00  
ó

- Nada

**51** ¿Cuál es el valor de esta propiedad, es decir, por cuánto cree usted que se vendería esta casa y el terreno, apartamento, o casa móvil y el lote si estuviera para la venta?

- |  |  |
|--|--|
| <input type="checkbox"/> Menos de \$10,000   | <input type="checkbox"/> \$90,000 a \$99,999   |
| <input type="checkbox"/> \$10,000 a \$14,999 | <input type="checkbox"/> \$100,000 a \$124,999 |
| <input type="checkbox"/> \$15,000 a \$19,999 | <input type="checkbox"/> \$125,000 a \$149,999 |
| <input type="checkbox"/> \$20,000 a \$24,999 | <input type="checkbox"/> \$150,000 a \$174,999 |
| <input type="checkbox"/> \$25,000 a \$29,999 | <input type="checkbox"/> \$175,000 a \$199,999 |
| <input type="checkbox"/> \$30,000 a \$34,999 | <input type="checkbox"/> \$200,000 a \$249,999 |
| <input type="checkbox"/> \$35,000 a \$39,999 | <input type="checkbox"/> \$250,000 a \$299,999 |
| <input type="checkbox"/> \$40,000 a \$49,999 | <input type="checkbox"/> \$300,000 a \$399,999 |
| <input type="checkbox"/> \$50,000 a \$59,999 | <input type="checkbox"/> \$400,000 a \$499,999 |
| <input type="checkbox"/> \$60,000 a \$69,999 | <input type="checkbox"/> \$500,000 a \$749,999 |
| <input type="checkbox"/> \$70,000 a \$79,999 | <input type="checkbox"/> \$750,000 a \$999,999 |
| <input type="checkbox"/> \$80,000 a \$89,999 | <input type="checkbox"/> \$1,000,000 ó más     |

**52** Conteste **SÓLO** si éste es un **CONDOMINIO** —

¿Cuánto es la cuota mensual de condominio?

Cantidad mensual — Dólares

\$ | | , | | .00

**53** Conteste **SÓLO** si ésta es una **CASA MÓVIL** —

a. ¿Tiene usted un préstamo a plazos o contrato sobre ESTA casa móvil?

- Sí
- No

b. ¿Cuánto fue el costo total de los pagos del préstamo a plazos, impuestos sobre bienes muebles, renta del lote, cuotas de registro, y cuotas de licencia para ESTA casa móvil y su lote el año pasado? Excluya los impuestos sobre bienes raíces.

Cantidad anual — Dólares

\$ | | , | | .00

→ ¿Viven más personas aquí? Si contesta que sí, continúe con la Persona 2.

## Census 2000 Glossary

Term	Abbreviation	Description
100 percent census edited file	HCEF	A computer file that contains the edited characteristics and records for all households and people in Census 2000. The edits are performed on the 100 percent census unedited file. The edits include consistency edits and imputation for items or people where the data are insufficient for the 100 percent data items from both the short- and long-form questionnaires. The HCEF provided the census counts for apportionment purposes.
100 percent census unedited file	HCUF	The decennial response file was combined with the decennial master address file to create the HCUF and sample census unedited file. The HCUF contains the unedited individual responses to the 100 percent data items from both the Census 2000 short- and long-form questionnaires.
100 percent data		Population and housing information collected for all living quarters in the United States. See long form, sample data, short form.
100 percent detail file	HDF	A file resulting from the application of disclosure avoidance and tabulation geography to the 100 percent census edited file. This file was used to produce Census 2000 data products and other tabulations based on the 100 percent items.
A Streamlined Acquisition Process	ASAP	The Census Bureau process to acquire services. There are six phases: (1) bureau integrated strategic planning and budgeting, (2) project planning, (3) market research, (4) selection acquisition vehicle, (5) meet project objective and manage acquisition, and (6) closeout.
Accuracy and Coverage Evaluation	A.C.E.	A coverage measurement methodology used to determine the number of people and housing units missed or counted more than once in Census 2000.
active entity		A governmental unit that has elected or appointed officials who carry out legally prescribed functions, provide services, and/or raise revenues. The Census Bureau differentiates active entities by their fiscal independence and whether they provide general or limited special services. See functional status, functioning entity, governmental unit, inactive entity, nonfunctioning entity.
address		The house number and street name or other designation assigned to a housing unit, special place, business establishment, or other structure for purposes of mail delivery or to allow emergency services, delivery people, and visitors to find the structure. See basic street address, city-style address, E-911 address, fire number, house number and street name address, location description, mailing address, non-city-style address.
address break		The city-style address on each side of a legal boundary; for example, 1234 Main Street is inside an incorporated place and 1236 is outside the place.
address coding guide	ACG	A forerunner of the Geographic Base File/Dual Independent Map Encoding file and TIGER® file.

Term	Abbreviation	Description
address control file	ACF	The 1990 residential address list used to label questionnaires, control the mail response check-in operation, and determine the nonresponse follow-up workload. See master address file.
Address List Review Program and Address List Map Review Program	ALR ALMR	Also called Local Update of Census Addresses. Census 2000 programs, established in response to requirements of Public Law 103-430, that provided an opportunity for local and tribal governments to review and update individual address information in the master address file and associated geographic information in the TIGER® database to improve the completeness and accuracy of both computer files. The governments signed a confidentiality agreement to participate.
address listing	AL	A field operation to develop the Census 2000 address list in areas of predominantly non-city-style addresses. The lister enters, in an address register, all mailing addresses and/or physical locations for all places within a specified area. The lister marks the location of each residential structure on an assignment area block map by drawing a map spot and assigning a map spot number. The lister also updates and corrects the map if necessary.
address range		The lowest and highest house numbers along each side of a street segment that has city-style addresses. The U.S. Census Bureau usually expands the range to include all possible numbers, not just the existing ones (for example, the Census Bureau expands the actual addresses of 105–131 on the odd-numbered side of the 100 block of a street to 101–199). Usually an address range on one side of a street contains only even or only odd numbers, but sometimes one or both sides contain both.
address register	AR	A book used by field staff to record or verify addresses and related information for all living quarters in an assignment area. It also includes: (1) instructions on how to perform the job and (2) a set of maps for the assigned area.
address register area	ARA	Term used in 1990. Now called an assignment area.
addressable feature		A physical feature along which living quarters can be constructed and assigned an address. Usually, this is a road or street, but it could also be an alley, driveway, and occasionally an unusual feature such as a railroad track or navigable stream.
Advance Census Report	ACR	In previous censuses, an unaddressed, short-form questionnaire delivered by U.S. Postal Service letter carriers in advance of the actual enumeration in list/enumerate areas. Enumerators picked up any completed ACRs, checked them for completeness and consistency, transferred the responses to standard census questionnaires, and completed any missing information. Used only in the Island Areas for Census 2000.
advance notice letter/reminder card	ANL/RC	Part of the questionnaire mailing strategy. ANL: In every area except list/enumerate, the Census Bureau sends an advance notice letter to every mailout address to alert households that the census form will be sent soon. RC: A postcard sent to addresses on the decennial master address file to remind respondents to return their census questionnaires or to thank them if they already have. All addresses in mailout/mailback areas receive a postcard. The Census Bureau blanket-mails these postcards to postal patrons (no addresses) in update/leave areas.
Advance Post Office Check	APOC	Obsolete term. See postal validation check.

Term	Abbreviation	Description
Alaska Native Claims Settlement Act	ANCSA	Legislation (Public Law 92-203) enacted in 1972 establishing the Alaska Native Regional Corporations and Alaska Native Villages to conduct business and nonprofit activities by and for Alaska Natives.
Alaska Native Regional Corporation	ANRC	A corporate entity organized to conduct both business and nonprofit affairs of Alaska Natives pursuant to the Alaska Native Claims Settlement Act.
Alaska Native Village	ANV	A type of local governmental unit in Alaska that constitutes an association, band, clan, community, group, tribe, or village recognized pursuant to the Alaska Native Claims Settlement Act. ANVs do not have legally defined boundaries. See Alaska Native Village statistical area, governmental unit, legal entity.
Alaska Native Village statistical area	ANVSA	A decennial census statistical area that represents the geographic jurisdiction of an Alaska Native Village (ANV) as established for the Census Bureau by officials of the ANV and its Alaska Native Regional Corporation for the purpose of presenting census data.
American Community Survey	ACS	A monthly sample household survey similar to the long-form census questionnaire. It was first tested in 1996 and is expected to replace the long form for the 2010 Census. Beginning in 2003, the nationwide monthly sample survey provides annual data for social, economic, and housing characteristics. At first, the data will be available for states, cities, counties, and metropolitan areas with a minimum population of 250,000; then, in 2004, a minimum population of 65,000; and in 2008, small geographic entities.
American FactFinder	AFF	A generalized electronic system for access and dissemination of Census Bureau data. The system is available through the Internet and offers prepackaged data products and the ability to build custom products. The system serves as the vehicle for accessing and disseminating data from Census 2000 (as well as the 1997 Economic Censuses and the American Community Survey). The system was formerly known as the Data Access and Dissemination System (DADS).
American Indian and Alaska Native area	AIANA	A Census Bureau term referring to these entity types: American Indian reservation, American Indian subreservation area, American Indian trust lands, state designated American Indian statistical area, tribal jurisdictional statistical area, tribal designated statistical area, tribal subdivision, Alaska Native Regional Corporation, Alaska Native Village, or Alaska Native Village statistical area.
American Indian area	AIA	A generic Census Bureau grouping that includes reference to any or all of the following areas: American Indian reservation, American Indian trust lands, tribal jurisdiction statistical area, or tribal designated statistical area.
American Indian area/Alaska Native area/Hawaiian Home Lands	AIANHH	An all-encompassing Census Bureau term referring to American Indian entities, Alaska Native entities, and Hawaiian Home Lands. See American Indian and Alaska Native area, Hawaiian Home Lands.
American Indian reservation		An American Indian geographic entity with boundaries established by treaty, statute, or executive or court order. Federal and some state governments have established reservations as territory over which American Indians have governmental jurisdiction. These entities are designated as colonies, communities, pueblos, rancherias, reservations, and reserves. See American Indian and Alaska Native area, governmental unit, legal entity.

Term	Abbreviation	Description
American Indian tribal subdivision		An administrative subdivision of an American Indian reservation. Tribal subdivisions may extend beyond the boundary of their reservations. These entities are internal units of self-government or administration that serve social, cultural, or economic purposes for the American Indians living on and adjacent to the reservation.
American Indian trust land	TL	Land held in trust by the federal government for either a tribe (tribal trust land) or an individual member of a tribe (individual trust land). Such land always is associated with a specific federally recognized reservation or tribe but may be located on or off the reservation. The Census Bureau recognizes and tabulates data separately only for off-reservation trust lands. See American Indian reservation, Hawaiian Home Lands.
apportionment		The number of representatives that a state is entitled to in the U.S. House of Representatives based on the decennial census. See reapportionment, redistricting.
assignment area	AA	A geographic area established by the Census Bureau for a specific field operation for the census. An AA consists of one or more census blocks for most operations and is assigned to a single enumerator, lister, or other field staff to obtain information about the residents and living quarters within the boundaries of the AA. Formerly called an address register area and an enumeration district. See assignment area map, collection geography.
assignment area map	AA map	A map that shows the area assigned to a member of the field staff for a specific census operation. The map displays the individual roads, streets, and nonstreet features (and their names, if any) in and adjacent to the assignment area (AA), and, if appropriate, the city-style address ranges of the roads and streets or the census collection block numbers within the AA. See assignment area, block map, collection block, locator map.
assignment control		For all field operations, clerks check the accuracy and completeness of work returned from the field to the local census office. This procedure takes on critical importance for nonresponse follow-up and list/enumerate.
assignment preparation		The coordination, preparation, and assembly of all materials, including maps, registers, and questionnaires, by assignment area. This operation is performed at the regional census centers for address listing and block canvassing and at the local census offices for other field operations. Map pouch labels and maps are printed in the regional census centers.
Asynchronous Transfer Mode	ATM	A process that increases the amount of information that can be electronically transferred at one time between sites.
Automated Address Range Program	AARP	A program for achieving consistent address/block number relationships between field-verified residential addresses in the master address file and address ranges in the TIGER® database.
automated data processing	ADP	The data processing operations performed by a system of electronic or electrical machines.
Automated Master Address File Geocoding Office Resolution	AMAF-GOR	A computer match that attempts to geocode city-style addresses in the master address file after street features, names, address ranges, and ZIP Code information have been inserted into the TIGER® database from digital files from a local government or commercial source. See Boundary and Annexation Survey, census map preview, digital exchange file, geocode, TIGER®, TIGER® Improvement Program, and targeted map update.



Term	Abbreviation	Description
bar code		A code consisting of a group of printed and patterned bars designed to be scanned and read into computer memory.
barrio		A legal subdivision of a municipio in Puerto Rico, treated as a minor civil division by the Census Bureau. See barrio-pueblo, county subdivision, legal entity, minor civil division.
barrio-pueblo		A legal subdivision of a municipio in Puerto Rico, treated as a minor civil division by the Census Bureau. The barrio-pueblo is differentiated from other barrios because it is the historical center and seat of government of its municipio. See barrio, county subdivision, legal entity, minor civil division.
basic street address	BSA	The house number and street name portion of an address, such as 11 Main Street. The BSA does not include designations for apartments, units, lots, and the like. However, when the address for a specific structure is identified by a number followed by a fraction or letter, such as 11½, or 11A, the fraction or letter is part of the BSA. See address, city-style address, house number and street name address, mailing address.
Be Counted enumeration and Be Counted form	BC/BCF	Includes the Be Counted enumeration procedure and the Be Counted form. The enumeration procedure targets areas that are traditionally undercounted. Unaddressed census questionnaires (Be Counted forms) are placed at selected sites where people who believe they were not counted can pick them up, complete them, and mail them to the Census Bureau. The sites are in targeted areas that local governments and community groups, in conjunction with the Census Bureau, identified as traditionally undercounted.
Be Counted field verification		This operation verifies the existence and the residential status of addresses given to the Census Bureau through the Be Counted program. Any address that is verified is added to the master address file.
best and final offer	BAFO	The final and best technical and price solution a vendor provides for a request for proposal in response to a call from the government contracting officer.
beta site		Located at headquarters, the beta site is an independent operation to test and assure quality, completeness, and security of software systems, hardware systems, and network systems before release to a production environment.
beta testing		Ensures that the hardware, software, and communication components are functioning properly before release to the various decennial operating units.
blanket mailing		There are two definitions for this term: (1) The mailing to all postal patrons (no addresses) of reminder cards or other forms. (2) A strategy that was considered but not implemented for Census 2000: the mailing of replacement questionnaires to either all addresses or all addresses in areas with anticipated low response rates.
block		A geographic area bounded on all sides by visible or non-visible features shown on census maps. A block is the smallest geographic entity for which the Census Bureau collects and tabulates decennial census information. See block boundary, block number, collection block, statistical entity, or tabulation block.

Term	Abbreviation	Description
block boundary		A census map feature, visible (street, road, stream, shoreline, and so forth) or nonvisible (county line, city limit, property line, and so forth), that delimits a census block. Two or more features usually delimit a block, but a single feature may delimit a block in the case of an island or a circular street. A boundary generally must include at least one addressable feature, that is, a feature that can have an address assigned to it. The boundary of a state or county is always a block boundary.
Block Boundary Suggestion Project	BBSP	The first phase of the Census Bureau's Public Law 94-171 program that provides an opportunity for states to suggest visible features, such as block boundaries, that are or may be voting district boundaries for the decennial census.
block canvassing		A Census 2000 field operation that ensures the quality of the master address file within the mailout/mailback area (city-style addresses). The Census Bureau sends canvassers into the field to canvass their assignment areas and ensure that the master address file contains a mailing address for every living quarters. They especially seek hidden housing units, such as attics, basements, or garages converted into housing units, or houses that appear to be one unit but which actually contain multiple housing units. They also update and correct the census maps. Formerly called precanvass and targeted canvassing. See blue line and canvass.
block cluster		A single block or a group of blocks, varying in size.
Block Definition Project	BDP	A program similar to the Block Boundary Suggestion Project. It applies only to American Indian reservations and Puerto Rico.
block group	BG	A combination of census blocks that is a statistical subdivision of a census tract. Geographic block groups never cross census tracts but may cross the boundaries of county subdivisions, places, urbanized areas, voting districts, and so forth. Tabulation block groups may be split to present data for every unique combination of county subdivision, place, and the like.
block locator map		A Census Bureau map that displays a census block—usually a collection block—and a substantial amount of surrounding area, to help field staff identify where the block is located and determine an efficient route of travel to the block. See collection block, locator map.
block map		A large scale map of an individual census collection block showing the individual roads, streets, and other features, together with their names (if any) within and adjacent to the block. Field staff use block maps to guide them in their canvass of each block, to annotate map changes, and to mark (map spot) and number the location of each residential structure. See assignment area map, block number, collection block, and map spot.

Term	Abbreviation	Description
block number		<p>A number assigned to each census block.</p> <ul style="list-style-type: none"> <li>▪ For collecting information for Census 2000, each census block was identified uniquely within a county (or statistically equivalent entity) by a 4- or 5-digit number. All the collection blocks in a county used the same number of digits. As a result of changes to the TIGER® database after the Census Bureau had numbered the blocks in preparation for Census 2000 field operations, the number could have an alphabetic suffix, to represent one portion of a physical block that was split by an added street or road or by the addition or change of the boundary of a county, American Indian reservation, off-reservation trust land, or military installation; e.g., if an added street bisected Block 1005, the block was split into Blocks 1005A and 1005B to represent the portion of the original collection block on each side of that street.</li> <li>▪ For tabulating data for Census 2000, each census block was identified uniquely within a census tract by a 4-digit number. A 1990 census block number had three digits and might include an alphabetic suffix. The first digit of a tabulation block number identified the block group in which the census block was located.</li> </ul>
block numbering area	BNA	<p>Small statistical subdivisions of a county for grouping and numbering blocks in nonmetropolitan counties where local committees of census data users have not established census tracts. For Census 2000, the agency combined the census tract and block numbering area programs into a single program; the resulting geographic entity was called a census tract.</p>
blue line		<p>A boundary defining the area included in mailout/mailback. Essentially, these are areas that have city delivery of mail.</p>
boarded up		<p>A housing condition in which the doors or windows of a building have been covered to prevent destruction or entry.</p>
borough		<p>A county equivalent in Alaska, a minor civil division in New York, and an incorporated place in Connecticut, New Jersey, and Pennsylvania. See governmental unit.</p>
boundary		<p>A line identifying the extent of a geographic entity, such as a block, census tract, county, or place. The legal boundaries the Census Bureau recognizes for a census are those in place on the first day of the census year.</p>
Boundary and Annexation Survey	BAS	<p>An annual survey of all incorporated places and all counties conducted by the Census Bureau to determine the correct legal limits and related information as of January 1 of the survey year. See Automated Master Address File Geocoding Office Operation, census map preview, targeted map update, TIGER®, and TIGER® Improvement Program.</p>

Term	Abbreviation	Description
boundary change		The establishment, relocation, or deletion of a boundary. For legal entities, boundary changes are reported to the Census Bureau in a state, local, or tribal government's response to a Boundary and Annexation Survey; through a periodic survey to collect boundary information for a specific set of geographic entities; as an adjunct to obtaining other information about an area (such as updated street pattern or address information); or by some other reliable source. For statistical entities, boundary changes are provided in preparation for a specific census in response to the Census Bureau's Participant Statistical Areas Program or some other specific boundary collection program. The boundaries of legal entities are changed due to legal actions, whereas statistical entities may be changed by appropriate reviewers to reflect population growth or decline, or because of revisions either to visible or legal features used as boundaries or to Census Bureau procedures. A boundary change also can occur due to an error in recording a boundary for one census or survey and showing it correctly for the next one.
building		Usually a separate structure that has open space on all sides. Townhouses are separate buildings. Some buildings can be used both as a residence and a business, as in the case of an apartment located above a grocery store.
Bureau of Economic Analysis	BEA	Department of Commerce. The BEA's goal is to provide a clear picture of the U.S. economy by preparing, developing, and interpreting the national income and product accounts (summarized by the gross domestic product) as well as aggregate measures of international, regional, and state economic activity.
Bureau of Labor Statistics	BLS	Department of Labor. The BLS is the principal fact-finding agency for the federal government in the broad field of labor economics and statistics.
callback		Repeat telephone calls an enumerator makes to a living quarters to obtain information.
callback record page		A page in an address register used to record information about each callback an enumerator makes to a living quarters to obtain information.
cavass		To systematically travel, block by block, every street, road, path, and the like in an assignment area, identifying every place where people live or could live.
casing check		See postal validation check.
census		A complete enumeration of a population or the business and commercial establishments, farms, or governments in an area. See decennial census.
Census 2000 Committee on Statistical Policy	CCSP	Composed of policy makers and technicians who provided external review and advice. The group reviewed policy matters as they affected decisions about statistical methods to be used.
Census 2000 library		A depository of key Census 2000 documents using an electronic document tracking system. See Personal Computer Document Organization and Control System.
Census 2000 Publicity Office	C2PO	Census Bureau. Developed, implemented, and coordinated an integrated marketing program for Census 2000, including paid advertising, direct mail, public relations, partnerships, and local outreach.
Census Address List Improvement Act of 1994		See Public Law 103-430.

Term	Abbreviation	Description
Census Advisory Committee	CAC	Several advisory committees counseled the Census Bureau on matters relating to Census 2000. The Commerce Secretary's 2000 Census Advisory Committee was composed of representatives of organizations interested in and knowledgeable about the decennial census. The Census Advisory Committee of Professional Associations consisted of nine representatives from each of the following organizations: the American Economic Association, the American Marketing Association, the American Statistical Association, and the Population Association of America. Five race and ethnic advisory committees informed the Census Bureau on matters relating to their communities' participation in the decennial census and uses of census products. These committees represented the following race and ethnic groups: African Americans, American Indians and Alaska Natives, Asians, Hispanics, and Native Hawaiians and Other Pacific Islanders.
census area		The statistical equivalent of a county in Alaska. Census areas are delineated cooperatively with the State of Alaska for statistical purposes in the portions of Alaska not within an organized borough.
census block		See block.
census block map		A map showing the numbered census blocks and appropriate higher-level census geography within a geographic entity or area. A census block map usually consists of multiple map sheets. See block map, Census Bureau map.
Census Bureau	CB	Department of Commerce. The Census Bureau is the country's preeminent statistical collection and dissemination agency. It publishes a wide variety of statistical data about people and the economy of the nation. The Census Bureau conducts approximately 200 annual surveys and conducts the decennial census of the U.S. population and the quinquennial census of industry.
Census Bureau map		Any map, in electronic or paper form, produced by the Census Bureau. Such a map usually displays the boundaries and names and/or codes of the geographic entities that the Census Bureau uses to take a census or survey, or for which the Census Bureau tabulates data, and may include both visible and invisible features, feature names, and other information appropriate to the purpose for which the map was prepared. Some Census Bureau maps display statistical data in various thematic forms. Every Census Bureau map displays a credit note showing that it was produced by the U.S. Census Bureau. May be referred to as "census map" after first usage of the term.
census code		A code assigned by the Census Bureau to identify a specific geographic entity. The Census Bureau uses census codes for geographic entities for which a federal information processing standards code either does not exist or is inadequate to identify and/or sequence a type of entity. See federal information processing standards code, geographic code.
census county division	CCD	A subdivision of a county that is a relatively permanent statistical area established cooperatively by the Census Bureau and local government authorities. Used for presenting decennial census statistics in those states that do not have well-defined and stable minor civil divisions that serve as local governments.
Census Day		The reference date for collection of census information. For the decennial census, this has been April 1 of the decade year (year ending with zero) since the 1930 census.

Term	Abbreviation	Description
census designated place	CDP	A statistical entity comprising a dense concentration of population that is not within an incorporated place but is locally identified by a name. CDPs are delineated cooperatively with state, local, and tribal government officials based on Census Bureau guidelines. For the first time in Census 2000, CDPs did not have to meet a population threshold to qualify for tabulation of census data. See comunidad, place, statistical entity, zona urbana.
census division		See division (census geographic).
census edited file	CEF	This file contains the 100 percent edited characteristics/records for all households and persons in the census. The edits include consistency edits and imputation for items or persons where the data are insufficient. See 100 percent data, census unedited file.
census feature class code	CFCC	A 3- or 4-character alphanumeric code assigned to the various features (points, lines, polygons, and key geographic locations) in the TIGER® database to uniquely identify the basic characteristics of each feature. Only landmarks use 4-character CFCCs, which appear only in the Geography Division's internal files.
census field office	CFO	A temporary Census Bureau office established in Census 2000 to manage address listing field work, conduct local recruiting, and create a local presence.
census geography		A collective term referring to the geographic entities used by the Census Bureau for data collection and tabulation. There is collection geography and tabulation geography.
census identification number		A number associating a response with a specific address in the master address file.
census map		Any map produced by the Census Bureau. A census map displays geographic entities used in a Census Bureau census or survey for which the Census Bureau tabulates data.
census map preview		A Census 2000 program that asked local government officials to review census maps. See Automated Master Address File Geocoding Office Operation, Boundary and Annexation Survey, targeted map update, TIGER®, and TIGER® Improvement Program.
Census Monitoring Board		Established by public law, the function of the board was "to observe and monitor all aspects of the preparation and implementation of the 2000 decennial census (including all dress rehearsals and other simulations of a census in preparation therefore)." The board ceased to exist on September 30, 2001.
census region		See region (census geographic).
census statistical areas committee	CSAC	A committee established by local government officials and other interested individuals to identify, in cooperation with the Census Bureau, the census tracts, block groups, census designated places, and other statistical entities for the area it serves.
census statistical areas key person	CSAKP	A person designated by a census statistical areas committee to act as its contact person with the Census Bureau.
census subarea		Statistical subdivisions of boroughs and census areas (county equivalents) in Alaska.
census tract		See tract.
census tract number		See tract number.

Term	Abbreviation	Description
census unedited file	CUF	A file created by merging the control file for the decennial master address file with the decennial response file of unedited data after the primary selection algorithm has been applied. This file contains the final housing unit and person counts. It is used to generate apportionment data as well as related "raw" or unedited census data.
central city		In a metropolitan area (MA), the largest place and, in some areas, one or more additional places that meet official standards issued by the federal Office of Management and Budget. If a place extends beyond an MA, only the portion within the MA is a central city. A few primary metropolitan statistical areas do not have a central city.
central county		A core county (or statistically equivalent entity) of a metropolitan area (MA). Such a county includes at least half the population of a central city of the MA, provided the central city is located in an urbanized area related to the MA, or at least half the population of the related urbanized area(s) in the county. All other counties (or statistically equivalent entities) in an MA are "outlying counties." MAs in New England do not have a central county.
central place		In an urban area (urbanized area or urban cluster), the largest place and, in some areas, one or more additional places that meet specific Census Bureau criteria. If a place is identified as an extended place, only the portion within the urban area represents the central place. For an urban area that does not contain an incorporated or census designated place, there is no central place; the title of the urbanized area or urban cluster uses the name of a minor civil division, or a local place name recognized by the Board on Geographic Names and recorded by the U.S. Geological Survey, but the name does not represent a central place.
city		A type of incorporated place in all states and the District of Columbia. In agreement with the State of Hawaii, however, the Census Bureau does not recognize the city of Honolulu for presentation of decennial census data. In Virginia, all cities are not part of any county, and the Census Bureau treats them as county equivalents as well as places for purposes of data presentation; there also is one such independent city in each of three states: Maryland, Missouri, and Nevada. In 20 states, some or all cities are not part of any minor civil division, and the Census Bureau treats them as county subdivisions for purposes of data presentation. See county equivalent, county subdivision, governmental unit, incorporated place, and independent city.
city delivery area		An area (1) in which post offices deliver mail to addresses consisting of a house number and street name AND (2) which consists of city delivery routes as designated by the U.S. Postal Service. Some homes and establishments in a city delivery area may choose to use a post office/drawer or general delivery for their mail. See city-style address, nondelivery area, rural delivery area.
city-style address		An address that consists of a house number and street name; for example, 201 Main Street. The address may or may not be used for the delivery of mail and may include apartment numbers/designations or similar identifiers. See address, basic street address, house number and street name address, mailing address, noncity-style address.

Term	Abbreviation	Description
cluster		A range of house number and street name addresses that contains one or more addresses that were not geocoded to a census block. Lists of such address ranges ("cluster lists") were used for Master Address File Geocoding Office Resolution, the TIGER® Improvement Program, and targeted map update, to identify for resolution those address ranges for which the Census Bureau had received one or more addresses that it could not match to a specific location in the TIGER® database.
coefficient of variation	CV	The ratio of the standard error (square root of the variance) to the value being estimated, usually expressed in terms of a percentage (also known as the relative standard deviation). The lower the CV, the higher the relative reliability of the estimate.
collection block		A physical block enumerated as a single geographic area, regardless of any legal or statistical boundaries passing through it. (Except the state and county boundaries are always block boundaries.) See block, block number, tabulation block.
collection geography		The geographic entities used by the Census Bureau for taking a census. For Census 2000, a census field office or local census office/crew leader district/assignment area collection block identified a unique geographic area. See tabulation geography.
Commerce Administrative Management System	CAMS	A system integrating financial and related subsystems for management and administration.
<i>Commerce Business Daily</i>	CBD	A newspaper published by the Department of Commerce in which all procurement notices and awards in the federal government are listed.
commercially available off-the-shelf software/ commercial off-the-shelf software	COTS	Software that may be purchased and implemented for a particular application with minimal or no modification required.
Commonwealth		The legal designation for four states (Kentucky, Massachusetts, Pennsylvania, and Virginia) and two Island Areas (Puerto Rico and the Northern Mariana Islands). The Census Bureau does not use this term in presenting data.
comunidad		A census designated place in Puerto Rico. See census designated place, zona urbana.
compact disk-read only memory	CD-ROM	An optical disk that is created by a mastering process and used for storing large amounts of data. Unlike standard computer disks and diskettes, CD-ROMs can be used only to read stored data, not to update or change its content.
Complete Count Committee	CCC	A volunteer committee established by local, and sometimes state, governments and comprised of a cross-section of community leaders, including representatives from government, education, business, religious organizations, community agencies, minority organizations, and the media. These committees were charged with developing and implementing a Census 2000 outreach, promotion, recruiting, and enumeration assistance plan of action designed to target and address the needs of their community.
computer-assisted personal interview	CAPI	A method of data collection consisting of the interviewer asking questions displayed on a laptop computer screen and entering the answers directly into the computer.
Computer Assisted Survey Research Office	CASRO	Census Bureau. Provides automation and telecommunication technologies to improve the collection, processing, and dissemination of data.



Term	Abbreviation	Description
computer-assisted telephone interviewing	CATI	A method of data collection using telephone interviews in which the questions to be asked are displayed on a computer screen and responses are entered directly into the computer.
concept of operations	CONOPS	The Department of Commerce's reengineered acquisition process.
confidentiality		The guarantee made by law (Title 13, U.S. Code) to individuals who provide census information regarding nondisclosure of that information to others. See Privacy Act, special sworn status individual.
confidentiality edit		The name for the Census 2000 disclosure avoidance procedure.
Congressional Affairs Office	CAO	Census Bureau. Acts as a liaison between Congress and the Census Bureau.
congressional district	CD	An area established by law for the election of representatives to the U.S. Congress. Each CD is to be as equal in population to all other CDs in the state as practicable, based on the decennial census counts.
consolidated city		An incorporated place that has combined its governmental functions with a county or county subdivision but contains one or more other incorporated places that continue to function as local governments within the consolidated government. See consolidated government, incorporated place, legal entity.
consolidated government		A governmental unit that includes two or more legal entities that have joined together to form a common government; for example, a consolidated city-county government.
consolidated metropolitan statistical area	CMSA	A geographic entity designated by the federal Office of Management and Budget for use by federal statistical agencies. An area becomes a CMSA if it qualifies as a metropolitan statistical area (MSA), has a population of 1 million or more, and has component parts that qualify as primary metropolitan statistical areas, provided local opinion favors the designation. CMSAs consist of whole counties except for the New England states, where they consist of cities and towns.
content edit		An operation including a review of questionnaires for missed answers or multiple entries. The edits are designed to improve data quality and reduce item nonresponse.
continuous measurement	CM	Census data is collected once every 10 years. To provide a stream of data between decennial censuses, the Census Bureau has instituted the American Community Survey.
conventional census		See list/enumerate.
Cost and Progress System for Census 2000	C&P	Refers to both the system and the reports generated by the system. The C&P system was a component of the management information system that reported on the cost and progress of address list development and data collection, capture, processing, and dissemination for Census 2000. See Enterprise Information System.
count question resolution	CQR	A process whereby state, local, and tribal government officials could obtain answers to their concerns about the accuracy and completeness of the Census 2000 counts.

Term	Abbreviation	Description
county		A type of governmental unit that is the primary legal subdivision of every state except Alaska and Louisiana (boroughs and parishes, respectively). The Island Areas also do not have counties as their primary legal subdivision (county is a minor civil division in American Samoa). See county equivalent, governmental unit.
county equivalent		A geographic entity that is not legally referred to as a county but is recognized by the Census Bureau as equivalent to a county for purposes of data presentation. Because they contain no county-type subdivision, the Census Bureau treats the District of Columbia and Guam as county equivalents (as well as state equivalents). See also borough, census area, independent city, municipio, parish.
county subdivision		A legal or statistical division of a county recognized by the Census Bureau for data presentation. See barrio, barrio-pueblo, borough, census county division, county subarea, city, minor civil division, town, unorganized territory, village. Also see legal entity, statistical entity.
coverage edit/coverage edit follow-up	CEFU	An edit performed on the mailback census response universe. Staff make telephone calls to resolve forms that are incomplete or have other coverage discrepancies, such as a difference between the number of persons reported in that household and the number of persons for whom census information was provided on the form. This edit includes the large household follow-up.
coverage improvement follow-up	CIFU	A procedure for the traditional census in which housing units with conflicting status information are followed up.
crew leader	CL	The immediate supervisor of a team of listers, enumerators, or other field staff for a decennial census. See crew leader district, field operations supervisor.
crew leader district	CLD	The district area assigned to a crew leader, formed by grouping together a number of enumerator assignment areas.
crews of vessels		The shipboard populations of U.S. Navy, U.S. Coast Guard, and merchant marine vessels. For geographic purposes, they are assigned to the offshore area adjacent to their home port.
Customer Liaison Office	CLO	Census Bureau. The CLO is the point of contact between the Census Bureau and its external customers, both public and private. The external customers include government organizations, such as the state data centers, business and industry data centers, census information centers, governors' liaisons for Census 2000, and tribal governmental leaders, and nongovernment entities, such as the national labor unions and national nonprofit organizations.
dangerous settlements		Compounds where listers have encountered dangerous situations, such as militia groups. The listers are instructed to note the living quarters as a special place and to not interview. Though listed as a special place, special place operations are not conducted at these living quarters. Procedures for listing and enumerating these settlements include interviewing the local postmaster and public officials.
Data Access and Dissemination System	DADS	Now called the American FactFinder.
data capture audit resolution	DCAR	An edit and review on response records. An edit compares a derived count of persons to the questionnaire count. Edit failures may be resolved in-house or referred to coverage follow-up.

Term	Abbreviation	Description
data capture center	DCC	A decentralized facility that checks in questionnaires returned by mail, creates images of all questionnaire pages, and converts data to computer-readable format. The DCCs also perform other computer-processing activities, including automated questionnaire edits, work flow management, and data storage. There is one permanent DCC, the National Processing Center. For Census 2000, the Census Bureau set up three temporary DCCs. The temporary facilities were provided and operated by a private contractor through the data capture services contract.
Data Capture Management Information System	DMIS	A computerized management information system developed for use in the data capture centers. It provides automated tools to facilitate and support the management of the centers.
data capture services contract	DCSC	The contract that provides the facilities for data capture center operations and services.
Data Capture System 2000	DCS 2000	The data capture system that was used to capture information from census forms. This system incorporated the following activities: processing more than 120 million incoming forms; digitally capturing and processing billions of bits of information on the forms; converting automatically the image of the form to text-based data; and editing/repairing data that the system was unable to decipher automatically.
Data Preparation Division	DPD	Now called the National Processing Center.
Decennial Applicant Name Check	DANC	An automated system used to screen all applicants' backgrounds for criminal histories to facilitate the selection, hiring, promotion, and payrolling of qualified and suitable applicants for the conduct of Census 2000.
decennial census		The census of population and housing, taken in each year ending in zero. Article 1, Section 2 of the Constitution requires that a census be taken every 10 years for the purpose of apportioning the U.S. House of Representatives. The first census of population was taken in 1790. The Census Bureau first conducted the census of housing in 1940.
Decennial Cost Model	DCM	The primary tool for documenting and analyzing budgetary resources needed to support program requirements. It contains assumptions and parameters used to describe and analyze the budget components.
decennial field interface	DFI	The collection of systems used in the regional census centers, the census field offices, and the local census offices to control and manage the census data collection effort. It includes, among others, the operations control, payroll and personnel, map production, and management information systems.
Decennial Management Division	DMD	Census Bureau. The DMD directs and monitors the decennial census. It coordinates and provides project management for all census operations; maintains the master activity schedule, the Cost and Progress System, the Executive Information System, and the Decennial Cost Model; manages the decennial budget; manages decennial communications, issue resolution change control, and requirements documentation; and directs development of the census plan.

Term	Abbreviation	Description
decennial master address file	DMAF	Had features for controlling and tracking the long- and short-term operations and programs of Census 2000. Contained the processing status information to support document mailouts; data capture progress control, tracking, and reporting; and field enumeration processes (notably follow-ups). The base file for sampling housing units for programs, such as long-form implementation. Limited to addresses that the Census Bureau successfully linked to the TIGER® database. See master address file.
decennial response file	DRF	Contains every response to the census from all sources. The primary selection algorithm is applied to this file to unduplicate persons between multiple returns for a housing unit and to determine the housing unit record and the persons to include at the housing unit. The DRF is then combined with the decennial master address file to create the census unedited file.
Decennial Statistical Studies Division	DSSD	Census Bureau. Develops mathematical and statistical techniques for the design and conduct of the census.
Decennial Systems and Contracts Management Office	DSCMO	Census Bureau. Developed and managed major Census 2000 contracts to process Census 2000 data and disseminate data to the public.
delete		The status for an address in the master address file that no longer qualifies as a living quarters.
delivery sequence file	DSF	A computerized file containing all delivery point addresses serviced by the U.S. Postal Service (USPS). The USPS updates the DSF continuously as its letter carriers identify addresses for new delivery points or changes in the status of existing addresses.
demographic analysis	DA	An independent, macro-level approach to validate the census results. Estimates using demographic analysis are based on aggregate sets of administrative data, including birth and death records, immigration statistics, and Medicare data.
digital exchange file		An electronic file of roads and streets, their names, address ranges, and ZIP Codes obtained from a local government or commercial source and used to update TIGER®.
digital line graph		Digital information derived by the U.S. Geological Survey from its maps.
direct access		An entrance to a living quarters directly from the outside of the building or through a common or public hall (as in an apartment building).
direct sample follow-up		A methodology for nonresponse follow-up sampling whereby the initial response period stops at a specified date and a sample is selected from all remaining nonresponding units.
Director		Census Bureau. Determines policies and directs the programs of the Census Bureau, taking into account applicable legislative requirements and the needs of users of statistical information.
disclosure avoidance	DA	Statistical methods used in the tabulation of data prior to releasing data products to ensure the confidentiality of responses.
district office	DO	A pre-Census 2000 term for local offices established by the Census Bureau to conduct the decennial census. See census field office, local census office.

Term	Abbreviation	Description
division (census geographic)		A grouping of states within a census geographic region, established by the Census Bureau for the presentation of census data. The nine divisions (East North Central, East South Central, Middle Atlantic, Mountain, New England, Pacific, South Atlantic, West North Central, and West South Central) are intended to represent relatively homogeneous areas that are subdivisions of the four census geographic regions.
dress rehearsal	DR	A census of population and housing conducted in selected areas prior to a decennial census to determine the effectiveness of planned census operations. The Census 2000 Dress Rehearsal was conducted in 1998 in Sacramento, California; Menominee County, Wisconsin, including the Menominee American Indian reservation; and 11 counties in South Carolina, including the city of Columbia.
Dual Independent Map Encoding	DIME	Term used in the 1990 census. See Geographic Base File/Dual Independent Map Encoding.
dual system estimation	DSE	The estimation methodology used for the Accuracy and Coverage Evaluation (A.C.E.). This operation uses a geographic sample of block clusters to find persons missed by the census or A.C.E. and any errors from the census. The persons from the unedited census files are computer matched and then clerically matched to the data collected from the A.C.E. interviews. After the computer matching, the person matching continues through the following steps: clerical matching, field follow-up to resolve discrepancies, and a final clerical matching.
E-Sample		In the Census 2000 Accuracy and Coverage Evaluation (A.C.E.) program, the E-sample consisted of people enumerated in the census in the A.C.E. sample block clusters.
E-911 address		A number, usually unique within a county, posted on or near a structure, especially in rural areas, for use by emergency personnel to locate the structure. An E-911 address is a house number and street name address, which may or may not be used for mail delivery.
early opening local census offices	ELCO	Local census offices (LCOs) that open a year earlier than other LCOs to conduct operations required for a traditional (nonsampling) census.
economic census		The collective name for the censuses of construction, manufactures, minerals, minority- and women-owned businesses, retail trade, service industries, transportation, and wholesale trade, conducted by the Census Bureau every 5 years (in years ending in 2 and 7).
Economics and Statistics Administration	ESA	Much of the statistical, economic, and demographic information collected by the federal government is made available to the public through the ESA. The ESA has two principal agencies: the Census Bureau and the Bureau of Economic Analysis.
embedded housing unit	EHU	One of two kinds of housing units found at a special place. An EHU is a housing unit within a group quarters where the occupants live separately from others living in the group quarters. An example of an EHU is a house parent's room in a dormitory. Embedded means located within the building and not free-standing.

Term	Abbreviation	Description
emergency shelters		Includes shelters that operate on a first-come, first-served basis where people must leave in the morning and have no guaranteed beds for the next night or where people know they have a bed for a specified period of time even if they leave the building every day. Shelters also include facilities that provide temporary shelter during extremely cold weather (such as churches) and facilities that provide emergency shelter for runaway or neglected children or abused women. Emergency shelters are service locations. See hotels, motels, or other facilities; regularly scheduled mobile food vans; service locations; shelters for children who are runaways, neglected, or without housing; soup kitchens; transitional shelters.
enhanced list	E/L	Listing of addresses in blocks that were selected to be included in the Integrated Coverage Measurement survey. Conducted independently of the general address listing activities and enhanced using additional procedures to obtain the most complete address listing possible.
Enterprise Information System or Executive Information System	EIS	Used with the Cost and Progress System for Census 2000 to access reports and data from the warehouse and to report to the Department of Commerce on decennial issues, the schedule, and the cost framework.
enumeration		The process of interviewing persons and recording the information on census forms.
enumeration district		Obsolete term. Now called an assignment area.
enumerator		A Census Bureau employee who interviews people to obtain information for a census questionnaire. The term also applies to field personnel who perform activities associated with update/leave and urban update/leave.
Estimation Review System	ERS	A system used for a sampling census that provides the statistical results of the various types and phases of the estimation process to the analysts.
Executive Information System		See Enterprise Information System.
executive steering committee		The assistant to the associate director for the decennial census, associate director for the decennial census, principal associate director for programs, principal associate director/chief financial officer, associate director of field operations, and the deputy director.
extended city		See extended place.
extended place		A place that contains both urban and rural territory; i.e., an incorporated place or census designated place that is partially within and partially outside of an urbanized area or urban cluster. First used for Census 2000. Previously referred to as an "extended city," which applied only to incorporated places, subject to very specific criteria.
facility questionnaire		See Special Place Facility Questionnaire.

Term	Abbreviation	Description
false entity		A legal geographic entity of one type that is used to complete the coverage of another part of the Census Bureau's geographic hierarchy. The Census Bureau uses false entities to ensure complete coverage for certain levels of the hierarchy; for example, to ensure that all area in the nation is assigned to a geographic entity at the county level. The Census Bureau treats the District of Columbia as equivalent to both a state and a county for data presentation purposes; the county record is a false entity. The Census Bureau treats Alexandria, VA, as a place and as a statistical equivalent of both a county (see independent city) and county subdivision (see independent place); the county and county subdivision records are false entities.
feature		Any part of the landscape, whether natural (such as a stream or ridge) or artificial (such as a road or power line). In a geographic context, features are any part of the landscape portrayed on a map, including nonvisible boundaries of legal entities, such as city limits or county lines. See nonstreet features, nonvisible feature, visible feature.
federal information processing standards code	FIPS	A standardized set of numeric or alphabetic codes issued by the National Institute of Standards and Technology to ensure uniform identification of geographic entities through all federal government agencies. The entities covered are states, counties, metropolitan areas, congressional districts, foreign geographic entities, named populated and related location entities (such as places and county subdivisions), and American Indian and American Native areas.
field assignment	FA	A combination of the assignment areas used in a previous operation to form a better workload for an enumerator. See assignment area.
Field Division	FLD	Census Bureau. Plans and directs the collection of national sample survey, census, and other data at the local level. Data are collected through a flexible field organization of regional offices in 12 major cities across the country. The offices employ part-time interviewers who gather data by direct contact with the public. During major censuses, the division administers temporary regional census centers, district offices, and other offices.
field follow-up	FFU	A data collection procedure involving personal visits by enumerators to residential addresses to perform any of the following operations: resolve inconsistent or missing data items on returned questionnaires identified during content edit and possible enumeration errors discovered in coverage edit; conduct vacant/delete check; obtain data for blank or missing questionnaires; and check on addresses for which no questionnaire has been checked in.
field operations supervisor	FOS	Supervises activities of crew leaders and enumerators.
film optical sensing device for input to computers	FOSDIC	A device that reads microfilmed questionnaires and transfers the data to magnetic tape for the Census Bureau's mainframe computers. Created by the Census Bureau for the 1960 census.
follow-up	FU	A secondary census or survey operation, predominantly in data collection, carried out to successfully complete an initial operation. It is most often a telephone or personal visit interview to obtain missing data or clarify original responses. See field follow-up, nonresponse follow-up.
free-standing housing unit	FSHU	One of two kinds of housing units found at a special place. A FSHU is a living quarters that is physically separate from the group quarters at a special place. An example of an FSHU is a president's house at a college.

Term	Abbreviation	Description
Freedom of Information Act	FOIA	Created in 1974. An act that requires federal agencies to provide access to and copies of existing agency records to the public. Access can be denied only if records are within specific exempted categories, such as Title 13 data.
frontloading		Hiring and training approximately twice as many enumerators as are needed for decennial field operations to compensate for expected turnover.
functional status		The classification of a geographic entity as a legal or statistical entity. It further identifies a legal entity as an active, inactive, false, functioning, or nonfunctioning entity and, if active, denotes its fiscal independence and whether it provides general or limited special services. Functional status may determine an entity's eligibility to participate in various Census Bureau programs.
functioning entity		A generic term that refers to both active and inactive governmental units. (Even though inactive, a governmental unit has the legal capacity to carry out governmental functions; local people simply choose not to do so.) See active entity, governmental unit, inactive entity, nonfunctioning entity.
gated community		A community, composed of individual houses, duplexes, or apartment buildings, surrounded by a secured fence or other barrier allowing limited access through a secure gate.
General Services Agency	GSA	A central management agency that sets federal policy in such areas as federal procurement, real property management, and information resources management.
geocode		A code that identifies a specific geographic entity. For example, geocodes needed to identify a census block for data collection are the state code, the county code, and the block number.
geocoding		The assignment of an address, structure, key geographic location, or business name to a location that is identified by one or more geographic codes.
Geographic Base File/Dual Independent Map Encoding	GBF/DIME	The predecessor of TIGER®.
Geographic Catalog of Legal and Statistical Entities	GEO-CAT	A file that controls and describes the inventory of the higher-level geographic entities maintained by the Census Bureau, including their names, codes, attributes and hierarchical relationships. The GEO-CAT, which is part of the TIGER® system, does not include lower-level entities such as census tracts, block groups, and census blocks.
geographic code		A code, consisting of one or more alphanumeric or special-text characters, used to identify a specific geographic entity. Every geographic entity recognized by the Census Bureau is assigned one or more geographic codes. Also referred to as a geocode. See census code, federal information processing standards code.
geographic database		A computer-readable database whose primary structure includes geographic codes and/or coordinates (latitude and longitude), together with associated attributes. The TIGER® database is a geographic database.
geographic entity		A geographic unit of any type, legal or statistical, such as a state, county, place, county subdivision, census tract, or census block.



Term	Abbreviation	Description
geographic hierarchy		A geographic presentation that shows the geographic entities in a superior/subordinate structure. In this system of relationships among geographic entities, each entity (except the smallest one) is divided into lower-order units that in turn may be subdivided further. For example, states are subdivided into counties, which are subdivided into both county subdivisions and census tracts. The Census Bureau uses three sets of hierarchies: one is based on states and counties; another on American Indian areas, Alaska Native areas, and Hawaiian Home Lands; and a third on metropolitan or urban areas. See census geography, tabulation geography.
geographic information system	GIS	A computer system for the input, storage, processing, applications development, retrieval, and maintenance of information about the points, lines, and areas that represent the streets and roads, rivers, railroads, geographic entities, and other features on the surface of the Earth—information that previously was available only on paper maps.
geographic program participant database	GPP	A Census Bureau control file that records information about participation by local governments in census programs designed to improve the content of TIGER® and expand the master address list.
geographic reference file	GRF	A generic term for a file that contains geographic information such as area names, geographic codes, and selected x, y coordinate values. These files are necessary for the Census Bureau to organize the address list for the field activities and for production of tabulation displays.
Geographic Support System	GSS	The TIGER® system plus all other activities supporting the census and survey activities of the Census Bureau. This includes all decennial census geographic products, all economic and agriculture censuses geographic products, all American Community Survey geographic products, and the related computer systems. The Census Bureau's GSS also includes the geographic activities related to the master address file, the special census program, the current sample survey program, the Census Bureau's research and development activities, the operations that use the information collected by the Boundary and Annexation Surveys, references for map sources, etc.
Geographic Update System	GUS	The operations in the regional offices (ROs) and regional census centers (RCCs) that implemented the update of the information in the TIGER® database. Also, a computer software package for the 1990 census that enabled census staff in the Census Bureau's ROs/RCCs and the then Data Preparation Division to view, analyze, and interactively update and revise the information in the TIGER® database as a result of various field operations. See Geographic Update System for X Window (GusX).
Geographic Update System for X Window	GusX	The Census 2000 version of the Geographic Update System (GUS) software. It was more flexible, object-oriented, and user-friendly than the GUS, with operators at various decentralized sites using the Census Bureau's UNIX workstations to access and manipulate information in the TIGER® database. The X refers to the software that runs the X Window Utility program, together with a Motif graphical user interface, on a UNIX platform.
Geography Division	GEO	Census Bureau. GEO defines decennial census geography; creates and maintains the master address file; spatially locates addresses using the TIGER® database; maintains and updates TIGER®; and provides geographic support for other business, economic, and government surveys and censuses.

Term	Abbreviation	Description
Government Accountability Office	GAO	An investigative arm of the Congress that performs audits and evaluations of government programs and activities.
Government Printing Office	GPO	U.S. government. The mission of the Government Printing Office is to inform the nation by producing, procuring, and disseminating printed and electronic publications of the Congress as well as the executive departments and establishments of the federal government.
governmental unit	GU	A governmental unit is an organized entity which, in addition to having governmental character, has sufficient discretion in the management of its own affairs to distinguish it as separate from the administrative structure of any other governmental unit. To have governmental character, an entity must have existence as an organized entity and responsibility to the public.
group quarters	GQ	A place where people live or stay other than the usual house, apartment, or mobile home. Two general types of group quarters are recognized: institutional (for example, nursing homes, mental hospitals or wards, hospitals or wards for chronically ill patients, hospices, and prison wards) and noninstitutional (for example, college or university dormitories, military barracks, group homes, shelters, missions, and flophouses). Group quarters may have housing units on the premises for staff or guests.
group quarters enumeration		An operation designed to enumerate people living or staying in group quarters. Enumerators visit each special place with group quarters, list the names of the people living or staying there, and leave an Individual Census Report for each person to complete. Enumerators return at a later date to pick up the forms and, if necessary, conduct interviews to obtain any missing information or conduct interviews with nonrespondents. See group quarters.
hard to enumerate	HTE	A term used to describe an area whose environment or population may present difficulties for enumeration.
Hawaiian Home Lands	HH	Areas created as a result of the Hawaiian Homes Commission Act of 1920 to provide agricultural, pastoral, and residential land for native Hawaiians.
headquarters	HQ	A term sometimes used to designate the Census Bureau facility, staff, and operations in Suitland, MD.
heterogeneity		Heterogeneity occurs when blocks of housing units assigned to sampling strata or groupings do not have equal chances of being included or missed by the census or survey. Heterogeneity creates difficulty for the small area estimation process because the correction factor is applied to all people with the specified characteristic in that sampling poststratum even though some of them do not actually have the coverage characteristics.
highest elected official		The elected or appointed person who is the chief executive official of a governmental unit and is most responsible for the governmental activities of the governmental unit, such as the governor of a state, chair of a county commission, or mayor of an incorporated place.
historic areas of Oklahoma		The area encompassing the former American Indian reservations that had legally established boundaries during the period 1900 through 1907 but were dissolved during the 2- to 3-year period preceding the establishment of Oklahoma as a state in 1907. The 1980 census tabulated data for this entity, but it was replaced for the 1990 census by tribal jurisdiction statistical areas.

Term	Abbreviation	Description
homogeneity		Homogeneity assumes that all people in a particular sampling stratum or poststratum have an equal chance of being included or missed by the census or survey. A lack of homogeneity in a particular sample block is not an error, but it does create difficulty for the small area estimation process. This happens because the correction factor is applied to all people with the specified characteristic in that poststratum even though some of them do not exhibit the same coverage characteristic.
hotels, motels, or other facilities		Hotels, motels, or other facilities for which vouchers are provided or that operate under contract to provide shelter to people without housing. These are service locations. See emergency shelters; regularly scheduled mobile food vans; service locations; shelters for children who are runaways, neglected, or without housing; soup kitchens; and transitional shelters.
house-number and street-name address	HN/SN	An address assigned to a specific structure, consisting of a number and the street name on which the structure is located. The address may or may not be used for mail delivery. See address, basic street address, city-style address, mailing address.
household		A person or group of persons who live in a housing unit. These equal the count of occupied housing units in a traditional census.
householder		The member of a household who lives at the housing unit and owns or rents the living quarters. If there is no such person present, any household member who is at least 15 years of age can answer the questionnaire.
Housing and Household Economic Statistics Division	HHES	Census Bureau. In concert with others at the Census Bureau, HHES compiles, analyzes, and publishes data on the physical, social, and financial characteristics of the nation's housing and on the socioeconomic characteristics of the nation's population.
housing unit	HU	A house, an apartment, a mobile home or trailer, a group of rooms, or a single room that is occupied as a separate living quarters, or, if vacant, is intended for occupancy as a separate living quarters. See separate living quarters.
identification number		See census identification number.
imputation		When information is missing or inconsistent, the Census Bureau uses imputation to assign values. Imputation relies on the tendency of households of the same size within a small geographic area to be similar in most characteristics. For example, the value of "rented" is likely to be imputed for a housing unit not reporting on owner/renter status in a neighborhood with multiunits or apartments where other respondents reported "rented" on the census questionnaire. There are two major types of imputation: (1) allocation, in which missing values for individual items are filled in on the basis of other reported information for the person or household (or from other persons or households with similar characteristics) and (2) substitution, in which <i>all</i> of the information for a person or household is created from other persons or households with similar characteristics.
incorporated place		A type of governmental unit incorporated under state law as a city, town (except the New England states, New York, and Wisconsin), borough (except in Alaska and New York), or village and having legally prescribed limits, powers, and functions. See consolidated city, governmental unit, independent city, legal entity, place.

Term	Abbreviation	Description
independent city		An incorporated place that is a primary division of a state and legally not part of any county. The Census Bureau treats an independent city as both a county equivalent and county subdivision for data tabulation purposes. See city, county equivalent, county subdivision, incorporated place.
independent place		In a state in which the Census Bureau recognizes minor civil divisions (MCDs), an incorporated place that is not legally part of any MCD. The Census Bureau treats an independent place as equivalent to a county subdivision and as an incorporated place for data presentation purposes. Independent places exist in 23 states and the District of Columbia.
index map		A map that shows the relationship between the map sheets, including inset maps, that cover a specific mapped geographic entity.
Individual Census Questionnaire	ICQ	A questionnaire that contains population questions for one person. The form is used at both soup kitchens and regularly scheduled mobile food vans. This form asks if the person has a usual residence but does not ask housing questions. It also asks about the person's use of services at shelters, soup kitchens, or mobile food vans. Enumerators conduct personal interviews using this form. See service-based enumeration, targeted nonsheltered outdoor location.
Individual Census Report	ICR	A questionnaire that is used during group quarters enumeration and at two service locations (shelters and targeted nonsheltered outdoor locations) that contains population questions for one person. There are both long- and short-form versions. In most group quarters, additional questions are asked of a sample (1 in 6) of the population. The forms ask if the person has a usual residence but does not ask housing questions. Enumerators distribute this form to the clients to complete. At targeted nonsheltered outdoor locations enumerators conduct personal interviews using this form. See group quarters enumeration, self-enumerating places.
industry and occupation	I&O	The current or most recent job activity reported on the census long-form questionnaire. These responses require coding and classification processing.
inset map		A Census Bureau map that displays an area at a larger scale than the scale of its parent sheet. Inset maps generally cover a densely developed area that cannot be shown clearly at the map scale of the parent sheet. See map inset.
Inspector General	IG	Department of Commerce. The IG conducts and supervises audits, inspections, and investigations of Department of Commerce programs and operations.

Term	Abbreviation	Description
Integrated Coverage Measurement	ICM	<p>This operation was proposed for Census 2000 but was not implemented. The objective of such an operation is to measure how well the Census Bureau counted people and housing in a census. A large-scale sample survey is conducted independently of regular census operations. The sample consists of block clusters in urban and rural areas. The results are matched to census results and estimates of the undercount are created. It is a micro-level approach; that is, case-by-case matching.</p> <p>There are three phases to such an operation. In the <i>housing unit phase</i>, an inventory of housing within sample blocks is conducted separately from the census. In the <i>computer-assisted personal interview (CAPI) phase</i>, an independent sample of nonrespondents is taken, and telephone and personal visit second interviews are conducted to create an independent roster. In the <i>person-matching phase</i>, persons enumerated in the census are matched to persons enumerated in the CAPI phase, follow-up interviews for discrepancies are conducted, unresolved cases are imputed as a last resort, and statistical procedures are used to produce estimates of the people missed or duplicated in the census. The final phase of such an operation is to use dual system estimation to compare the census counts to the ICM counts and create estimation factors to adjust the census results. Also called the Quality Check Survey.</p>
interactive voice recognition	IVR	An automated telephone system that offers callers different menu choices covering a variety of predetermined topics.
internal point		A set of geographic coordinates (latitude and longitude) that is located within a specified geographic entity. For many entities, this point represents the approximate center of the entity; for some, the shape of the entity or the presence of a body of water causes the central location to fall outside the entity or in water, in which case the point is relocated to land area within the entity. The geographic coordinates are shown in degrees to six decimal places in census products.
Internet Questionnaire Assistance	IQA	An operation which allows respondents to use the Census Bureau's Internet site to (1) ask questions and receive answers about the census form, job opportunities, or general questions about the purpose of the census and (2) provide responses to the short form.
Island Areas	IA	Islands included in the U.S. Census of Population and Housing are U.S. Virgin Islands, Guam, the Commonwealth of the Northern Mariana Islands, and American Samoa. Puerto Rico is sometimes called an island area. These were formerly called outlying areas.
invalid return detection	IRD	A procedure for identifying invalid non-ID'd forms, that is, forms returned in Census 2000 as an attempt to introduce error into the population count.
joint use area		Territory that is administered, claimed, and/or used by two or more American Indian tribes. It may consist of overlap of territory of adjoining American Indian reservations or Oklahoma tribal statistical areas, or off-reservation trust land for one tribe that is located within the reservation of another tribe. Such territory was referred to as joint area for the 1990 census.
key from image	KFI	An operation in which keyers enter data by referring to a scanned image of a questionnaire for which data could not be recognized by optical character recognition with sufficient confidence.

Term	Abbreviation	Description
key from paper	KFP	An operation in which keyers enter data directly from a hardcopy questionnaire which could not be read by optical character recognition.
large household	LHH	A housing unit with more than six persons.
large household follow-up	LHFU	A census operation that follows up on a household that indicated on the census form more than six persons in that housing unit. The questionnaire only allows for the reporting of information for six persons per household. This operation is included in the coverage edit.
late mail return	LMR	Mail received after the cut-off date for identifying nonresponding housing units for the nonresponse follow-up operation.
legal entity		An entity whose origin, boundary, name, and description result from charters, laws, treaties, or other administrative or governmental action, such as the United States, states, the Island Areas, counties, cities, townships, boroughs, towns, villages, American Indian reservations, Alaska Native Villages, congressional districts, and school districts. The legal entities recognized for a decennial census are those in existence on January 1 of the decennial census year.
list/enumerate	L/E	A method of data collection in sparsely populated (rural) and remote areas, such as remote Alaska. The procedures are to list addresses or physical locations for housing units, enumerate the household, and update the census map as needed. The enumerators list each residential address or location description and conduct the enumeration in one visit using a short- or long-form according to the sampling pattern for the assignment area.
lister		A census employee who obtains addresses and related information and records the information on address listing pages and census maps.
living quarters	LQ	A dwelling where people live, stay, or could live. Living quarters are classified as housing units or group quarters. They are usually found in structures intended for residential use but also may be found in structures intended for nonresidential use as well as tents, vans, shelters for people without housing, dormitories, barracks, and so forth.
local census office	LCO	Temporary Census Bureau offices established for Census 2000 data collection purposes. Called "district office" in previous censuses.
Local Update of Census Addresses	LUCA	A Census 2000 program, established in response to requirements of Public Law 103-430, that provided an opportunity for local and tribal governments to review and update individual address information in the master address file and associated geographic information in the TIGER® database to improve the completeness and accuracy of both computer files. The governments had to sign a confidentiality agreement to participate. Also called the address list review program.
Local Update of Census Addresses field verification		An operation verifying the existence and the residential status of addresses given to the Census Bureau by local officials during the LUCA program.
location description		A description of the physical location or characteristics of a living quarters that does not have a house-number and street-name address.

Term	Abbreviation	Description
locator map		A census map that helps enumerators find the location of and determine how to travel to their assignment areas. The map covers more area than the assignment area.
long form	LF	The decennial census questionnaire containing 100 percent and sample questions. See short form.
long-form sampling		A variable rate sampling plan is used to determine which households receive the long form. The Census Bureau samples for the long form using four rates based on the size of a government. Nationally, or overall, 1 in 6 households receive a long form. This is a sample for content; that is, a sample determining which households receive the long-form content.
mail census area		The area covered by the mailout/mailback, update/leave, and urban update/leave methods of enumeration.
mail response rate		The total number of <i>checked-in</i> questionnaires returned by mail divided by the number of questionnaires mailed by the U.S. Postal Service or delivered by census enumerators. This check-in rate differs from a true mail response rate because it reflects forms that have been processed and not necessarily all of those that have been received.
mail return rate		The total number of households returning a questionnaire by mail divided by the number of <i>occupied</i> housing units that received a questionnaire by mail or by a census enumerator (the only ones that can return a questionnaire). This measure cannot be derived until the enumeration is completed and the final number of occupied housing units is determined.
mailing address		This address is used by a living quarters, special place, business establishment, and the like to receive mail. It may be a house number and street name, which may be followed by an apartment, unit, or trailer lot designation; building or apartment complex name and apartment designation; trailer park name and lot number; post office box or drawer; rural route or highway contract route, which may include a box number; or general delivery. A mailing address also includes a ZIP Code. A mailing address may serve more than one living quarters, establishment, or the like. See basic street address, city delivery area, city-style address, house-number and street-name address, non-city-style address, nondelivery area, rural delivery area, ZIP Code.
mailout/mailback	MO/MB	A method of data collection in which the U.S. Postal Service delivers addressed questionnaires to residents who are asked to complete and mail back the questionnaire to the appropriate Census Bureau office. This method is used for more than 80 percent of all households (usually city-style addresses).
Management Information System	MIS	Provides decision support functions, such as critical-path analysis and what-if analysis. Provided information on dates, the responsible organization, budget, cost to date, and current progress of Census 2000 operations. It includes the master activity schedule, the Executive Information System, and the Cost and Progress System.
map feature		Any part of the landscape, whether visible—either physical (i.e., natural features such as water bodies and their shorelines, mountain peaks) or cultural (i.e., manmade features such as roads, streets, railroads, power lines)—or invisible on the ground (e.g., boundaries of legal entities, national parks, and military installations; property lines; imaginary street extensions), that is portrayed on a map as a point, line, or area. See boundary, feature, nonstreet feature.

Term	Abbreviation	Description
map image metafile	MIM	A computer file that provides a full-image description of a census map in digital form (a human-readable format). The regional offices, regional census centers, and National Processing Center use MIMs to create maps for printing or placing on CD-ROM. See single MIM-based integrated mapping system.
map inset		A sketch map drawn by an enumerator, lister, etc., to represent an enlargement of an area that, on the original Census Bureau map, is too small to clearly display added streets and/or map spots and map-spot numbers. The map usually is drawn on the back of the map sheet that contains the enlarged area, but a separate sheet of paper may be used for this purpose. See inset map.
map legend		An illustrated list of map content: the symbols, type styles, and, if appropriate, shading or colors shown on a map or map series, and the meaning of each.
Map Plotting System	MAPS	The MAPS site or area is the portion of the regional office/regional census center in which maps are produced, assembled, and stored.
map spot		An enumerator places a dot on a census map to show the location of one or more living quarters. The enumerator assigns a number, unique within the census block, to each map spot to correspond to the entry in the address register for a basic street address or residential structure. The map spots are entered into the TIGER® system. For Census 2000, map spots were identified primarily by census listers and enumerators during address listing and list/enumerate operations but also created during the Local Update of Census Addresses, update/leave, rural update/enumerate, and some follow-up operations.
map spot number		The number assigned uniquely to each map spot within a census collection block. The same number could represent more than one living quarters if they were located in a multiunit structure. Map-spot numbers began with "1" in each collection block and continued until every residential structure in a block was represented by a map spot. Map-spot numbers could include one or more alphabetic suffixes, to account for residential structures added between previously listed ones during quality assurance rework of a listed block, update/leave, update/enumerate, and Census 2000 follow-up operations; e.g., if a missing living quarters was found between map spots 11 and 12, it could be assigned the number 11A. There could be gaps in the numbering system if a map spot had been deleted because a listed living quarters was found not to exist or to have been mislocated. If a map spot represented more than one living quarters, the number of living quarters was shown in parentheses after the map spot number on the map. The Census Bureau assigned special 4-digit numbers to represent various types of special places/group quarters.
Marketing Services Office	MSO	Census Bureau. The MSO creates innovative and effective marketing communication channels, enhances the corporate marketing infrastructure, infuses a marketing culture and customer orientation, institutionalizes internal customer information systems, and assists in new product development.
master activity schedule	MAS	A schedule of all activities involved in the planning, preparation, conduct, and data capture, processing, and dissemination of the Census 2000.



Term	Abbreviation	Description
master address file	MAF	The MAF is a list of every living quarters nationwide and their geographic locations. The computer file was created by combining the addresses in the 1990 address control file with the current versions of the U.S. Postal Service delivery sequence file, and supplementing this with address information provided by state, local, and tribal governments. The MAF ties to the TIGER® database. The MAF was updated throughout the decade to provide addresses for delivery of Census 2000 questionnaires, to serve as the sampling frame for the Census Bureau's periodic demographic surveys, and to support other Census Bureau statistical programs. See decennial master address file.
Master Address File Geocoding Office Resolution	MAFGOR	An operation where the regional offices and regional census centers try to find the location of addresses from the U.S. Postal Service that did not match to the records in TIGER®. Staff use atlases, maps, city directories, and the like to locate these addresses and add them to TIGER®.
master address file update file	MAFUF	Census Bureau staff do not individually key new addresses and address revisions directly into the master address file (MAF). Instead, using a specified format, they key the relevant information into a file—MAFUF—that stores the information until the Geography Division is ready to merge the complete updated file into the MAF in a batch process.
metropolitan area	MA	A collective term established by the federal Office of Management and Budget (OMB) in 1990 to refer to metropolitan statistical areas, consolidated metropolitan areas, New England county metropolitan areas, and primary metropolitan statistical areas. The OMB establishes MAs based on census data.
metropolitan statistical area	MSA	These are designated by the federal Office of Management and Budget for use by federal statistical agencies. These geographically based entities are a core area with a large population nucleus plus adjacent communities with a high degree of economic and social integration with the core. An MSA consists of one or more counties, except in New England, where MSAs are defined in terms of cities and towns; however, New England county metropolitan areas are defined in terms of counties. See consolidated metropolitan statistical area, metropolitan area, New England county metropolitan area, primary metropolitan statistical area, and statistical entity.
Military Census Report	MCR	Questionnaire used to conduct the census in military installations.
military/maritime enumeration		An operation counting domestic military installations and ships assigned to a home port in the United States and maritime vessels in operation on Census Day.
minor civil division	MCD	For demographic census purposes, a primary government, such as a township, or an administrative subdivision of a county, such as a precinct or magisterial district.
multiunit structure		A building that contains more than one housing unit (for example, an apartment building).
municipality		A legally established entity in Alaska and the Northern Mariana Islands. The Census Bureau treats a municipality as equivalent to a county for data presentation purposes. The Bureau also treats the municipality (Anchorage) in Alaska as an incorporated place. This designation in Alaska is new for Census 2000. See borough, census area, city and borough, county.

Term	Abbreviation	Description
municipio		A type of governmental unit that is the primary legal subdivision of Puerto Rico. The Census Bureau treats municipios as the statistical equivalents of counties. See county equivalent and governmental unit.
must-hold boundary		A map feature that the Census Bureau agrees to recognize as the boundary of a tabulation census block. The purpose is to ensure that data are available for a specific geographic area because its component areas have been identified as unique census blocks.
National Academy of Sciences	NAS	U.S. government. The NAS is a private, nonprofit society of scholars engaged in scientific and engineering research, dedicated to the furtherance of science and technology and to their use for the general welfare.
National Archives and Records Administration	NARA	U.S. government. The NARA oversees the management of federal government records, including individual census records after 72 years, presidential diaries, historic correspondence, and a display of presidential gifts from around the world.
National Content Survey (1996)		One of the test censuses done as part of the planning and testing process for Census 2000. It was the principal vehicle for testing and evaluating subject content for Census 2000. It also provided information on questionnaire design and on mailing strategy and techniques to improve coverage.
National Institute of Standards and Technology	NIST	Department of Commerce. An organization under the Technology Administration. The NIST promotes United States economic growth by working with industry to develop and apply technology, measurements, and standards.
National Operations Center	NOC	The staff and facilities at the National Processing Center that served as one of the data capture centers for Census 2000.
National Processing Center	NPC	The permanent Census Bureau processing center in Jeffersonville, Indiana. It included the National Operations Center.
National Research Council	NRC	The council is the principal agency of the National Academy of Sciences for advising the government, the public, and the scientific and engineering communities.
National Technical Information Service	NTIS	Department of Commerce. An organization under the Technology Administration. The NTIS promotes the nation's economic growth and job creation by providing access to federally produced information for the public and production services to federal agencies.
National Telecommunications and Information Administration	NTIA	Department of Commerce. The NTIA is the executive branch's principal voice on domestic and international telecommunications and information technology issues.
New Construction Capture	NCC	This operation was conducted shortly before Census 2000. Local and tribal governments reported new living quarters built since the Local Update of Census Addresses (LUCA) operation.
New England county metropolitan area	NECMA	A county-based area designated by the federal Office of Management and Budget to identify metropolitan areas in New England.
no identification number	Non-ID	A response without a census identification number. The census identification number associates the response with a specific address in the master address file.

Term	Abbreviation	Description
non-city-style address		An address that does not use a house number and street name. This includes rural routes and highway contract routes, which may include a box number; post office boxes and drawers; and general delivery. See address, city-style address, mailing address, nondelivery area, and rural delivery area.
nondelivery area		An area in which the U.S. Postal Service does not deliver mail to homes, businesses, and the like. Instead, the residents must pick up their mail at a local post office, using either a post office box or drawer or general delivery. See city delivery area, noncity-style address, and rural delivery area.
nonfunctioning entity		A legal entity that cannot have elected or appointed officials to provide services or raise revenues. Such entities include administrative areas, such as voting districts, and areas from which people are elected to a legislative body, such as congressional districts and state legislative districts. Some counties and minor civil divisions are nonfunctioning entities. See legal entity.
nongovernmental organization	NGO	The partnerships developed during Census 2000 planning included national and local organizations and community groups. See partnerships.
nonresponse	NR	Housing units from which no questionnaire was returned by mail or from which a telephone response was not received.
nonresponse conversion operation	NRCO	A step in the Accuracy and Coverage Evaluation survey process during the person interviewing stage. At a cutoff date, all person interviewing cases are brought in from the field. The best interviewers are assigned to the unresolved cases. This is a last attempt to convert refusals to responses.
nonresponse follow-up	NRFU	The objective is to obtain a completed questionnaire from households for which a questionnaire was not received by mail or from which a telephone response was not received. A census follow-up operation in which temporary field staff, known as enumerators, visit the housing units in which these households reside.
nonsampling error		Errors that occur during the measuring or data collection process. Nonsampling errors can yield biased results when most of the errors distort the results in the same direction. Unfortunately, the full extent of nonsampling error is unknown. Decennial censuses traditionally have experienced nonsampling errors, most notably undercount, resulting from people being missed in the enumeration processes.
nonstreet feature		A natural or artificial part of the landscape, such as a stream, ridge, road, or power line. See feature, nonvisible feature, and visible feature.
nonvisible feature		A boundary of a legal entity, such as a county line, city limit, property line, and so forth. See feature, nonstreet feature, and visible feature.
occupied housing unit		A housing unit is classified as occupied if it is the usual place of residence of the person or group of persons living in it at the time of enumeration or if the occupants are only temporarily absent; for example, away on vacation. Occupied rooms or suites of rooms in hotels, motels, and similar places are classified as housing units only when occupied by permanent residents, that is, individuals for whom the facility is their usual place of residence.

Term	Abbreviation	Description
Office of Management and Budget	OMB	U.S. government. The OMB's predominant mission is to assist the President in overseeing the preparation of the federal budget and to supervise its administration in Executive Branch agencies.
Office of Personnel Management	OPM	U.S. government. The OPM is the federal government's human resources agency.
operational test dry run	OTDR	A practice test of the data capture centers.
Operations Control System 2000	OCS/2000	This system was one of the decennial field interface systems and was used for control, tracking, and progress reporting for all field operations conducted for Census 2000, including production of materials used by field staff to do their work.
optical character recognition	OCR	Technology that uses an optical scanner and computer software to "read" human handwriting.
optical mark recognition	OMR	Technology that uses an optical scanner and computer software to scan a page, recognize the presence of marks in predesignated areas, and assign a value to the mark depending on its specific location and intensity on a page.
outlying areas		Obsolete term. See Island Areas.
overseas enumeration		Counts federal employees assigned overseas (including members of the Armed Forces) and their dependents, and persons on board United States military ships assigned to a foreign home port.
P-sample		People identified as nonmovers or out-movers and were residents of the A.C.E. survey housing unit on Census Day.
paper-assisted personal interview	PAPI	A method of data collection in which the enumerator uses a paper form to complete the interview.
parish		A type of governmental unit that is the primary legal subdivision of Louisiana, similar to a county in other states. See county equivalent and governmental unit.
Participant Statistical Areas Program	PSAP	A Census 2000 program that provided tribal and local officials with the opportunity to review and revise existing statistical areas and identify new ones. The program included census tracts, block groups, census designated places, and census county divisions. See statistical entity.
partition		A portion of the TIGER® database separated to effectively manage the size of that database in order to support operations such as updating, processing, and mapping of a specific part of the database. A partition usually consists of an entire county or statistically equivalent entity, but a county that has many records in the database may be divided into multiple partitions to allow the computer to process, and enable staff to work with, smaller files. For most operations, only one person at a time can access a partition. Also referred to as a county partition.
partnerships		Agreements with state, local, and tribal governments and community groups that gave these groups an opportunity to participate in various ways in Census 2000.
personal visit	PV	Face-to-face contact between a member of the public and an enumerator to obtain data.

Term	Abbreviation	Description
physical/location description		A short written description of the location and physical characteristics of a living quarters that does not have a house-number/street-name address. The description, together with the Census Bureau map showing the location of the map spot number for the living quarters, is intended to help Bureau staff recognize this living quarters in the field. (Note: After Census 2000, the Census Bureau changed this to “physical description,” relying on the location of the numbered map spot on the Census Block Map to identify the approximate site of each residential structure.)
place		A concentration of population either legally bound as an incorporated place or identified by the Census Bureau as a census designated place. See census designated place, incorporated place, legal entity, and statistical entity.
place of birth	POB	State or foreign country in which a person was born.
place of work	POW	The street address or location of a person’s current workplace.
planning database		A geographic database containing prior census housing, demographic, and socioeconomic variables correlated with nonresponse and undercounting data and used to identify specific geographic areas (for example, tracts) that could benefit from special enumeration methods to improve coverage.
Planning, Research, and Evaluation Division	PRED	Census Bureau. Provides technical expertise and executive leadership for planning future censuses and surveys. Coordinates policy and program related activities for future censuses and surveys.
political entity		See governmental unit and legal entity.
Population Division	POP	Census Bureau. Provides regularly updated information on the population of the United States and its demographic, geographic, and social characteristics. The division’s International Programs Center provides demographic and socioeconomic data on all major countries.
postal validation check	PVC	The U.S. Postal Service workers validate the master address file for addresses within the mailout/mailback area. Formerly called casing.
post-enumeration survey	PES	Evaluates coverage on a case-by-case basis using the Dual System Estimation methodology. Provides undercount information for detailed categories, such as renter/home owner and racial and ethnic group, which is not possible with demographic analysis. The Census 2000 Accuracy and Coverage Evaluation was a post-enumeration survey.
postmaster return	PMR	See undeliverable as addressed.
poststratum		The grouping of people within a particular stratum: for example, all white, non-Hispanic male renters ages 18–22 (poststratum) in a rural area (stratum).
Pre-Appointment Management System/Automated Decennial Administrative Management System	PAMS/ADAMS	An integrated structure of administrative management programs that supports applicant tracking and processing, background checks, selection records, recruiting reports, personnel and payroll processing, and archiving of historical data. This system was used in the hiring of temporary workers for Census 2000.
precanvass		See block canvassing.
prelist		See address listing.

Term	Abbreviation	Description
primary metropolitan statistical area	PMSA	A geographic entity designated by the federal Office of Management and Budget for use by federal statistical agencies. If an area meets the requirements to qualify as a metropolitan statistical area and has a population of 1 million or more, two or more PMSAs may be designated within it if they meet published statistical criteria and local opinion favors the designation. When PMSAs are designated within an MSA, the larger area of which they are components is designated a consolidated metropolitan statistical area. See statistical entity.
primary selection algorithm	PSA	Computer program applied to the decennial response file (DRF) to eliminate duplicate responses and to determine the housing unit record and the persons to include at the housing unit. After this procedure, the DRF is merged with the decennial master address file to create the census unedited file.
Privacy Act	PA	A 1974 act that places restrictions on the collection, use, maintenance, and release of information about individuals. It gives individuals the right to see records about themselves, to obtain copies of their records, to have records corrected or amended with agency approval, and to have a statement of disagreement filed in their records if the agency does not approve the correction or amendment.
Privacy Act notice		Form D-31 is a notice that advises persons of the authority under which the Census Bureau collects information, how it will use the information, and the effect of not answering a question.
production rate		A performance measure calculated as the number of cases completed within a specified time period: for example, cases completed per hour or cases completed per day.
Program for Address List Supplementation	PALS	This program was discontinued in 1997. It was created for Census 2000 to provide governmental units and regional and metropolitan agencies an early opportunity to submit lists of individual addresses for their communities to the Census Bureau for use in building the master address file.
program master plans	PMP	These documented all preparatory, field, processing, and statistical requirements for each major Census 2000 operation. The plans were coordinated by the Decennial Management Division program management staff.
Program Steering Committee	PSC	The PSC and the Management Integration Team provided the structure for the early planning of Census 2000 and were replaced by the Census Operational Managers, the Issue Resolution/Change Control Board, and the Decennial Division Chiefs Steering Committee.
pseudo-LCO		For Census 2000, where the land area under the authority of an American Indian tribe or the populated area of a military base was situated in more than one state or included widespread discontinuous parcels of land that could not satisfactorily be included within the boundary of a single local census office (LCO), the Census Bureau assigned such lands to the LCO that contained the administrative offices or headquarters of the tribe or base. As a result, each tribe or base worked with only one LCO for the census. The Census Bureau informally referred to the lands involved in the reassigned areas as pseudo-LCOs because they were not actually LCOs in their own right. Each pseudo-LCO was assigned a unique code; the first two digits were those of the regional census center (RCC) in which the pseudo-LCO was physically located and the last two digits were 66 through 89. Thus, an RCC could contain as many as 24 pseudo-LCOs.

Term	Abbreviation	Description
pseudo-tract		See interim census tract.
pseudo-voting district	pseudo-VTD	An area for which the Census Bureau reports voting district (VTD) data, even though the boundary of the actual VTD was adjusted by the reviewing officials so that it no longer matches the legally established boundary. Because the Census Bureau required that VTDs conform to census blocks for data presentation purposes, participants had to adjust some VTDs to use census block boundaries. Any VTD that was not identified by a participant as an actual VTD was shown with a "P" VTD indicator flag in the Census 2000 Redistricting Data (Public Law 94-171) Summary File. See voting district.
Public Information Office	PIO	Census Bureau. Manages relations with the news media, produces radio and video news releases, distributes daily newspaper clips of Census Bureau stories, administers the foreign visitors program, and writes and edits a variety of publications.
Public Law 94-171	P.L. 94-171	The public law requiring the Census Bureau to provide selected decennial census data tabulations to the states by April 1 of the year following the census. These tabulations are used by the states to redefine the areas included in each congressional district and the areas in other districts used for state and local elections, a process called redistricting.
Public Law 103-430	P.L. 103-430	The public law that amends Title 13, U.S. Code, to allow designated local and tribal officials access to the address information in the master address file to verify its accuracy and completeness. This law also requires the U.S. Postal Service to provide its address information to the Census Bureau to improve the master address file.
public use form	PUF	A form issued by a federal agency to obtain information from the public. A PUF that is to be administered to ten or more persons requires prior approval and clearance by the Office of Management and Budget.
public use microdata area	PUMA	A geographic entity for which the Census Bureau provides specially selected extracts of raw information from a small sample of long-form census records that have been screened to protect confidentiality of the census records. The extract files are referred to as public use microdata samples. For Census 2000, PUMAs, which must have a minimum census population of 100,000 and cannot cross a state line, received a 5 percent sample of the long-form records; these records were presented in state files. These PUMAs were aggregated to form "super-PUMAs," which required a minimum census population of 400,000 and received a 1 percent sample in a national file. (For the 1990 census, the 1 percent PUMAs needed a minimum census population of only 100,000, could cross state lines, and could cover areas that were different from the 5 percent PUMAs.) An area received both the 5 percent and 1 percent files when a super-PUMA coincided with a single PUMA. PUMAs for Census 2000 were delineated by state officials and comparable officials in the District of Columbia and Puerto Rico. As in 1990, the Census Bureau provided a 10 percent sample file each for Guam and the Virgin Islands. Data users can use these files to create their own statistical tabulations and data summaries. PUMAs were referred to as county groups for the 1980 and earlier censuses.
public use microdata sample	PUMS	Computerized files containing a small sample of individual long-form census records showing the population and housing characteristics of the people included on those forms. See public use microdata area.

Term	Abbreviation	Description
Puerto Rico	PR	See Island Areas.
Puerto Rico area office	PRAO	This is equivalent to a mini regional census center and has nine local census offices reporting to it.
quality assurance	QA	A systematic approach to build excellence into a process.
quality check		See Integrated Coverage Measurement.
quality control	QC	Using various statistical methods to validate that products meet standards.
questionnaire		The census or survey form on which a respondent or enumerator records information requested by the Census Bureau for a specific census or special survey.
Questionnaire Assistance Center	QAC	Centers established by local census offices to assist respondents in completing their questionnaires. Established in community centers, large apartment buildings, and so forth and staffed by volunteers and Census Bureau employees. See Walk-In Questionnaire Assistance Center.
<i>Questionnaire Reference Book</i>	QRB	This book provides detailed instructions to enumerators on how to fill out the census form.
Race and Ethnic Advisory Committees	REAC	An in-house term referring to the separate advisory committees on the race and ethnic populations. The original committees were the Census Advisory Committee on the African American Population, Census Advisory Committee on the American Indian and Alaska Native Populations, Census Advisory Committee on the Asian and Pacific Islander Populations, and Census Advisory Committee on the Hispanic Population. In 2000, the Asian and Pacific Islander Populations Committee became two committees—the Asian Advisory Committee and the Native Hawaiian and Other Pacific Islander Advisory Committee.
Race and Ethnic Targeted Test	RAETT	A test, conducted in 1996 in selected areas of the country, to evaluate alternative formats and sequencing of the race, Hispanic-origin, and ancestry questions.
ready for use	RFU	Indicates that the installation of hardware and software has passed testing and is ready for use.
reapportionment		The redistribution of seats in the U.S. House of Representatives among the states on the basis of the most recent decennial census as required by Article 1, section 2 of the Constitution. See apportionment, redistricting.
redistricting		The process of revising the geographic boundaries of areas from which people elect representatives to the U.S. Congress, a state legislature, a county or city council, a school board, and the like to meet the legal requirement that such areas be as equal in population as possible following a census. See apportionment, reapportionment.
Redistricting Data Program	RDP	A decennial census program that permits state officials to identify selected map features they want as block boundaries and specific areas, such as voting districts for which they need census data. See Block Boundary Suggestion Project, redistricting, voting district.
refusal		Reluctance by residents, apartment managers, local officials, or others to cooperate with census employees.
region (census geographic)		A grouping of states established by the Census Bureau for the presentation of census data. Each region (Northeast, South, Midwest, and West) is subdivided into divisions. See division (census geographic), statistical entity.



Term	Abbreviation	Description
regional census center	RCC	One of 12 temporary Census Bureau offices established to manage local census office activities and to conduct geographic programs and support operations, such as automated map production. The Census Bureau also operates an area office to manage census operations in Puerto Rico.
regional director	RD	The head of a regional office.
Regional Elected Officials Meeting	REOM	One of a series of regional meetings conducted by the Census Bureau with elected officials of local and state governments to encourage their support for Census 2000.
regional office	RO	One of 12 permanent offices established for the management of all census operations in an area that covers several million housing units.
regularly scheduled mobile food vans		Includes mobile food vans that are regularly scheduled to visit designated street locations for the primary purpose of providing food to people without housing. These are service locations. See service-based enumeration.
reinterview		The objective is to verify that enumerators collected accurate information. A sample of households in an assignment area is contacted again in person or by telephone. An enumerator re-asks certain questions and compares the answers to the original questionnaire. This verifies that the enumerator visited the correct address and that the questionnaire was completed accurately. This operation is performed in all areas after nonresponse follow-up and list/enumerate or rural update/enumerate.
reminder/thank you card		This is a postcard sent to addresses on the decennial master address file to remind respondents to return their census questionnaires or to thank them if they already have. All addresses in mailout/mailback areas receive a postcard. The Census Bureau conducts a blanket-mailing of these postcards to postal patrons (no addresses) in update/leave areas.
remote Alaska enumeration		List/enumerate is used for remote parts of Alaska. The unique aspect of remote Alaska enumeration is it begins in mid-February so enumerators can reach people living in remote locations before the spring thaw. After the spring thaw, travel to these areas is difficult. Questions are asked as of Census Day.
replacement questionnaire		A second questionnaire sent to addresses on the decennial master address file in mailout/mailback areas to increase mail response rates as part of the questionnaire mailing strategy. This was not used for Census 2000.
request for proposal	RFP	A government announcement in the <i>Commerce Business Daily</i> and on the Internet requesting vendors to propose a technical solution with costs for a statement of need or a statement of work. See statement of need, statement of work.
requirements initiative	RI	The documentation of business plans in support of expenditure of funds for acquisition of information technology products and services.
research and development	R&D	The R&D program for Census 2000 started in 1991 and ended in 1995.
research and experimentation	REX	The program of studies used to evaluate a census, to research new procedures and techniques, and to conduct experiments under true census conditions. For Census 2000, this program was referred to as Testing, Experimentation, and Evaluation.

Term	Abbreviation	Description
residence status		Each person in the coverage measurement sample block is assigned a residence status code identifying the person as either a resident or nonresident of the housing unit on Census Day.
Residential Finance Survey	RFS	This survey has been done every 10 years following the census since 1950. The survey collects information about the acquisition and financing of residential properties in the United States.
respondent		The person supplying survey or census information about his or her living quarters and its occupants.
restricted access building/secured building		An apartment building (that is, multiunit building) that can be entered only through doors that are locked to the public.
rural		Territory, population, and housing units not classified as urban constitute rural. The urban and rural classifications cut across other hierarchies; for example, there are generally both urban and rural territories within both metropolitan and nonmetropolitan areas.
rural delivery area		An area within which a post office delivers mail to residents living on rural delivery routes, as designated by the U.S. Postal Service. While many housing units in a rural delivery area use non-city-style addresses, some rural delivery routes include a substantial number that use house number and street name addresses. See city delivery area, city-style addresses, non-city-style addresses, and nondelivery area.
rural update/enumerate	RU/E	The enumerator attempts to update address lists and enumerate housing units for selected hard-to-enumerate rural areas. They also update and correct the census maps if needed.
sample census edited file	SCEF	A file containing 100 percent and sample characteristics for housing units and persons in the long-form sample. Processing for the SCEF includes merging the results of industry and occupation coding and place of work and migration coding, coding several other items, and weighting the long form responses.
sample census unedited file	SCUF	The decennial response file is combined with the decennial master address file to create the 100 percent census unedited file and the SCUF. The SCUF contains the unedited 100 percent items and sample items for all sample housing units and their residents and all sample persons in group quarters in Census 2000.
sample data		Detailed social, economic, and housing information collected on the long form from a selected portion of all housing units and people living in group quarters. The 1990 census sampled approximately 15 percent of the nation's population and 16 percent of its housing units. See 100 percent data.
sample edited detail file	SEDF	A file containing 100 percent and sample characteristics for housing units and persons in the long-form sample. The SEDF was used to create the Census 2000 sample data products and other tabulations based on the sample data.
sampling error		Errors that occur because only part of the population is directly contacted. With any sample, differences are likely to exist between the characteristics of the sampled population and the larger group from which the sample was chosen. Sampling error, unlike nonsampling error, is measurable.

Term	Abbreviation	Description
sampling stratum		A grouping or classification that has a similar set of characteristics based on the previous census.
school district	SD	A geographic area delineated by state, county, or local officials designating the school(s) that students in a particular locale must attend.
seasonal/recreational/occasional use		A housing unit held for occupancy only during limited portions of the year, such as a beach cottage, ski cabin, or time-share condominium.
self-enumerating places		Includes military facilities and group quarters, such as hospitals and prisons where the safety of the residents or the enumerators is a concern. A staff member of the facility lists the names of all people staying in each group quarters at the facility and prepares the Individual Census Report packets. A crew leader returns in a day or two to collect the completed materials. Note: Military Census Reports are used at military installations. See group quarters, Individual Census Report.
separate living quarters		Quarters in which the occupants live separately from any other individual in the building and which have direct access from outside the building or through a common hall. For vacant units, the criteria of separateness and direct access are applied to the intended occupants whenever possible.
service-based enumeration	SBE	An operation designed to enumerate people at service locations that primarily serve people without housing, such as emergency or transitional shelters; shelters for children who are runaways, neglected, or without conventional housing; shelters for abused women; soup kitchens; and regularly scheduled mobile food vans. The SBE also included enumeration at targeted nonsheltered outdoor locations. See service locations and targeted nonsheltered outdoor locations.
service locations		Locations where clients are enumerated during the service-based enumeration operation, such as emergency or transitional shelters; shelters for children who are runaways, neglected, or without conventional housing; shelters for abused women; soup kitchens; and regularly scheduled mobile food vans.
shelters for children who are runaways, neglected, or without conventional housing		Includes shelters/group homes that provide temporary sleeping facilities for juveniles. These are service locations. See emergency shelters; hotels, motels, or other facilities; regularly scheduled mobile food vans; service locations; soup kitchens; and transitional shelters.
Shipboard Census Report	SCR	A census questionnaire used for military and maritime (civilian) personnel aboard ships.
short form	SF	The decennial census questionnaire containing only the 100 percent questions. See 100 percent data, long form.
simplified enumerator questionnaire	SEQ	A questionnaire that enumerators use for transient, or T-Night, enumeration and when conducting the non-response follow-up. See nonresponse follow-up and T-Night enumeration.
single MIM-based integrated mapping system	SMIMS	A software system for creating the Map Image Metafiles (MIM).
Source Selection Evaluation Board	SEB	An evaluation group that evaluates proposals and selects the source for the contract award.

Term	Abbreviation	Description
soup kitchens		Includes soup kitchens, food lines, and programs distributing prepared breakfasts, lunches, or dinners. These programs may be organized as food service lines, bag or box lunches, or tables where people are seated, then served by program personnel. These programs may or may not have a place for clients to sit and eat the meal. These are service locations. See service-based enumeration.
special census		A federal census conducted at the request and cost of a local government to obtain population figures between decennial censuses.
special notice		A page in the address register to remind the enumerator of the confidentiality of the information being collected and to remind the enumerator to make legible entries.
special place	SP	A place containing one or more group quarters where people live or stay, such as a college or university, nursing home, hospital, prison, hotel, migrant and seasonal farm worker camp, or military installation or ship. See group quarters.
Special Place Facility Questionnaire	SPFQ	A questionnaire used to interview an official at a special place for the purpose of collecting/Updating address information for the special place and any associated group quarters and housing units, determining the type of special place/group quarters, and collecting additional administrative information about each group quarters at the special place.
Special Place Facility Questionnaire operation		An operation where interviewers at telephone centers call each special place on the special place file and conduct computer-assisted telephone interviews to collect/update address information for the special place and any associated group quarters and housing units, determine the type of special place and any associated group quarters, and collect any additional information about each group quarters at the special place. If the interview cannot be completed by phone, an enumerator visits the facility to conduct the interview. See Special Place Facility Questionnaire.
special sworn status individual	SSS	Designation for a temporary employee hired to assist the Census Bureau on work authorized by Title 13 and subject to the same confidentiality requirements as regular Census Bureau employees. See confidentiality.
standard deviation		A measure of the dispersion of values in a frequency distribution from the average.
state		A type of governmental unit that is the primary legal subdivision of the United States. See governmental unit, state equivalent.
state certifying official	SCO	The official designated annually by the governor of each state and state equivalent to review and certify that the Census Bureau's inventory of local governmental units in that state is accurate and that the boundary changes were accomplished in accordance with state law. See Boundary and Annexation Survey.
state code		A two-digit code assigned by National Institute of Standards and Technology to identify each state and state equivalent. See census code, federal information processing standards code, geographic code.

Term	Abbreviation	Description
state data center	SDC	A state agency or university facility identified by the governor of each state and state equivalent to participate in the Census Bureau's cooperative network for the dissemination of census data. An SDC also may provide demographic data to local agencies participating in the Census Bureau's statistical areas programs and may assist the Census Bureau in the identification and delineation of statistical areas.
state-designated American Indian statistical area	SDAISA	A new program offered by the Census Bureau to the states for state-recognized American Indian tribes without a land base. A state government liaison can review and update the boundaries for these geographic areas, and the Census Bureau provides data for these areas.
state equivalent		A type of governmental unit treated by the Census Bureau as if it were a state for purposes of data presentation. For Census 2000, the state equivalents included the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands of the United States, American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands. See governmental unit, Island Areas, state.
state legislative district	SLD	The area represented by a member of the upper or lower chamber of a state legislature (or, for Nebraska, its unicameral legislature).
statement of need	SON	A description of the services and/or final product solicited by the government. See statement of work.
statement of work	SOW	A description of the objectives and/or tasks required to be accomplished as a part of a request for proposals or in a contract for professional services. See statement of need.
statistical entity		Any specially defined geographic entity, such as a metropolitan area, urbanized area, tribal designated statistical area, census county division, census designated place, census tract, block group, or census block, for which the Census Bureau tabulates data. Statistical entity boundaries are not legally defined, and the entities have no governmental standing. See legal entity.
Statistical Research Division	SRD	Census Bureau. Conducts statistical and methodological research motivated by practical problems arising in all phases of data collection, processing, and dissemination.
street segment		The portion of a street or road between two features that intersect that street/road, such as other streets/roads, railroad tracks, streams, and governmental unit boundaries.
subbarrio		The primary legal subdivision of a barrio or barrio-pueblo (minor civil division) in 23 municipios in Puerto Rico. Census 2000 provides the same types of data for subbarrios as it does for barrios and barrios-pueblo. See sub-MCD.
sub-MCD		A legal subdivision of a minor civil division (MCD). For Census 2000, only Puerto Rico has sub-MCDs (subbarrios).
tabulation block		A physical block that does not have any legal or statistical boundaries passing through it OR each portion of a physical block after the Census Bureau recognizes any legal or statistical boundaries that pass through it. See block, block number, collection block.
tabulation geography		The geographic entities for which the Census Bureau tabulates and presents data, such as the United States, American Indian and Alaska Native areas, states, counties, county subdivisions, places, congressional districts, metropolitan areas, census tracts, and census blocks. See collection geography, geographic entity.

Term	Abbreviation	Description
targeted canvassing		Used in the Census 2000 Dress Rehearsal. Replaced by block canvassing.
targeted mailing		The mailing of replacement questionnaires is targeted to nonrespondents, that is, households that did not return a completed questionnaire by a certain time.
targeted map update		An operation where census employees (updaters) go into the field to find the city-style address ranges that the regional offices and regional census centers (RCCs) were unable to resolve during Automated Master Address File Geocoding Office Resolution. The updaters identify the streets and address ranges by annotating census maps and lists of uncoded address ranges. They return the maps and lists to the RCCs, and the RCCs insert the information into the TIGER® database and flag errors in the master address file. The computer matches and geocodes the addresses. See Automated Master Address File Geocoding Office Operation, Boundary and Annexation Survey, census map preview, TIGER®, and TIGER® Improvement Program.
targeted multiunit check		Used in the Census 2000 Dress Rehearsal. Replaced by block canvassing.
targeted nonsheltered outdoor location	TNSOL	A geographically identifiable outdoor location open to the elements where there is evidence that people might be living without paying to stay there and those people do not usually receive services at soup kitchens, shelters, and mobile food vans. Sites must have a specific location description that will allow a census enumeration team to physically locate the site; for example, “the Brooklyn Bridge at the corner of Bristol Drive” or “the 700 block of Taylor Street behind the old warehouse.” Excludes pay-for-use campgrounds, drop-in centers, post offices, hospital emergency rooms, and commercial sites (including all-night theaters and all-night diners). See service-based enumeration.
targeting database		See planning database.
Technologies Management Office	TMO	Census Bureau. Develops and implements computer-assisted data collection and related support operations. Oversees the development of automated instruments for computer-assisted interviewing applications. Serves as liaison with production software contractors.
telephone follow-up	TFU	Telephone contact from a district office or a processing office to occupied housing units to complete or correct inadequate data for mail return questionnaires that failed the edit.
Telephone Questionnaire Assistance	TQA	A toll-free service that was provided by a commercial phone center to answer questions about Census 2000 or the census questionnaire and to conduct short-form telephone interviews.
Telephone Questionnaire Assistance field verification		An operation to verify the existence and the residential status of addresses given to the Census Bureau from the Telephone Questionnaire Assistance operation. Addresses verified by a field enumerator were added to the master address file.
tenure		All occupied housing units are classified as either owner-occupied or renter-occupied.
test census		A partial or complete census of population and housing that the Census Bureau conducts in selected areas prior to a decennial census to test the validity and effectiveness of a variety of operations, including alternatives.

Term	Abbreviation	Description
TIGER® Improvement Program	TIP	The TIGER® (Topologically Integrated Geographic Encoding and Referencing) Improvement Program provides all local governments and regional and metropolitan agencies the opportunity to assist the Census Bureau in locating and updating street features, street names, and address ranges identified as missing or incorrect in the TIGER® database. This information is needed to link U.S. Postal Service addresses with the TIGER® database. See Automated Master Address File Geocoding Office Operation, Boundary and Annexation Survey, census map preview, digital exchange file, geocode, targeted map update, TIGER®.
TIGER/Line® file		The computer-readable extract of the TIGER® (Topologically Integrated Geographic Encoding and Referencing) database that the Census Bureau makes available to the public. It contains data representing the roads, railroads, bodies of water, boundaries of legal and statistical entities, and other visible and nonvisible features, along with their attributes (names, address ranges, geographic codes, census feature class codes, and the like).
Title 13 (U.S. Code)	T-13	The law under which the Census Bureau operates and that guarantees the confidentiality of census information and establishes penalties for disclosing this information.
tool kit		Special census methods and procedures available for improving cooperation or enumeration in hard-to-enumerate areas. These are not normally scheduled operations but are available to the Census Bureau regional offices for use as needed. Examples: targeting database, team and blitz enumeration, and urban update/leave.
Topologically Integrated Geographic Encoding and Referencing	TIGER®	A computer database that contains a digital representation of all census-required map features (streets, roads, rivers, railroads, lakes, and so forth), the related attributes for each, and the geographic identification codes for all entities used by the Census Bureau to tabulate data for the United States, Puerto Rico, and Island Areas. The TIGER® database provides a resource for the production of maps, entity headers for tabulations, and automated assignment of addresses to a geographic location in a process known as “geocoding.” TIGER® was preceded by the GBF/DIME (Geographic Base File/Dual Independent Map Encoding) files. See Automated Master Address File Geocoding Office Operation, Boundary and Annexation Survey, census map preview, digital exchange file, geocode, targeted map update, TIGER® Improvement Program.
touchtone data entry	TDE	An automated data capture technology that allows a respondent, using the keypad of a touchtone telephone, to reply to computer-generated prompts.
town		A type of minor civil division in the New England states, New York, and Wisconsin and a type of incorporated place in 30 states and the Virgin Islands of the United States. See county subdivision, governmental unit, incorporated place.
township		A type of minor civil division in 16 states. In some states, many or all townships are nonfunctioning entities. In Michigan, some townships are legally designated as “charter townships.”

Term	Abbreviation	Description
tract		Small, relatively permanent statistical subdivisions of counties delineated by local committees of census data users in accordance with Census Bureau guidelines for the purpose of collecting and presenting decennial census data. These neighborhoods contain between 1,000 and 8,000 people, typically approximately 1,700 housing units and 4,000 people. Tracts are designed to have homogeneous population characteristics, economic status, and living conditions at the time they are established. Census tract boundaries normally follow visible features but may follow governmental unit boundaries and other nonvisible features. There were more than 60,000 census tracts in 2000. See statistical entity, census statistical areas committee.
tract number		Used to uniquely identify a census tract within a county.
traffic analysis zone	TAZ	An area defined by a metropolitan planning organization for tabulating transportation statistics from the census.
transient location		Includes living quarters with people who have no usual home elsewhere who were enumerated during Transient Night, or T-Night, enumeration at YMCAs, YWCAs, hostels, commercial and government-run campgrounds, campgrounds at racetracks, fairs, carnivals, and marinas. Census enumerators complete a simplified enumerator questionnaire for the residents who do not have a home elsewhere. These locations are classified as housing units.
Transient Night or T-Night, T-Night enumeration	T-NIGHT, TNE	A method of enumeration in which Census Bureau staff enumerate people at transient locations, such as campgrounds at racetracks, recreational vehicle campgrounds or parks, commercial or public campgrounds, fairs and carnivals, and marinas. Enumerators conduct a personal interview using a simplified enumerator questionnaire. No vacant units are generated by this operation. See simplified enumerator questionnaire, transient location.
transitional shelters		Includes shelters providing a maximum stay for clients of up to 2 years and offering support services to promote self-sufficiency and to help clients obtain permanent housing. These are service locations. See service locations.
tribal block group		A block group within a tribal census tract. Where a census tract numbered in the 9400 series crosses a county line, the same tribal block group may be located on both sides of that boundary. See block group, tribal census tract.
tribal census tract		A census tract or portion of a census tract located within a federally recognized American Indian reservation and/or off-reservation trust land. Thus, the boundary of a federally recognized American Indian reservation and off-reservation trust land is always a tribal census tract boundary. Some of these census tracts are numbered in the 9400 series, primarily where they cross a county line. See census tract, tribal block group.
tribal designated statistical area	TDSA	An area identified outside Oklahoma by federal- and state-recognized tribes without a land base or associated land trust.
tribal jurisdiction statistical area	TJSA	An area identified by Oklahoma tribal officials as containing the American Indian population over which they have jurisdiction.



Term	Abbreviation	Description
Tribal Review Program		A program in 1997 and 1998 to allow officials of all federally recognized American Indian and Alaska Native entities to review and update the maps for Census 2000 for their jurisdictions. Other programs involving map review for the American Indian/Alaska Native areas include Address List Map Review, Block Definition Project, Boundary and Annexation Survey, census map preview, and Local Update of Census Addresses.
turnover rate		The total number of workers who quit during a field operation divided by the total number of workers hired for that operation.
type of enumeration area	TEA	A classification identifying how the Census Bureau takes the decennial census of a geographic area. Examples of possible TEAs include: <ul style="list-style-type: none"> <li>▪ The area inside the “blue line.” For 2000, this was the mailout/mailback and urban update/leave operations.</li> <li>▪ Address listing areas.</li> <li>▪ List/enumerate areas.</li> <li>▪ Remote areas of Alaska.</li> </ul> See address listing, blue line, list/enumerate, mailout/mailback, rural update/enumerate, update/leave, urban update/leave.
undeliverable as addressed	UAA	A U.S. Postal Service notification that a mailing piece could not be delivered to the designated address. Formerly called a postmaster return.
unorganized territory	UT	The portion of a county that is not included in any legally established minor civil division (MCD) or incorporated place in a state in which the Census Bureau recognizes MCDs for purposes of decennial census data presentation. For purposes of data presentation, the Census Bureau may divide a large area of unorganized land into several UTs. See county subdivision, statistical entity.
update/enumerate	U/E	A method of enumeration in which enumerators update the mailing list obtained by address listing and other operations, update census maps, and simultaneously enumerate the area. For enumeration, they canvass selected blocks and pick up completed, unaddressed questionnaires previously left by a mail carrier or complete a census questionnaire for each occupied and vacant housing unit. For Census 2000, the Census Bureau implemented this methodology primarily in areas designated for rural update/enumerate. See rural update/enumerate, type of enumeration area, update/leave.
update/leave	U/L	A method of data collection in which the objective is to update the address register while delivering questionnaires. Enumerators personally deliver a census questionnaire to a household and at the same time update the address list and census maps. The household completes and returns the form by mail. This method is primarily used for houses without city-style addresses. See address listing, city-style address, list/enumerate, mailout/mailback, non-city-style address, type of enumeration area, rural update/enumerate.
urban		All territory, population, and housing units in urbanized areas and in places of 2,500 or more persons outside urbanized areas. The urban and rural classifications cut across other hierarchies; for example, there are generally both urban and rural territories within both metropolitan and nonmetropolitan areas.

Term	Abbreviation	Description
urban cluster	UC	A densely settled area that has a census population of 2,500 to 49,999. A UC generally consists of a geographic core of block groups or blocks that have a population density of at least 1,000 people per square mile, and adjacent block groups and blocks with at least 500 people per square mile. It may include less densely settled blocks that form enclaves or indentations or that connect discontinuous areas that have qualifying densities. A UC consists of territory outside of any place; all or part of one or more incorporated places and/or census designated places; or such a place(s) together with adjacent territory. See central place, extended place, urban, urbanized area. NOTE: Any urban area delineated in Guam is classified as an urban cluster regardless of its population size.
urban growth area	UGA	In Oregon, an "urban growth boundary" is delineated around each incorporated place or a group of incorporated places by state and local officials, and subsequently confirmed in state law, to control urban development. The Census Bureau refers to the resulting geographic entities as "urban growth areas." UGAs were new for Census 2000. ("Urban growth boundary" is a legal term; "urban growth area" is a Census Bureau term.)
urban update/enumerate	UU/E	A method of enumeration within mailout/mailback areas in selected cities to enumerate blocks occupied almost entirely by boarded-up structures. The objective is to update the address register while delivering questionnaires. Enumerators complete a census questionnaire for each occupied and inhabitable housing unit, and update the address register and the census maps. The Census Bureau did not use this type of enumeration in Census 2000.
urban update/leave	UU/L	Update/leave procedures are used in targeted urban areas where mail delivery may be a problem, such as an apartment building where the mail carrier may leave the forms in a common area. Enumerators deliver census questionnaires for residents to complete and mail back, update the address register, and update the census maps.
urbanized area	UA	An area, consisting of one or more places and the adjacent urban fringe, containing at least 50,000 people and an overall population density of at least 1,000 people per square mile of land. The Census Bureau uses published criteria to determine the qualification and boundaries of UAs. See statistical entity.
U.S. Postal Service	USPS	The organization responsible for delivering the mail questionnaires in Census 2000 and the producer of the delivery sequence file.
usual home elsewhere	UHE	A housing unit that is temporarily occupied by a person(s) who has a usual home elsewhere.
usual residence		The living quarters where a person spends more nights during a year than any other place.

Term	Abbreviation	Description
vacant housing unit		A housing unit is vacant if no one is living in it at the time of enumeration, unless the occupants are only temporarily absent. Units temporarily occupied at the time of enumeration entirely by individuals who have a usual residence elsewhere are classified as vacant. (Transient quarters, such as hotels, are housing units only if occupied. Thus, there are no vacant housing units at hotels and the like.) New units not yet occupied are classified as vacant housing units if construction has reached a point where all exterior windows and doors are installed and final usable floors are in place. Vacant units are excluded from the housing unit inventory if they are open to the elements. Also excluded from the housing unit inventory are units with a posted condemnation sign or units that are used entirely for nonresidential purposes.
vacant housing unit follow-up		The verification of the occupancy status of all cases originally identified by either the U.S. Postal Service or an enumerator as addresses without occupants or addresses that are no longer housing units.
village		A type of incorporated place in 20 states and American Samoa. The Census Bureau also treats all villages in New Jersey, South Dakota, and Wisconsin and some villages in Ohio as county subdivisions. See governmental unit, incorporated place.
visible feature		A feature that can be seen on the ground, such as a street or road, railroad track, power line, stream, shoreline, fence, ridge, or cliff. A visible feature can be a manmade or natural feature. See feature.
voice recognition entry	VRE	An automated data capture technology that allows a respondent, speaking over a telephone, to reply to computer-generated prompts.
voting district/legislative district	VTD	Any of a variety of types of areas, such as election districts, precincts, wards, and legislative districts, established by state and local governments for purposes of elections.
Walk-In Questionnaire Assistance Center		Places, such as post offices, libraries, stores and malls, schools and community centers, and other sites people frequent, where unaddressed questionnaires, called Be Counted forms, were offered in an attempt to ensure everyone had the opportunity to be counted. The centers were staffed by volunteers and Census Bureau employees.
whole household usual home elsewhere	WHUHE	See usual home elsewhere.
wide area network	WAN	A group of computers linked within a network, such as the Census Bureau's regional offices, to exchange and share information. Whereas a "local area network" may link computers within a building or among several buildings, a WAN covers more area and distance. See local area network.
work breakdown structure	WBS	A way of organizing a project by a hierarchy of its components. The master activity schedule was organized by a WBS with 13 components or major programs. All Census 2000 program documentation and planning was keyed to this.
ZIP + 4		A 4-digit code following a 5-digit ZIP Code established by the U.S. Postal Service for the purpose of expediting mail delivery. The 9-digit code generally identifies one side of a street segment or an entire cul-de-sac or similar dead-end street.

Term	Abbreviation	Description
ZIP Code	ZIP	ZIP Codes are administrative units established by the U.S. Postal Service for the distribution of mail. ZIP stands for zone improvement plan. It is a 5-, 7-, 9-, or 11-digit code assigned by the U.S. Postal Service to a street or portion of a street, a collection of streets, a business, or other establishment or structure, or a group of post office boxes to expedite the delivery of mail. The Census Bureau used only 5-digit ZIP Codes for the addresses and address ranges in most Census 2000 operations.
ZIP Code area		The addresses served by a 5-digit ZIP Code established by the U.S. Postal Service to expedite the delivery of mail. Most ZIP Codes do not have specific boundaries, and their implied boundaries do not necessarily follow clearly identifiable visible or invisible map features; also, the carrier routes for one ZIP Code may intertwine with those of one or more other ZIP Codes, and therefore this "area" is more conceptual than geographic. See ZIP + 4, ZIP Code, ZIP Code tabulation area.
ZIP Code tabulation area	ZCTA	A statistical entity developed by the Census Bureau to approximate the delivery area for a U.S. Postal Service 5-digit ZIP Code in the United States and Puerto Rico. A ZCTA is an aggregation of one or more census blocks that have the same predominant ZIP Code associated with the mailing addresses in the Census Bureau's master address file. Thus, the Postal Service's delivery areas have been adjusted to encompass whole census blocks so that the Census Bureau can tabulate census data for ZCTAs. For areas larger than 25 square miles for which the Census Bureau's master address file contained no addresses with ZIP Codes, the Census Bureau used the first 3 digits of the ZIP Code(s) that serve the area or a nearby area. For the dress rehearsal data, there were two blank spaces after such 3-digit codes; for Census 2000, there was a suffix of "XX." A water feature that could not logically be assigned to a specific ZCTA got assigned a 3-digit code followed by "HH" to indicate that the water feature could not be assigned meaningfully to any adjacent land ZCTA. ZCTAs do not include all ZIP Codes used for mail delivery. The Census Bureau first created ZCTAs for the Census 2000 Dress Rehearsal. See ZIP Code, ZIP Code area.
zona urbana	ZU	In Puerto Rico, an area consisting of the municipio seat of government and the adjacent built-up area. ZUs are delineated like census designated places, except that ZUs cannot cross municipio boundaries. ZUs have never had to meet a minimum population threshold to qualify for tabulation of census data, a criterion that for Census 2000 applied for the first time to all census designated places. See census designated place, comunidad.