

# Meeting 21<sup>st</sup> Century Demographic Data Needs—Implementing the American Community Survey: July 2001

*Report 1: Demonstrating Operational Feasibility*



U S C E N S U S B U R E A U  
*Helping You Make Informed Decisions*

U.S. Department of Commerce  
Economics and Statistics Administration  
U.S. CENSUS BUREAU

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## Executive Summary

The American Community Survey (ACS) is indispensable to the successful reengineering of the 2010 census design and has proven operationally feasible for nationwide implementation in 2003. To meet the challenges of rapid demographic and technological change and in response to stakeholders' requests, Census Bureau managers have concluded that the design of the decennial census must be simplified and long form data collection must be more timely. Therefore, rather than occurring as part of the decennial census, collection of demographic and socioeconomic data will be ongoing throughout the decade via the ACS. In 2000, a critical test of operational feasibility for the ACS--the Census 2000 Supplemental Survey (C2SS)--was successfully conducted in an additional 1,203 counties nationwide.

The formal program to develop and test the ACS began in 1994. Since then, the program's name, size, and scope have been evolving in preparation for full implementation in 2003. A series of testing activities have been occurring. The full set of testing and developmental activities starting in 1994 are referred to as the ACS development program in this report. As part of the comprehensive ACS development program, the Census Bureau has initiated a robust research and testing program examining the full range of technical, statistical, and operational issues associated with implementing the ACS. Key results will be documented in a series of reports. This is the first in the series and focuses on the desirability and operational feasibility of full implementation of the ACS.

In brief, the ACS design is an improvement over the long form decennial census offering greater flexibility in incorporating the ongoing operational improvements of survey methods. The ACS will divide a huge, nationwide workload into manageable pieces over a longer time frame. In addition to improving the decennial census design, the ACS is the most effective and efficient tool available to measure the complexities of the shifting American landscape in a timely manner. In this information-based economy, federal, state, and local decision makers, as well as private business and nonprofit organizations, need current, reliable, and comparable data to chart the future. Testing to date, including the C2SS, has demonstrated that not only is the ACS desirable, but it is also operationally feasible nationwide. Major observations include:

**The American Community Survey is crucial to a successful 2010 census design** (See page 7). Collecting long form data throughout the decade via the ACS will have a profound effect on both 2010 census design planning and outcome. Implementing the ACS in 2003 means that by 2008 staff responsible for planning the 2010 decennial census will have confidence that long form data, including data for the smallest areas and groups, will be available, thus precluding the need to collect long form data as part of the 2010 census. By having only a short form in 2010, the Census Bureau can more sharply focus on its constitutional mandates--to fully enumerate the population to apportion the House of Representatives. The ACS development program--supported by a complete and accurate address system--will simplify the decennial design, resulting in improved coverage in 2010.

**The American Community Survey Development Program reflects a changing America** (See page 9). The value of decennial census long form data to inform both federal decision making and the federal statistical system cannot be overstated. These data form the basis for the annual allocation of billions of dollars in federal funds, and guide planners and policymakers at all levels of government and in the smallest of communities. Decennial census long form data, however, have been subjected to the constraints inherent in a single, massive data collection effort. The ACS, on the other hand, has been specifically designed to ameliorate those constraints by collecting long form data throughout the decade. The ongoing presence of the ACS enables informed planning throughout the nation and throughout the decade.

**Nationwide implementation—the C2SS—was operationally successful** (See page 14). The successful implementation of the C2SS during 2000 demonstrated that full implementation of the ACS is operationally feasible. Operational feasibility means that C2SS planned tasks were executed on time, within budget, and that the data collected met certain basic Census Bureau quality standards. Despite competition from Census 2000 for resources and lack of experience with a nationwide workload, staffing was sufficient, operations were carried out as anticipated, and observed response rates were high. To determine whether a nationwide implementation would adversely affect operational performance, comparisons were made between the 1999 and 2000 results from 36 counties. Based on the results of the C2SS, managers are confident that the full ACS can be successfully implemented nationwide in 2003. Specific findings include:

- Workload projections for the C2SS were achieved.
- An effective strategy allowed the C2SS to collect much of the survey data by mail.
- Telephone Questionnaire Assistance and Edit Follow-up activities were completed although staffing limitations caused some delays.
- The quality assurance process for data entry ensured accurate capture of mail returns.
- Computer-Assisted Telephone Interviews were conducted on schedule, successfully reducing the workload for personal visit followup.
- Personal visit interviewing was completed on schedule with a high rate of response.
- Total survey response rates remained high in 2000.
- Timely release of C2SS data products is expected.

As indicated by the results of the operational assessment of the C2SS, the Census Bureau is confident about its ability to fully implement the ACS in 2003. However, while this report provides important insight into the rationale and feasibility of the ACS, it does not tell the whole story. Analyses of the 2000 ACS program data will be documented in future reports that provide full quality measures and comparisons to the Census 2000 long form data. Just as in prior census planning cycles, demographic and technological change require bold decisions and innovative approaches. What cannot be disputed is that the timeliness and relevance of ACS program data are what a modern nation demands and is, therefore, an appropriate response to change.

## Overview and Purpose

Census Bureau managers have concluded that Census 2000 cannot be repeated without incurring significant risk. The decennial census design must be reengineered to respond to rapid demographic and technological change. The American Community Survey is crucial to successfully reengineering the decennial census design—moving away from the massive and nearly overwhelming effort to collect demographic and socioeconomic data once in 10 years from one in six households.<sup>1</sup> Rather than occurring as part of the decennial census, this detailed and dynamic activity will be ongoing throughout the decade.

The formal ACS development program began in 1994. Since then, the program's name, size, and scope have been evolving in preparation for full implementation in 2003. The Continuous Measurement program, an experimental activity conducted in four sites, began in 1996. Its primary purpose was to develop the methods for providing timely, accurate, and detailed long form data each year. Over a period of four years, this activity expanded to 36 counties. The C2SS was conducted as part of Census 2000 in 1,203 counties. Its primary purpose was to demonstrate the operational feasibility of collecting long form data at the same time as, but in a separate process from, Census 2000 and at the national level. The C2SS combined with the 36 counties provided national level data. Data collection activities for the Census Long Form Transitional Database is continuing in the same 1,203 counties. Its purpose is to demonstrate the data's usability and reliability. By 2003, developmental activities within the ACS program will be completed, culminating in the full nationwide implementation of the ACS. When the term "ACS development program" is used, herein, it refers to the full set of testing, research, and development program activities that started in 1994 and will continue until the ACS is fully implemented. A more detailed description of the ACS development program activities can be found in Appendix 1. While developmental activities will be completed upon full implementation, a full suite of ACS improvement and enhancement activities will be ongoing throughout the life of the survey.

As part of the Census Bureau's comprehensive ACS development program, key results will be documented in a series of reports. This report focuses on the importance, desirability, and feasibility of full implementation of the ACS. It will illustrate how implementing the ACS will improve the 2010 census design and provide timely and relevant demographic and socioeconomic data to policymakers at the federal, state, and local levels. Further, this report will demonstrate the operational feasibility of conducting the C2SS concurrently with Census 2000.

In preparing this report, Census Bureau staff reviewed available information on the ACS development program performance. Analysts consulted with decennial survey and field experts to identify key technical and operational quality indicators, developed study plans to collect the

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<sup>1</sup>Long form and ACS development program data include social, demographic, housing, and economic characteristics.

data, analyzed the data, and documented the results. Additionally, case studies were identified providing direct, empirical information on the usefulness of the survey in communities where it has been implemented. Further, analysts identified current and intended federal uses of ACS-related data to improve the quality of important demographic and socioeconomic information. Over the next two years, subsequent reports demonstrating the results of the ACS development program will be released and will include:

- A description of the data release plan and products from the C2SS to provide an empirically-based summary of the usefulness of ACS development program information.
- A comparison of the item nonresponse rates for selected C2SS and census short form items (e.g., age, race).
- A detailed analysis of the quality of data from the ACS development program, including a description of the components of error.
- A comparison of selected item nonresponse rates for C2SS and census long form items such as income and education.
- A comprehensive final comparison of Census 2000 data for the nation and at the state level to data from the ACS development program.
- A comparison of Census 2000 long form and ACS development program data in smaller geographic areas.
- Other topics as appropriate.

Additionally, as part of the Census 2000 Testing and Experimentation Program, a synthesis of the C2SS operational results will be developed.

## **Introduction**

The Census Bureau's mission and goal are to provide timely, relevant, and high-quality data about the people and economy of the United States at the lowest possible cost. The decennial census, which has included the enumeration of the nation's population and housing as well as the collection of detailed demographic and socioeconomic information via the long form, is the foundation of the federal statistical system. The development of a comprehensive, nationwide address list has been critical for ensuring the quality of the decennial census results. The country is apportioned, states are redistricted, policies are developed, plans are made, voting and civil rights laws are supported, and billions of dollars of federal funds are allocated as a result of the decennial census. Further, surveys and censuses are calibrated based on the decennial census. The quality of the decennial census directly affects the quality of subsequent surveys and

censuses throughout the federal statistical system.

By removing the highly resource intensive and detailed long form data collection and the compilation of address information from the 2010 census design, the design can be simplified, thereby reducing risk and potentially improving coverage of the country's population. In response to the rapid growth of a large and diverse population and stakeholders' needs, Census Bureau managers have concluded that a modern nation demands a more timely and relevant approach.

### ***Decennial census planners continue to confront the challenge of change***

Over the decades, the Census Bureau has encountered and subsequently overcome numerous policy, operational, technical, and fiscal challenges, thus ensuring the continuing integrity of the federal statistical system. Census 2000 challenges were many. While evaluations of data quality are still underway, Census 2000 is widely considered the most accurate census to date in terms of coverage. However, this success cannot be repeated without incurring unacceptable risk and cost.<sup>2</sup>

The Census Bureau remains committed to learning from prior censuses and striving for ongoing operational improvement of survey methods. Just as in other decades, demographic and technological change has prompted the Census Bureau to make bold decisions and take innovative approaches. While planning for the 1940 census, the Census Bureau determined that it was neither cost-effective nor necessary to ask all questions of every person. Planners developed the census sample as a major enhancement to the 1940 census and that design has been used through 2000. In planning for the 1970 census, the Census Bureau determined that it could no longer effectively enumerate the population through personal visits alone. The Census Bureau reengineered the design by moving to a self-response mailing strategy as the primary data collection mode in 1970—a strategy still in place and designed to improve data accuracy and reduce the number of personal visits.

Successful enumeration in 2010 will require just such innovations. Challenges facing planners of the 2010 census are formidable. Demographic and technological changes are occurring too rapidly not to consider bold innovation. For example, enumeration complexity is increasing due to a growing, diverse population and increasingly diverse living arrangements; data collection is further complicated due to escalating privacy and confidentiality concerns; and the Census

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<sup>2</sup>Bureau of the Census, "Potential Life Cycle Savings for the 2010 Census," April 30, 2001.

Bureau must plan for a dynamic technological and political environment with limited resources.<sup>3</sup> Consequently, managers are reengineering the 2010 decennial census via a strategy that harnesses the synergy among three Census Bureau programs—the MAF/TIGER<sup>4</sup> modernization, the American Community Survey (ACS) implementation, and the 2010 decennial census design.<sup>5</sup>

While a full discussion of the MAF/TIGER modernization is beyond the scope of this report, it is important to recognize that a complete and accurate address system is crucial to the success of either of the other two strategic programs. MAF/TIGER provides the so-called frame or address pool on which the decennial census, all demographic surveys, and the ACS development program are based.<sup>6</sup> MAF/TIGER accuracy is widely considered the single best forecaster of a successful, complete decennial census and ACS implementation.

### *The American Community Survey—the response to stakeholder needs*

Over 10 years ago, in response to congressional and other stakeholder demands for more timely and relevant data, the Census Bureau began examining a new approach for gathering long form data. Over time, rapid demographic change had outpaced the usefulness of the decennial long form. Consequently, in lieu of the static, once-in-a-decade snapshot of the nation's population, Census Bureau experts began researching the feasibility of an ongoing survey to collect and disseminate timely demographic and socioeconomic data. This research culminated in the ACS development program.

When fully implemented in 2003, the ACS will be in every county in the U.S., as well as in Puerto Rico, and will survey an annual sample of three million housing units. The ACS will produce information on content items similar to the decennial census long form for communities in the country, including small areas such as census tracts, small towns, American Indian Reservations, Native Alaskan villages, and rural areas. The first data for communities of 65,000 people or more will be available in 2004, about six months after the 2003 data collection year ends and every year thereafter. The first data for communities with between 20,000 and 65,000 people will be available in 2006 and updated yearly. By 2008, four to five years before census long form data would have been available, the ACS will be providing detailed demographic and socioeconomic profiles for even the smallest areas and groups.

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<sup>3</sup>Ruth Ann Killion, "2010 Census Planning: Demographic and Technological Change Escalating Complexity," Draft, July 2001.

<sup>4</sup>Master Address File/Topologically Integrated Geographic Encoding and Referencing.

<sup>5</sup>Preston J. Waite, "2010 Census Planning: The Strategy," Draft, July 2001.

<sup>6</sup>Bureau of the Census, "Business Case Analysis for Implementation of 21<sup>st</sup> Century MAF/TIGER Enhancements to Support the 2010 Census," revised June 26, 2000, pp3-6.

## **The American Community Survey—Crucial to a Successful 2010 Census Design**

Collecting long form data throughout the decade via the ACS will have a profound effect on both 2010 census design planning and outcome. Implementing the ACS in 2003 means that by 2008 staff responsible for planning the decennial census will have confidence that long form data, including data for the smallest areas and groups, will be available, precluding the need to collect long form data as part of the 2010 census. By having only a short form in 2010, the Census Bureau can more sharply focus on its constitutional mandate—to fully enumerate the population to apportion the House of Representatives. The ACS development program—supported by a complete and accurate address system—will simplify the decennial census design, resulting in potentially improved coverage in 2010.

### ***The American Community Survey will improve planning and simplify the 2010 decennial census design***

Planning for a short-form-only census in 2010 allows innovation and streamlining in ways and on a scale not possible when long form data collection is included. Planners can focus on the basics—determining the best methods to count the nation’s large, growing, and diverse population. An implemented ACS directly and indirectly supports 2010 planning and improves the design. For example, the ACS can provide the Census Bureau with current profiles of the geographic concentrations, numbers, and languages other than English that are spoken in some areas throughout the country. This knowledge enables planners to better focus decennial census data collection and outreach research and design efforts.

Because ACS staff will maintain a continuous presence in the local areas, rapport and relationships will have already been established, thus facilitating the 2010 census enumeration activities. For example, ACS staff and community partners will have adequate time to identify and resolve issues. They will be able to refine data collection or outreach processes and procedures for use in the decennial census. In addition, an ongoing community presence will continue to foster relationships and partnerships among government and community officials.

Collecting only short form information allows the Census Bureau to simplify and improve upon most decennial census operations, including printing, data collection, and data capture. The absence of the long form will substantially reduce the amount of paper required and will facilitate expanded electronic reporting. For example, the long form accounted for about half of all the paper in Census 2000 and its size (about 45 pages) increased production difficulties. Not having a long form greatly simplifies printing, assembly, and postal service distribution activities. Additionally, focusing on enumeration enables the Census Bureau to take full advantage of state-of-the-practice technology to streamline data collection and processing activities. For example, enumerators may collect short form data using a handheld computer that enables fast and accurate data collection with less paper. Less paper translates into simpler, faster data processing, substantially reducing workloads.

Finally, full implementation of the ACS will allow the Census Bureau to try out new technologies and adapt them to make data collection and processing more efficient and cost effective. For example, the ACS development program is exploring Internet data collection and its effects on response rates. The results will provide early insight into issues associated with the expanded use of the Internet and other electronic data collection modes, identifying areas for additional research and testing.

***Implementing the American Community Survey—supported by the MAF/TIGER modernization—will potentially improve decennial census coverage***

In addition to aiding decennial census planners, the ongoing collection of long form data via the implementation of the ACS, supported by an accurate MAF/TIGER system, potentially will lead to improved coverage in the 2010 census enumeration. The ACS presence in counties across the U.S. will provide current and accurate information about where to target traditionally hard-to-enumerate groups and areas. For example, should a new community of non-English speaking people be identified, regional staff can better respond by ensuring appropriate outreach and other special data collection methods. This is in stark contrast to Census 2000 planning. Planners were dependent on the outdated 1990 long form data to support an internal targeting database that identified neighborhoods that would have required additional outreach or special data collection methods. However, the data were too old to reliably target such neighborhoods. Regional managers and staff had to depend on community specialists to identify such areas—a much less systematic approach.<sup>7</sup> With ongoing ACS data collection, current and detailed demographic and socioeconomic profiles of geographic concentrations will be available to support census enumeration, as well as to continuously update the planning database.

The MAF/TIGER modernization provides the foundation upon which the Census Bureau's censuses and surveys will depend. MAF/TIGER is a mission-critical program. The MAF/TIGER modernization enhances and improves the current system by incorporating global positioning system technology to ensure positional accuracy and by moving from a Census Bureau-developed database to a commercial-off-the-shelf system.

To take advantage of a fully implemented ACS, the Census Bureau requires a complete and accurate MAF/TIGER. On the other hand, a complete and accurate MAF/TIGER depends on the implementation of the ACS. The ongoing presence of ACS staff enables the timely update of the address list, including the identification of new construction and newly converted group quarters. An accurate MAF/TIGER helps ensure that the data collected by the ACS correctly reflect the population and housing characteristics for small geographic areas and groups. In 1990 and in 2000, many enumeration errors were due to errors in the census address file that affected both coverage and data quality. These errors included housing units not being included, included

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<sup>7</sup>Bureau of the Census, "The Census 2000 Language Program: Lowering Barriers to Census Participation—A Business Case Analysis," July 31, 1998.



more than once, or being placed in the wrong geographical location (known as geocoding error). For example, the Census Bureau estimates that about one-third of the persons missed in the 1990 census were due to missing entire housing units.<sup>8</sup> In addition to missing housing units, overcounts occur when housing units are listed more than once. In Census 2000, decennial managers had to design a complex, unplanned operation to try to identify and delete housing units that had been improperly duplicated in the MAF. By providing continuous updates to the address list throughout the decade, MAF accuracy will be improved for 2010 and the 2010 decennial census design will be simplified.

Together, the ACS implementation and the MAF/TIGER modernization reduce the complexity of the 2010 decennial census design. These two strategic programs allow flexibility for incorporating new and innovative data collection and processing methods. Such methods include a targeted second mailing or mailing forms in two languages to selected small areas. Expending resources throughout the decade in an informed, focused, and proactive manner will optimize the 2010 census planning environment and lay the foundation for future censuses and surveys. The ACS implementation, supported by a modern and accurate MAF/TIGER, will provide better ground truth—not only a crucial factor in a successful 2010 census but also an invaluable contribution to governments and communities.

## **The American Community Survey Development Program— Reflecting a Changing America**

The value of decennial census long form data to inform federal decision making and to the federal statistical system cannot be overstated. It forms the basis for the annual allocation of billions of dollars in federal funds and can guide planners and policymakers at all levels of government including the smallest of communities. Decennial census long form data, however, has been subjected to the constraints inherent in a single, massive data collection effort. The ACS, on the other hand, has been specifically designed to ameliorate those constraints, by collecting long form data throughout the decade. The ongoing presence of the ACS enables informed planning throughout America. It is the most effective and efficient tool available to measure the complexities of the shifting American landscape in a timely manner. In this information-based economy, federal, state and local decision makers, as well as private business and nonprofit organizations, need current, reliable, and comparable data to chart the future.

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<sup>8</sup>Hogan, Howard, “The 1990 Post-Enumeration Survey: Operations and Results,” *Journal of the American Statistical Association*, September 1993, p. 1056.

***The American Community Survey has been designed to collect detailed demographic and housing information***

The ACS design and implementation stands in stark contrast to the traditional decennial long form survey. The ACS design is premised on the ongoing operational improvement of survey methods to ensure data quality versus the decennial long form survey that, once designed and implemented, cannot be readily adjusted. Given that the primary purpose of the decennial census is to enumerate the U.S. population and housing—not to collect detailed long form data—the long form survey is subjected to the same constraints. For example, because of schedule and budget concerns, the long form survey in Census 2000 did not include a content followup, thereby decreasing data quality. That is, if items on questionnaires returned by mail were left blank, no attempt to collect that data was made. Subsequently, these items were statistically inferred. The quality of data items, such as income, that are used to distribute federal funding could be adversely affected. In contrast, following up with respondents to obtain answers to questions is an integral part of the ACS development program methodology.

Collecting data from nonresponse households is a formidable task. Because the long form survey is part of the decennial census enumeration, Census Bureau managers are dependent on the hiring and training of hundreds of thousands of temporary employees. Due to schedule constraints, these employees undergo limited training. In contrast, ACS development program staff are permanent professional interviewers. These professional interviewers are typically experienced and have undergone extensive training, including methods to collect information from a reluctant respondent. This better level of preparedness is expected to lead to both higher response rates and interview quality.

Another major contrast between the two approaches is the data collection methodology. The Census 2000 long form survey data are collected as part of the one-time census enumeration activity. The 20 million long forms distributed in Census 2000 were mailed along with the 100 million short forms in mid-March, 2000. Due to schedule and operational constraints, a replacement questionnaire was not feasible. Followup for housing units not returning forms by mail began in late April, 2000.<sup>9</sup> Hundreds of thousands of temporary Census Bureau enumerators began streaming out nationwide, armed with paper questionnaires and their respective lists of addresses from which no mailed response had been received. Nonresponse followup lasted about nine weeks. While the snapshot of America was taken as of April 1, 2000, readying the long form data for release to data users occurred from about October 2000 until the spring of 2002.

In contrast, the ACS development program data are collected in ongoing, three-month cycles through a combination of mail out/mail back questionnaires, Computer Assisted Telephone Interviewing (CATI), and Computer Assisted Personal Interviewing (CAPI). A sample of

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<sup>9</sup>Bureau of the Census, “Census 2000 Master Activity Schedule,” April 5, 2001.

housing unit addresses is drawn from the MAF, and questionnaires are mailed at the beginning of month one. A second (targeted) questionnaire is then mailed to those who did not respond by mail. During month two, housing units that did not respond by mail and have telephone numbers are called. Finally, in month three, a subsample of nonrespondents is drawn, and a personal visit by professional interviewers is made to those housing units. The quality of data is improved by using well-trained permanent interviewers with computers to complete interviews. The use of the computerized questionnaire, rather than a paper questionnaire, allows the Census Bureau to incorporate consistency checks of the data into the collection process.<sup>10</sup>

The ACS development program divides a huge nationwide workload into manageable pieces over a longer time frame. ACS staff are able to gather the information and conduct the required analyses and quality checks in a controlled manner. Consequently, while data release and distribution for the decennial long form take two years, ACS development program data products can be released in about six months. Such efficiency can be achieved because the program is not burdened by the production of the products required for apportionment.

***The American Community Survey development program provides current, timely information essential for governing***

Decennial census long form data have played an indispensable role in governing the nation for decades. Every question on the form has a specific federal legislative or judicial mandate or requirement. When the Census Bureau reported to Congress on March 30, 1998, on the specific Census 2000 questions, the Census Bureau provided selected citations from about 130 laws that use specific long form items. As one example, there are 25 citations alone for the long form disability questions. Without the decennial long form, the Congress could lack the information needed to effectively manage its programs. However, as stated earlier, increasingly rapid demographic change has rendered the social, economic, and housing profiles from the decennial long form less useful for meeting congressional and other stakeholder needs. This is why federal agencies and communities have urged the Census Bureau to develop the ACS.

Already, the ACS development program is beginning to assist some federal managers administer their programs. For example, the 107<sup>th</sup> Congress has mandated the use of ACS data for determining the number of children and youth with limited English proficiency for use in computing formula grants to states.<sup>11</sup> Similarly, the ACS will provide community data on children with disabilities and specific functional limitations for use in the distribution of more than 4 billion dollars in grants to states for programs for children with disabilities.

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<sup>10</sup> Bureau of the Census, "Computer-Assisted Person Interviewing in Census 2000: A Business Case Analysis," September 18, 1998.

<sup>11</sup> HR1, Report No. 107-67, Part 1, Section 3105. Formula Grants to States, paragraph 4.

When fully implemented, the ACS will enable informed decision making across the full spectrum of federal programs. The ACS will collect information that is comparable within and across states for program evaluations and use in funding formulas. Three case studies illustrate the value that a fully implemented ACS will provide to the federal government:

- For the Department of Education, the distribution of eight billion dollars in funding for the Title 1 program for educationally disadvantaged students requires estimates of children in poverty for school districts. The ACS will greatly improve the quality of these estimates over what is currently available by providing current demographic characteristics for areas. Programs that will benefit from updated ACS information include Educational Excellence for Hispanic Americans, Neglected and Delinquent Children Program, Bilingual Education/English as a Second Language Program, and Programs for Children with Disabilities.
- For the Department of Health and Human Services, the ACS will improve the availability of welfare data. ACS information will be used in formulas for awarding high-performance bonuses to states achieving welfare reform goals.
- For the Administration on Aging, the ACS will enable policymakers and planners at the federal, state, and local levels to make informed decisions about the needs and resources of older Americans (i.e., Quality of Life of the Elderly). For example, the ACS will provide information about the characteristics of aging workers, transitions in living arrangements that people make as they age, and the ability of the elderly to perform activities of daily living.

Because ACS information will be provided every year, trends over time and results of some federal programs may be measured. Helping to define the needs and the resources of the people living in the U.S., a fully implemented ACS provides the tool required for the business of governing in an increasingly complex and dynamic society at the federal, state, and local community level.

***Communities continue to benefit from the American Community Survey development program***

To date, empirical evidence of the usefulness of ACS development program data is primarily found at the community level. However, the usefulness of the information at the local level is indicative of the value that the fully implemented ACS will bring to the federal and state governments. For example, the fully implemented ACS will continue to help communities establish goals using objective information, increase program accountability by measuring results, and measure program performance for future planning. While the Census Bureau and community researchers are continuing to evaluate and understand the program's results, the preliminary assessment is that the information has surpassed expectations as to its quality and usefulness. Three case studies illustrate the value of the ACS development program data to states and communities:

- The Agency on Aging and the Medical Center in Fulton County, Pennsylvania ( a sparsely populated rural county) uses the ACS development program information to better understand the needs and resources of its elderly population. The Fulton County Partnership uses updated ACS development program information as part of its ongoing assessment of community needs for the county’s human services programs. For example, the program data identify the parts of Fulton County where the older population is most concentrated to provide insight into current needs for nursing home care.
- The Baystate Medical Center in Springfield, Massachusetts is using ACS development program data to develop appropriate educational materials and tailor health intervention strategies in its lower-income neighborhoods with concentrations of women with late-stage breast cancer. ACS development program data were also used to target specific neighborhoods where about 29,000 adults spoke Spanish at home and about 7,000 did not speak English well or at all. As a result, educational material in both Spanish and English was provided for those neighborhoods with a concentration of Spanish speaking women.
- The Springfield, Massachusetts community is using the ACS development program information in its citywide Violence Prevention Task Force. The purpose of the Task Force is to educate and mobilize residents and implement public policy to reduce youth violence. The Task Force uses geographic information system software to map the incidence of arrests of youth in the police districts of Springfield. Then, the demographic and socioeconomic characteristics from the ACS development program—such as poverty, high school dropout rates, childbearing, and work patterns among teens—are overlaid on the maps to help the Task Force understand possible interactions among factors associated with youth violence. This, in part, enables the Task Force to develop services (e.g., youth centers, libraries) and intervention programs that might be most effective to address youth violence in the community.

These are some of the real-life examples of communities and governments using timely, accurate ACS development program data. Because these are case studies and the ACS is not fully implemented, one cannot statistically generalize about the results. However, once implemented, there is every reason to expect that communities large and small will benefit from the ongoing presence of the ACS and the timeliness of its information.

***The American Community Survey development program is improving the federal statistical system***

A fully implemented ACS has the ability to dramatically improve the federal statistical system and, in fact, has already demonstrated improvement. Responding to the requests of policymakers for unforeseen data needs is costly and time consuming not only for the Census Bureau but also other statistical organizations. Such requests require implementing a new survey

or modifying existing surveys. The ACS can be a valuable resource to avoid or reduce the cost of new or modified surveys. For example, once the implemented ACS completes a stable year of initial operations, it could add questions on health insurance coverage. Specifically, the ACS in combination with Current Population Survey data could more effectively respond to Congress's expressed need for data on the health insurance coverage of children.<sup>12</sup> Combining the information in both surveys precludes the need for developing a new survey or further expanding an existing one.

Additionally, other federal agencies are beginning to use the ACS development program to improve their statistics about important demographic and socioeconomic data. For example, the Bureau of Labor Statistics (BLS) will be using ACS development program data to improve the quality of its labor force statistics. Specifically, the BLS has decided to include this information in its statistical model for the Local Area Unemployment Statistics program. The BLS has determined that the estimates will be improved at state and substate levels.

Finally, rather than having to wait for the release of decennial long form data products, Census Bureau experts are using the C2SS information to research the presence of an unanticipated number of Hispanics in Census 2000. For example, researchers are using C2SS data to study migration patterns to begin understanding how and why the number of Hispanics exceeded projections.

Conceptually, full implementation of the ACS is critical both to the success of the 2010 census design and for capturing detailed and current demographic and socioeconomic data. Further, its benefits are already being realized. However, conducting a survey in 36 counties is not comparable to the nationwide implementation of the Census 2000 long form survey. Consequently, the ACS development program demonstrated that it was operationally feasible to successfully scale-up from three dozen counties in 1999 to a nationally representative sample in 2000 through the conduct of the C2SS.

## **Nationwide Implementation—the C2SS—was Operationally Successful**

The successful implementation of the C2SS during Census 2000 demonstrated that full implementation of the ACS is operationally feasible. Successful implementation or operational feasibility means that planned tasks for the C2SS were executed on time, within budget, and the data collected met certain basic Census Bureau quality standards. Despite competition from Census 2000 for resources and lack of experience with a nationwide workload, staffing was sufficient, major operations were carried out as anticipated, and observed response rates were high. The C2SS operation provided insight into activities needing improvement or revision, given the large increase in workload over 1999. In particular, Telephone Questionnaire

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<sup>12</sup>The Current Population Survey is a monthly survey, administered by the Bureau of Labor Statistics, that provides labor force and employment data.

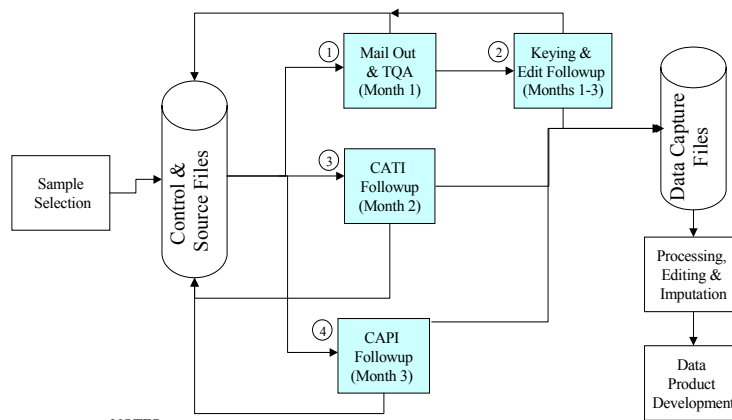
Assistance (TQA) and Edit Follow-up operations were not sufficiently staffed to handle the large increase in workloads.

To determine whether a nationwide implementation would adversely affect operational performance, comparisons were made between the 1999 and 2000 results from 36 counties. Based on the results of the C2SS, managers are confident of the ability to successfully conduct the ACS at full implementation in 2003.

***Overview of data collection and processing activities provide insight into operational complexity***

The C2SS applied ACS survey methods. The C2SS was conducted continuously on independent monthly samples of addresses. The data for each sample were collected over a three month time period. The design of the ACS relies on optimizing three modes of data collection. Initial attempts are made to collect the data using mailout/mailback techniques. TQA is provided to help households complete the forms that they receive in the mail. Mail returned forms are data captured by keying and reviewed for completeness. Incomplete forms are included in the Edit Follow-up operation. Nonrespondents to the mailout are enumerated using CATI and CAPI methods. Figure 1 below depicts the general data collection and processing activities occurring for each month’s sample.

Figure 1 ACS Primary Process Flow Diagram



NOTES:  
 (1) Shaded boxes represent primary operations discussed in report  
 (2) Numbers represent the general flow of primary operations over a given three month period, whereby the post data capture operations are conducted after all data collection activities are completed each year.

***Workload projections for the C2SS were achieved***

Operational performance measures for the C2SS indicated a well-planned and executed survey. This is especially notable given that the most experienced field managers were detailed from the ACS development program to the decennial census, not to mention the competition with Census

2000 in hiring interviewers. Similar resource competition existed in the processing center. Further, according to field reports, the presence of both the C2SS and Census 2000 caused confusion about why both were required. Nevertheless, the C2SS came in slightly under budget and increased staffing and workloads were found to be manageable. During the conduct of the C2SS, some staffing deficiencies and higher than anticipated workloads were identified for some data processing activities. Specifically, during the most intense data processing time frame for Census 2000, the C2SS did experience an increase in data capture backlogs and both TQA and Edit Follow-up operations suffered delays. These operations were able to recover once Census 2000 processing abated. An assessment is underway to preclude these problems from recurring.

The experiences gained in the C2SS implementation will assist in refining workload projections for 2003. As can be seen in Table 1, workloads for the key data collection and processing activities came in close to projections, but could be improved. Table 1 also summarizes the workload increase from the 36 comparison counties in 1999 to the combined comparison counties and C2SS in 2000. The approximate five-fold increase in workloads coupled with a geographic dispersion from 36 counties into 1,239 counties was the major challenge of this test.

Table 1: Key Workload Comparisons\*

<b>Operation</b>	<b>1999 County Tests (Actual)</b>	<b>2000 County Tests &amp; C2SS (Projected)</b>	<b>2000 County Tests &amp; C2SS (Actual)</b>	<b>2003 ACS (Projected)</b>
<b>Sample</b>	166,000	891,000	891,000	3,000,000
<b>Mail Out &amp; Telephone Questionnaire Assistance Activities</b>	163,000	855,000	850,000	2,880,000
<b>Edit Follow-up</b>	28,000	143,000	153,000	480,000
<b>Mail Responses - Keying</b>	84,000	428,000	441,000	1,440,000
<b>CATI</b>	43,000	214,000	228,000	749,000
<b>CAPI</b>	24,000	128,000	143,000	461,000

\* rounded to nearest thousand

Managers responsible for the implementation of the ACS in 2003 concluded that the risk involved in expanding from 36 counties in 1999 to over 1,200 counties nationwide in 2000 was a greater risk than increasing the sample size from about 890,000 to 3 million. In general, major operations worked as anticipated and staffing was not a major concern. According to Field Division managers, recruiting challenges for 2003 will be mitigated because there is a qualified applicant pool coming off of Census 2000. Based on the results of the C2SS, managers are confident of the ability to conduct the ACS at full implementation in 2003. The design for each of the C2SS data collection and processing operations is detailed below and analyzed with



respect to workloads, timing, and any lessons learned.

***An effective strategy allowed the C2SS to collect much of the survey data by mail***

The foundation for cost-efficient implementation is the successful use of the U.S. Postal Service mail delivery to collect survey data. Census Bureau staff are responsible for a series of sampling, address editing, and questionnaire labeling and mailing activities. After sample selection, addresses are reviewed to ensure that they can be mailed successfully. Only complete addresses are eligible for mailing.<sup>13</sup> Sample addresses that are complete are subjected to a full implementation strategy to maximize the potential for mail response. Advance letters and reminder cards are used in addition to the initial and targeted replacement questionnaire mailings. Mail returns are checked in and data captured by keying. The timing of each of these activities is carefully scheduled and must be maintained.

Appendix 2, Table 1 summarizes the projected and actual workloads and the planned and actual schedules for each of these steps. This information indicates that each of the critical activities required to support the mailout of questionnaires and other materials was carried out as planned. Minor delays were experienced in the first four months of 2000, but schedules were met exactly in the months of May through December. Nationwide implementation of the required mailout/mailback activities, including more than a five-fold increase in workloads over 1999, was accomplished as planned.

Two additional measures assess the effectiveness of using mailout/mailback methods in the C2SS—rates of mailable addresses and rates of mail response. The rate of mailable addresses is important since incomplete addresses are not eligible for mailout and require subsampling at a rate of two-thirds for CAPI. A decrease in the rate of mailable addresses is, therefore, an indication of an increase in the proportion of addresses requiring CAPI interviewing. Because of the obvious cost implications, the MAF must be continuously updated to obtain an ever-increasing number of complete addresses. About 95.5 percent of the sample addresses in the combined C2SS and 2000 comparison counties were deemed complete and, thus, mailable. Note that this rate is relatively high nationally although lower rates are found in smaller geographic areas.

Mail response rates provide another measure of the success of using mailout/mailback methods. They provide a preliminary measure of respondent cooperation. The initial mail response rate is the ratio of valid responses received by mail to the total addresses determined to be eligible for mailout. In 1999, the initial mail response rate in the 36 counties was 51.8 percent. In the same 36 counties in 2000, the initial mail response rate was 49.0 percent. This drop in response was

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<sup>13</sup> A complete address is defined as an address with either a house number, street name and ZIP Code or a complete rural route, box number, and ZIP Code. Post Office boxes and other rural style addresses are considered incomplete.

expected after April when, it is hypothesized that, many households felt that they had done enough by participating in the decennial census. The initial mail response rate for the combined C2SS and 2000 comparison counties was 51.9 percent.

To stay within budget and produce high quality data, it is critical that the initial mail response rate remain at about 50 percent or higher. The sample design, as well as budget projections, rely on maintaining this rate of mail response. The initial mail response rate for the combined C2SS and 2000 comparison counties shows that assumptions about mail response were met when a national sample was used. Because the initial mail response rate directly affects CATI and CAPI workloads, a high rate indicates the ability to complete subsequent operations on schedule and within budget.

***Telephone Questionnaire Assistance and Edit Follow-up activities were completed although staffing limitations caused some delays***

Two activities that could have benefitted from a more robust staffing plan were TQA and Edit Follow-up. Understaffing impeded these activities from achieving full operational success. This C2SS experience resulted in increased staffing and use of CATI interviewers as backups when workloads exceed expectations. Alternative methods to improve the efficiency of the TQA and Edit Follow-up operations are being explored. This includes the use of interactive voice response and automated menus for TQA and call scheduler research supporting Edit Follow-up.

TQA interviewers field a spectrum of questions in providing assistance to households in sample for both the C2SS and the comparison counties. Interviewers usually deal with content or general questions about the survey. To support self-response, a toll-free number is provided on the questionnaire, and households are encouraged to call if they have any questions or need general help in completing their questionnaires. In 2000, the same staff that handled incoming calls to the TQA operation were also responsible for Edit Follow-up.

TQA was initially staffed with 15 interviewers to accommodate incoming calls for the C2SS. Workloads for the first four months of 2000 were higher than expected. Adjustments were not made until late in the year to address these staffing issues. The increased number of calls may have resulted from publicity related to Census 2000. Nonetheless, this staffing shortfall, in turn, adversely affected the Edit Follow-up operation.

In the Edit Follow-up operation, response records created by keying are subjected to an automated coverage and content edit to identify missing or inconsistent responses. A record can fail for content reasons based on the number of questions that were not answered that should have been. A record can also fail for coverage reasons if the questionnaire has missing or inconsistent information on the total count of persons. This edit provides a critical review of questionnaires returned by mail. Approximately one-third of all mail returns fail one or more of the edits and require telephone followup. This Edit Follow-up operation results in more complete and consistent data. No such followup for content deficiencies existed in Census 2000.

The workload for Edit Follow-up grew from about 28,000 cases in 1999 to about 153,000 cases in 2000. To assess potential production problems, data were analyzed to identify the proportion of the workload that exited Edit Follow-up without a call attempt being made. It appears that this operation was not sufficiently staffed early in the year and the additional TQA calls resulting from Census 2000 made the problem even worse. For most of the year, no call attempts were made for about 30 percent of the Edit Follow-up workload. The staffing changes made late in the year led to an improvement in these rates, cutting the proportion of cases without a call attempt to less than 14 percent. Currently, ACS managers are assessing what staffing and methodological changes are needed for 2003.

***The quality assurance process for data entry ensured accurate capture of mail returns***

After questionnaire check-in, mail return questionnaires are data captured by keying. To accommodate the increase in keying workloads from approximately 84,000 in 1999 to over 441,000 in 2000, the number of data entry keyers increased from 25 to 35. It is important that questionnaires are keyed in a timely manner to support later processing activities. Keying assignments are created on a continuous basis and not tracked by sample month. Keying backlog information was, therefore, studied to assess the average amount of time that a sample case was in the keying unit. The production goal is to have questionnaires keyed within two weeks of receipt. The data in Table 2 show that the production goal was only met in the latter part of 2000. This information indicates that major backlogs existed earlier in the year, especially in April and May. The table also shows that once Census 2000 competition subsided, timely data capture was reestablished. Although timely data capture is important, the delays experienced in 2000 were reversed as the decennial census operations were ending.

Table 2: Keying Backlogs

Month	Percent of Workload Completed in 2 Weeks or Less
January	86.4
February	68.4
March	41.2
April	0.5
May	5.4
June	36.0
July	46.5
August	86.2
September	99.5
October	98.8
November	97.6
December	94.3

To ensure that errors are not introduced during keying, a detailed quality assurance process has been developed. A new keyer, after training, must go through three stages of qualification: training, pre-qualification, and qualification. In the first stage, the keyer's work is 100 percent verified. If substantial errors are found, the keyer is retrained.<sup>14</sup> The pre-qualification stage requires 100 percent verification with immediate feedback on detected errors provided to the keyer. A sample of completed work is verified once the keyer moves into the qualification stage.

By design, this quality assurance process keeps the work unit total error rate below the 1.5 percent level, which prevents keying from being a serious source of error. Examination of summary reports from 2000 shows that the total error rate for all keyed data was 0.64 percent. Although the keying operation will introduce some error, the current quality assurance plan is sufficient to ensure that keying quality is maintained at a high level.

***Computer-Assisted Telephone Interviews were conducted on schedule, successfully reducing the workload for personal visit followup***

The CATI operation attempts to complete interviews by telephone for those who do not respond.

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<sup>14</sup> A batch will fail if any data entry field has an error rate of 1.5 percent or higher.

The addresses in sample are matched to a commercial database to obtain telephone numbers. Sample addresses with a telephone number that lack a mail response are included in the initial CATI workload. Once CATI interviewers verify that they have reached the correct address, they try to complete the interview.

The CATI operation grew from a small centralized followup of about 3,500 cases per month in 1999 to a decentralized effort using three CATI call centers that processed about 19,000 cases per month in 2000. As with mail implementation activities, monthly schedules must be adhered to so that the number of sample cases enumerated by CATI are maximized with any remaining work moved to the CAPI operation on schedule. Appendix 2, Table 2 displays the monthly planned and actual dates for the beginning of CATI followup and the closeout of this operation about three weeks later. Projected and actual workloads by month are also provided. These data show that workload estimates were on target in most months and that the CATI operation began and ended on schedule. The CATI operation was able to accommodate the higher than expected workloads experienced in June, July, September, and December. It is important to recognize that although stopping the CATI operation on schedule each month is simple, completing the assigned work in this time period is the key to successful implementation.

Monitoring CATI response rates each month allows for an assessment of whether this operation is performing as expected. The response rate for CATI is the ratio of completed CATI interviews to cases determined to be eligible for CATI interviewing.<sup>15</sup> The 2000 CATI response rate for the combined C2SS and comparison county workloads was 57.3 percent. In 1999, the CATI response rate (for the 36 comparison counties) was 62.4 percent. For the same 36 counties in 2000, the rate dropped to 52.5 percent. This 10 percentage-point drop was due to increases in both the rate of refusals and the rate of other noninterviews. This was expected considering that the CATI operations had to convince respondents to provide information for another Census Bureau request on the heels of Census 2000.

The CATI operation benefits from several quality assurance programs. The software prevents most errors such as out-of-range responses or skipped questions. Monitoring is used to check for other errors the interviewers could make, such as keying a different answer from what the respondent provided or failing to follow procedures for asking questions or probing respondents for answers to questions. Such monitoring is widely used and effective in the control of telephone interviewer errors. Also, full-time call center staff are carefully trained and provided with periodic training updates.

New interviewers receive standard CATI training plus a special workshop to train them on how to avoid refusals. At this point, interviewers are in their initial work status phase where they are monitored during 5 percent of their interviewing time. After qualification, interviewers are

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<sup>15</sup>Eligible CATI cases include sample addresses without a mail response with a telephone number that either reaches the correct sample address or appears to be a functioning number, even if the call attempts do not make contact with the household.

monitored periodically to make sure that they continue conducting interviews in a satisfactory manner. The monitor assigns a rating from 1 to 5 based on performance on a set of seven factors. As long as an interviewer maintains ratings of at least level 3, the interviewer is considered to be doing the job correctly. If the ratings drop, training or coaching is provided until the ratings are improved.

Given the substantial increase in workload for the C2SS, there was a clear need to train and monitor a large number of new interviewers. The staffing for the CATI operation grew from 39 interviewers in 1999 to 181 interviewers in 2000. Work expanded from one to three call centers. Monitoring provided an efficient means to assess if the new interviewers were performing as expected. A review of these monitoring reports indicated that the interviewers were generally performing the CATI interviews well. Moreover, this monitoring program enabled managers to identify and address potential problems in a timely manner.

### ***Personal visit interviewing was completed on schedule with a high rate of response***

The final data collection operation—Computer Assisted Personal Interviewing—has the crucial responsibility of obtaining completed interviews from households that have not as yet been enumerated by either mail or CATI. Two subsamples are selected for this followup operation. A two-third subsample is selected from addresses originally deemed to be incomplete and thus ineligible for the mailout and CATI operations. A one-third subsample is selected from the addresses with complete address information and neither a mail response nor a CATI interview. The CAPI workload is defined each month and sent to the field to be completed in about four weeks. Appendix 2, Table 3 summarizes the projected and actual CAPI workloads by month for the C2SS. It also includes the planned and actual dates for the start of CAPI interviewing and for CAPI closeout. These data show that the critical monthly schedules for CAPI interviewing were met consistently and that workloads for personal interviewing were in line with projections.

As with CATI interviewing, closing out an operation on time is important. But even more important is the need to complete a high proportion of the assigned interviews. The CAPI response rate provides an important performance measure for completing assigned CAPI cases. The CAPI response rate is the ratio of cases enumerated by CAPI to the cases eligible for CAPI interviewing.<sup>16</sup> The overall 2000 CAPI response rate for the combined C2SS and 36 counties was 91.7 percent. The rate achieved in the 36 comparison counties in 2000 was 91.9 percent. This was slightly lower than the rate for these same 36 counties in 1999 (93.0 percent.) These data show that the rates of CAPI response were not negatively affected by the large increase in total workload, the need to hire and train many new interviewers, or by competition from the decennial census.

The quality of completed interviews is very important. As in the CATI operation, built-in

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<sup>16</sup>Since the C2SS is a survey of housing as well as population, vacant units are considered eligible for CAPI.

checks and edits in the software control for the introduction of certain types of errors. A formal quality control reinterview program is also built into the CAPI operation. This program serves as a deterrent of performance deficiency, including falsification of data. The work of field interviewers is sampled and the respondent is contacted to determine if there is any evidence of falsification or other substandard performance. In addition, during the reinterview, the household roster is verified to measure the accuracy of roster information.<sup>17</sup> The falsification rate for 2000 was less than 1 percent (0.5 percent). This was a drop from the estimated falsification rate in 1999 of 1.6 percent. The 2000 rate was also consistent with other large demographic surveys. In 2000, 99.0 percent of the household rosters checked were accurate. This was similar to the 98.6 percent observed in 1999.

***Total survey response rates remained high in 2000***

Survey response rates are an important measure of performance. If survey response rates are low in certain areas or for certain population groups, the data may not provide an accurate picture. The total survey response rate is the ratio of completed interviews to the sample cases that were eligible to be interviewed.

As Table 3 depicts, the total survey response rate for the C2SS and the comparison counties was 96.5 percent. The rate achieved overall in the 36 counties that were surveyed in 1999 was 97.3 percent. The response rate for the same 36 counties in 2000 was 96.6 percent. The survey response rate was essentially maintained despite moving to a nationwide implementation. Estimates are also provided for each of the 36 comparison counties included in both 1999 and 2000. Appendix 3 provides detailed survey response rates for each of these 36 counties and demonstrates the variability that exists in these rates at lower levels of geography. The lowest rate of total survey response was observed in Bronx County, New York at 91.0 percent. All other counties had response rates of 95 percent or higher with nearly half of those response rates exceeding 98.0 percent.

Table 3: Total Survey Response Rates

Survey/Year	Estimated Survey Response Rate
36 counties (1999)	97.3
36 counties (2000)	96.6
C2SS + 36 counties combined (2000)	96.5

***Timely release of C2SS data products is expected***

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<sup>17</sup>Interviewers must create a complete roster, or listing, of the people in the household that need to be interviewed in the survey. The accuracy of the household roster is critical to ensuring survey coverage.

The complexity of preparing raw survey data for public release cannot be overstated. This complexity exacerbated by the very large workload is why it takes about two years to prepare decennial census long form data for release. The C2SS data products will undergo the same set of steps as census long form data. The difference is that the smaller sample size, coupled with the benefits that come from conducting the processing on a regular versus once a decade basis, expedite the data preparation and release of the C2SS.

A myriad of complex procedures are followed to ensure that the data are complete, statistically valid, and of high quality. The data must first be edited to correct for obvious errors. Then, using a well-established statistical method known as imputation, missing responses (e.g., race, education) are statistically derived. Because the data come from a survey that does not include the entire population, the data must be statistically weighted so that they represent the total population. Then, the data must be calibrated to the population controls to ensure consistency. Additionally, a series of complex steps are followed to calculate the actual estimates that will be used in the data products. Once the estimates are prepared, they undergo a rigorous review by subject matter experts using independent data sources to verify accuracy. Finally, the data are readied for tabulation and release.

All of these activities must be completed before data are released. In 1999, data for the largest comparison counties were released beginning in July of 2000; sufficient sample will not be available for the remaining counties until 2002. Work is underway to support release of data products from the C2SS and the same 21 comparison counties this summer. Appendix 4 provides a summary of the ACS development program data release dates.

## **Conclusions**

Implementing the ACS is integral to the Census Bureau continuing to successfully achieve its demographic and socioeconomic data collection mission. The Census Bureau has a constitutional and statutory mandate to enumerate the population and housing of the U.S. as well as to collect detailed demographic and socioeconomic data needed by policymakers at multiple levels of government. Given rapid demographic change and the ever-increasing demand for more timely and relevant information, the Census Bureau must move away from the massive and nearly overwhelming effort to collect the detailed data from one in six households every ten years. Hence, the rationale for designing, developing, and implementing the ACS—to provide more timely and relevant demographic and socioeconomic data throughout the decade. Implementing the ACS, supported by a modern and accurate MAF/TIGER address system, will not only meet detailed demographic and socioeconomic data needs in a timely manner but will also simplify, streamline, and improve the coverage of the 2010 census enumeration.

As the ACS development program has evolved over the last seven years, its desirability and the methodological and operational feasibility of full implementation have been successfully demonstrated. Federal, state, and local uses of ACS data have been steadily growing. Policy



and decision makers from the federal to the community levels are beginning to reap the benefits of current, relevant information provided by the presence of the ACS development program. However, it was essential to demonstrate that the program could be scaled up from 36 counties to a national survey, which was the rationale for the C2SS conducted in 2000. Although the presence of Census 2000 did have some negative effects on C2SS, overall, the data collection and processing operations were successfully completed and response rates were high. Adjustments are being made to further optimize operational activities, such as adopting a more robust staffing plan for TQA and Edit Follow-up. Such ongoing operational improvement is integral to the power of the ACS development program methodology.

Although the outcomes discussed in this report do not convey the whole story, they are important performance measures indicating that the C2SS was a well-managed and executed nationwide survey. The next step is to begin closely examining C2SS data quality. A full assessment will be documented in subsequent reports.

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## **Appendices**

## **Appendix 1: American Community Survey Development Program Names**

**Continuous Measurement:** An experimental program conducted in 31 sites across the nation to develop the methods for providing timely, accurate, and detailed socioeconomic long form data each year. The program uses the American Community Survey (ACS) questionnaire as the data collection instrument. The Continuous Measurement program will end in FY 2003, when the ACS program is fully implemented nationwide as part of the decennial census program. In FY2002, detailed analyses will compare data collected by the ACS in the 31 sites with data from Census 2000 for the same sites to understand how the two methodologies differ.

**American Community Survey:** When fully implemented in FY2003, it will collect the detailed demographic data traditionally collected on the decennial census long form from 3 million households a year, located in every county, American Indian and Native Alaskan area, and Hawaiian Homeland, as well as Puerto Rico. These data will provide updates on detailed characteristics about our nation every year, rather than only once every ten years. Full implementation of the ACS will enable the 2010 census to collect only short form information.

**Census 2000 Supplementary Survey:** The Census 2000 Supplementary Survey (C2SS) was conducted as part of Census 2000. Whereas Continuous Measurement is currently testing *data quality*, the C2SS was designed to demonstrate the *operational feasibility* of collecting long form information at the same time as, but in a separate process from, the decennial census. It, too, was conducted using the ACS questionnaire, but it is separate from the Continuous Measurement program, which is collecting data from larger samples, but only in the 31 sites. The C2SS covered 1,203 counties nationwide surveying 58,000 households monthly.

**Census Long Form Transitional Database (CLFTD):** CLFTD continues collecting data using the ACS questionnaire in the 1,203 counties of the C2SS. Thus, in combination with data from the C2SS, the CLFTD will measure the quality and usability of estimates based on averaging data collected over several years. It will demonstrate the reliability and stability of state and large area estimates over time, as well as the usability of multi-year estimates for the purposes now being met by data from the long form.

Finally, in FY 2003, all testing programs will be complete and the ACS program will be fully implemented nationwide within the decennial census program.

## Appendix 2: Workloads and Timing

<b>Table 1: Workloads and Timing of Mail Preparatory Activities</b>						
<b>Sample Panel</b>	<b>Workload for Initial Mailings</b>	<b>Deliver Advance Letters to USPS</b>	<b>Deliver Initial Packages to USPS</b>	<b>Deliver Reminder Cards to USPS</b>	<b>Workload for Second Mailing</b>	<b>Deliver Repl Packages to USPS</b>
<b>January</b>	P: 71,000 A: 69,621	P: 12/23/99 A: 12/23/99*	P: 12/27/99 A: 12/27/99*	P:12/30/99 A:12/30/99*	P:53,000 A:54,590	P: 1/21/00 A: 1/21/00
<b>February</b>	P: 71,000 A: 69,463	P: 1/20/00 A: 1/20/00**	P: 1/24/00 A: 1/24/00**	P:1/27/00 A:1/28/00**	P:53,000 A:47,490	P: 2/17/00 A: 2/17/00
<b>March</b>	P: 71,000 A: 69,552	P: 2/17/00 A: 2/17/00	P: 2/22/00 A: 2/22/00***	P: 2/25/00 A: 2/25/00***	P:53,000 A:46,181	P: 3/16/00 A: 3/16/00
<b>April</b>	P: 71,000 A: 71,347	P: 3/23/00 A:3/24/00****	P: 3/27/00 A:3/28/00****	P:3/30/00 A:3/30/00****	P:53,000 A:47,254	P: 4/20/00 A: 4/20/00
<b>May</b>	P: 71,000 A: 71,274	P: 4/20/00 A: 4/20/00	P: 4/24/00 A: 4/24/00	P: 4/27/00 A: 4/27/00	P:53,000 A:46,401	P: 5/18/00 A: 5/18/00
<b>June</b>	P: 71,000 A: 71,463	P: 5/25/00 A: 5/25/00	P: 5/30/00 A: 5/30/00	P: 6/2/00 A: 6/2/00	P:53,000 A:48,714	P: 6/22/00 A: 6/22/00
<b>July</b>	P: 71,000 A: 71,333	P: 6/22/00 A: 6/22/00	P: 6/26/00 A: 6/26/00	P: 6/29/00 A: 6/29/00	P:53,000 A:47,761	P: 7/20/00 A: 7/20/00
<b>August</b>	P: 71,000 A: 70,920	P: 7/20/00 A: 7/20/00	P: 7/24/00 A: 7/24/00	P: 7/27/00 A: 7/27/00	P:53,000 A:47,298	P: 8/17/00 A: 8/17/00
<b>September</b>	P: 71,000 A: 71,188	P: 8/24/00 A: 8/24/00	P: 8/28/00 A: 8/28/00	P: 8/31/00 A: 8/31/00	P:53,000 A:46,790	P: 9/21/00 A: 9/21/00
<b>October</b>	P: 71,000 A: 71,184	P: 9/21/00 A: 9/21/00	P: 9/25/00 A: 9/25/00	P: 9/28/00 A: 9/28/00	P:53,000 A:46,962	P: 10/19/00 A: 10/19/00
<b>November</b>	P: 71,000 A: 71,251	P: 10/19/00 A: 10/19/00	P: 10/23/00 A: 10/23/00	P: 10/26/00 A: 10/26/00	P:53,000 A:47,245	P: 11/16/00 A: 11/16/00
<b>December</b>	P: 71,000 A: 71,266	P: 11/22/00 A: 11/22/00	P: 11/27/00 A: 11/27/00	P: 11/30/00 A: 11/30/00	P:53,000 A:47,688	P: 12/21/00 A:12/21/00

LEGEND: P: Projected/Planned; A: Actual

\* C2SS: Delivery of January advance letter was 12/29/99, initial package was 1/5/00, reminder was 1/10/00, replacement was 1/21-24/00

\*\* C2SS: Delivery of February advance letter was 1/20-21/00, initial package was 1/25-31/00, reminder was 2/2/00

\*\*\* C2SS: Delivery of March initial package was 2/22-23/00, reminder was 2/28/00

\*\*\*\* C2SS: Delivery of April advance letter was 3/27/00, initial package was 3/30/00, reminder was 4/3/00

<b>Table 2: Workloads and Timing of Computer Assisted Telephone Interviewing Activities</b>			
<b>Sample Panel</b>	<b>Estimated CATI Workload</b>	<b>Begin CATI Follow-up</b>	<b>Closeout CATI Follow-up</b>
<b>January</b>	P: 18,000 A: 17,443	P: 2/4/00 A: 2/4/00	P: 2/27/00 A: 2/27/00
<b>February</b>	P: 18,000 A: 16,075	P: 3/3/00 A: 3/3/00	P: 3/26/00 A: 3/26/00
<b>March</b>	P: 18,000 A: 14,834	P: 4/5/00 A: 4/5/00	P: 4/27/00 A: 4/27/00
<b>April</b>	P: 18,000 A: 18,014	P: 5/3/00 A: 5/3/00	P: 5/26/00 A: 5/26/00
<b>May</b>	P: 18,000 A: 18,761	P: 6/2/00 A: 6/2/00	P: 6/25/00 A: 6/25/00
<b>June</b>	P: 18,000 A: 21,650	P: 7/1/00 A: 7/1/00	P: 7/26/00 A: 7/26/00
<b>July</b>	P: 18,000 A: 20,405	P: 8/4/00 A: 8/4/00	P: 8/27/00 A: 8/27/00
<b>August</b>	P: 18,000 A: 18,514	P: 9/1/00 A: 9/1/00	P: 9/25/00 A: 9/25/00
<b>September</b>	P: 18,000 A: 20,733	P: 10/4/00 A: 10/4/00	P: 10/28/00 A: 10/28/00
<b>October</b>	P: 18,000 A: 18,927	P: 11/3/00 A: 11/3/00	P: 11/26/00 A: 11/26/00
<b>November</b>	P: 18,000 A: 19,945	P: 12/1/00 A: 12/1/00	P: 12/27/00 A: 12/27/00
<b>December</b>	P: 18,000 A: 22,489	P: 1/3/00 A: 1/3/00	P: 1/27/00 A: 1/27/00

LEGEND: P: Projected/Planned; A: Actual

<b>Table 3: Workloads and Timing of Computer Assisted Personal Interviewing Activities</b>			
<b>Sample Panel</b>	<b>CAPI Workload</b>	<b>Begin CAPI Follow-up</b>	<b>Closeout CAPI Follow-up</b>
<b>January</b>	P: 11,000 A: 11,237	P: 3/6/00 A: 3/6/00	P: 3/30/00 A: 3/30/00
<b>February</b>	P: 11,000 A: 10,560	P: 4/4/00 A: 4/4/00	P: 4/30/00 A: 4/30/00
<b>March</b>	P: 11,000 A: 10,669	P: 5/4/00 A: 5/4/00	P: 5/31/00 A: 5/31/00
<b>April</b>	P: 11,000 A: 11,836	P: 6/5/00 A: 6/5/00	P: 6/29/00 A: 6/29/00
<b>May</b>	P: 11,000 A: 12,360	P: 7/3/00 A: 7/3/00	P: 7/31/00 A: 7/31/00
<b>June</b>	P: 11,000 A: 12,381	P: 8/3/00 A: 8/3/00	P: 8/31/00 A: 8/31/00
<b>July</b>	P: 11,000 A: 12,583	P: 9/5/00 A: 9/5/00	P: 9/28/00 A: 9/28/00
<b>August</b>	P: 11,000 A: 12,280	P: 10/3/00 A: 10/3/00	P: 10/31/00 A: 10/31/00
<b>September</b>	P: 11,000 A: 12,211	P: 11/3/00 A: 11/3/00	P: 11/30/00 A: 11/30/00
<b>October</b>	P: 11,000 A: 12,299	P: 12/4/00 A: 12/4/00	P: 12/28/00 A: 12/28/00
<b>November</b>	P: 11,000 A: 12,262	P: 1/3/01 A: 1/3/01	P: 1/31/01 A: 1/31/01
<b>December</b>	P: 11,000 A: 12,190	P: 2/5/01 A: 2/5/01	P: 2/28/01 A: 2/28/01

LEGEND: P: Projected/Planned; A: Actual

**Appendix 3: Comparison of 1999 and 2000 Total Survey Response Rates in the 36 Comparison Counties**

	<b>Total Survey Response Rate 1999</b>	<b>Total Survey Response Rate 2000</b>
<b>Pima AZ</b>	97.5	95.7
<b>Jefferson AR</b>	98.4	97.4
<b>San Francisco CA</b>	94.4	95.3
<b>Tulare CA</b>	99.2	98.2
<b>Broward FL</b>	97.6	97.1
<b>Upson GA</b>	98.8	98.8
<b>Lake IL</b>	97.2	97.2
<b>Miami IN</b>	97.2	98.2
<b>Black Hawk IA</b>	98.1	98.4
<b>De Soto LA</b>	97.9	96.2
<b>Calvert MD</b>	99.9	98.8
<b>Hampden MA</b>	97.2	96.0
<b>Madison MS</b>	99.7	97.3
<b>Iron MO</b>	97.6	99.2
<b>Reynolds MO</b>	98.1	100.0
<b>Washington MO</b>	98.4	99.3
<b>Flathead MT</b>	98.2	97.7
<b>Lake MT</b>	94.3	96.7
<b>Douglas NE</b>	98.6	97.2
<b>Otero NM</b>	97.3	98.5
<b>Bronx NY</b>	91.4	91.0
<b>Rockland NY</b>	98.8	98.3
<b>Franklin OH</b>	99.4	99.0
<b>Multnomah OR</b>	98.4	98.2
<b>Fulton PA</b>	99.1	98.3
<b>Schuykill PA</b>	97.7	98.1



	<b>Total Survey Response Rate 1999</b>	<b>Total Survey Response Rate 2000</b>
<b>Sevier TN</b>	99.7	96.5
<b>Fort Bend TX</b>	96.6	95.2
<b>Harris TX</b>	97.5	96.0
<b>Starr TX</b>	97.3	95.6
<b>Zapata TX</b>	98.5	98.4
<b>Petersburg VA</b>	99.2	100.0
<b>Yakima WA</b>	99.0	97.3
<b>Ohio WV</b>	99.5	97.9
<b>Oneida WI</b>	99.7	98.8
<b>Vilas WI</b>	97.9	97.8
<b>Overall 36 Counties</b>	<b>97.3</b>	<b>96.6</b>

## Appendix 4: ACS Development Program Data Release Schedule

<p>1999 American Community Survey, 21 of 31 sites* (those areas with a population of 65,000 or more only): release of core tables on American FactFinder and American Community Survey Web site.</p> <p>Core Tables are the basic population and housing tables which are used to prepare site profiles.</p>	<p>July 2000 (completed)</p>
<p>1999 American Community Survey, 21 of 31 sites: release of updated core tables and noncore tables on American FactFinder and American Community Survey Web site.</p> <p>Noncore tables round out the balance of the total set of tables (which number about 500) for both the American Community Survey and the Census 2000 Supplementary Survey. These tables are not required for the site profiles.</p>	<p>Winter 2000-20001 (completed)</p>
<p>1999 American Community Survey CD-ROM: release of 476 tables for 20 of 31 sites.**</p>	<p>June 2001</p>
<p>2000 American Community Survey, 21 of 31 sites: release of core tables with narrative and tabular profiles on American FactFinder and American Community Survey Web site. (Subsite data will be released Winter 2001-2002.)</p> <p>Census 2000 Supplementary Survey: release of core tables for 50 states, District of Columbia, and the country on American FactFinder.</p>	<p>Summer 2001</p>
<p>2000 American Community Survey: release of core tables for subsite data (for cities and places with populations of 65,000 or more) on American FactFinder and American Community Survey Web site.</p> <p>Census 2000 Supplementary Survey: release of core tables for substate data (for most counties and cities with populations of 250,00 or more) on American FactFinder.</p>	<p>Fall 2001</p>
<p>2000 American Community Survey: release of noncore tables for the 21 sites listed below, on American FactFinder and American Community Survey Web site.</p> <p>Census 2000 Supplementary Survey: release of noncore tables for 50 states, District of Columbia, and the country on American FactFinder</p>	<p>Winter 2001-2002</p>
<p>2000 American Community Survey and Census 2000 Supplementary Survey: release of 500+ tables and Public Use Microdata Samples on CD-ROM/DVD</p>	<p>Spring 2002</p>

**\*American Community Survey 21 sites are:** Jefferson County, AR; Pima County, AZ; San Francisco County, CA; Tulare County, CA; Broward County, FL; Lake County, IL; Black Hawk County, IA; Calvert County, MD; Hampden County, MA; Madison County, MS; Flathead & Lake Counties, MT; Douglas County, NE; Bronx County, NY; Rockland County, NY; Franklin County, OH; Multnomah County, OR; Schuylkill County, PA; Sevier County, TN; Fort Bend & Harris Counties, TX; Starr & Zapata Counties, TX; and Yakima County, WA.

\*\*The 1999 American Community Survey CD-ROM will not feature data for Bronx County, NY. See [www.census.gov/acs/www/index\\_c.htm](http://www.census.gov/acs/www/index_c.htm) for details.