Census 2000 Topic Report No. 9

Census 2000 Testing, Experimentation, and Evaluation Program

Issued March 2004

TR-9

Race and Ethnicity in Census 2000

U S C E N S U S B U R E A U

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U.S. Department of Commerce
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United States Census 2000

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Contents

LIST OF TABLES

Foreword

The Census 2000 Testing, Experimentation, and Evaluation Program provides measures of effectiveness for the Census 2000 design, operations, systems, and processes and provides information on the value of new or different methodologies. By providing measures of how well Census 2000 was conducted, this program fully supports the Census Bureau's strategy to integrate the 2010 planning process with ongoing Master Address File/TIGER enhancements and the American Community Survey. The purpose of the report that follows is to integrate findings and provide context and background for interpretation of related Census 2000 evaluations, experiments, and other assessments to make recommendations for planning the 2010 Census. Census 2000 Testing, Experimentation, and Evaluation reports are available on the Census Bureau's Internet site at: *www.census.gov/pred/www/*.

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1. Introduction and Background

This report discusses many of the key findings regarding race and Hispanic-origin reporting from Census 2000 research. We seek to assess how wording changes, question sequencing, revised instructions, dropping examples, and the option to report more than one race worked for Census 2000 in the United States and Puerto Rico, and make recommendations for designing the 2010 Census questions on race and ethnicity.

1.1 Related reports

This topic report is related to the Content and Data Quality Topic Report, and is overlapping to the extent of the discussion on race and ethnic items – specifically race, Hispanic origin, ancestry, and place of birth.

1.2 Past research

In some ways we have learned a lot from our experience with Census 2000, and in some ways things have not changed all that much. Part of the difficulty is that we are trying to measure what is essentially a social phenomenon. In order to understand what is still occurring to this day, we need to review what has been said in the past. We would do well to reflect on the words of William Alonso and Paul Starr (1987:24-27):

> Official statistics do not merely hold a mirror to reality. They reflect the **presuppositions and theories** about the nature of society. They are **products of social, political, and economic interest**s that are often in conflict with each other. They are **sensitive to methodological decisions** made by complex organizations with limited resources. More over, official numbers... often do not reflect all these factors instantaneously: They echo their past as the surface of a landscape reflects its underlying geology. (1987:1) **[emphasis added]**
>
> Official statistics directly affect everyday lives of millions of Americans. ...But official statistics also affect society in subtler ways. **By the questions asked** (and not asked), **categories employed, statistical methods used, and tabulations published**, the statistical systems change images, perceptions, aspirations. The Census Bureau's methods of classifying and measuring the size of population groups determine how many citizens will be counted as "Hispanic" or "Native American." These decisions direct the flow of various federally mandated "preferments," and they in turn spur various allegiances and antagonisms throughout the population. **Such numbers shape society as they measure it**. (1987:2) **[emphasis added]**

Heraclitus noted that "change alone is unchanging" and Charles Dickens noted that "change begets change." So it is that change affects our work at the Census Bureau. To paraphrase Shakespeare, sometimes we seek change, and sometimes change is thrust upon us. An area of regular change in decennial censuses is the items, categories, and methods used to collect racial and ethnic data (Edmonston and Schultze, 1995:142-143). We included racial identification, in one form or another, in every census since the first in 1790 (Bennett, 2000:313; Petersen, 1987:193). Hispanic origin did not appear as a distinct question until 1970 (Chapa, 2000:244). Prior to 1960, census enumerators determined the race of respondents through observation (Bennett, 2000:314). Moreover, from 1790 to 1860 enumerators were not given instructions or definitions of racial categories, and were free to determine the race of each person (Petersen, 1987:190).

Our research leading to the introduction of mail- and self-enumeration in the 1960 census, showed higher rates of enumerator error compared with self-enumeration error (Baylor, 2000:63). This suggested that census data could be more accurate if self-enumeration was used as much as feasible (Goldfield and Pemberton, 2000:149). Two conflicting issues have arisen in recent times. First, as the nation's diversity increases, there is growing pressure for revising and expanding the categories included on the census to be inclusive of all groups and identities. Second, there is a growing and documented recognition of the

fluidity and ambiguity of racial identities (Edmonston and Schultze, 1995:141). Courts have begun to litigate the classifications because of the different conceptual approaches. "The legal approach views individuals as potential members of protected classes," while "the statistical approach reflects an effort to provide a comprehensive demographic profile that may extend beyond legal considerations" (Edmonston and Schultze, 1995:141).

According to Becker (2000:157), the 1980 census was the first that required us to produce data by race and Hispanic origin that conformed with the Office of Management and Budget's (OMB) Statistical Directive No.15, issued in 1977. The data requirements for the Public Law 94-171 "file included a count of the total population and the population eighteen and older by each of five race groups (White, Negro or Black, Asian and Pacific Islander, American Indian, and Other) in total and for persons who also reported a Hispanic origin. These items were required to meet the data needs of the Voting Rights Act." As a consequence, these categories received prominent attention on the questionnaire and in early tabulations (Becker, 2000:157).

Another reason for heightened concern over the race and Hispanic-origin data was brought about by our research showing a differential undercount for people in racial and ethnic minority groups (Robinson and West, 2000:165-166). Many interest groups argued that the census should be adjusted for the undercount, but the Census Bureau concluded that the methods to achieve a fair and equitable adjustment were not available. The announcement by the Census Bureau Director that the 1980 census would not be adjusted was followed by numerous lawsuits which occupied census staff well into the 1980s. In the end, the 1980 census was not adjusted for the undercount (Becker, 2000:157).

Our research also shows that there are other factors associated with why people are missed in the census, but many of those factors, such as illiteracy or lack of English proficiency, lack of familiarity with reasons for data collection, and housing units without clear addresses or in high crime areas (Cohen, 2000:100), may disproportionately affect minority populations as well. Our research on the 1990 census shows that a differential undercount still existed but was declining (Bryant, 2000:160-161).

In any case, litigation demanding that census counts be adjusted for undercount also plagued the 1990 census. Numerous lawsuits were filed against the Census Bureau, and in the process created a negative media environment during the census-taking and the data release. This round of litigation was not settled until the Supreme Court handed down a decision in March 1996 that left the census count as enumerated (Bryant, 2000:15-159).

Census 2000 did not escape the public and private scrutiny and litigation either. The General Accounting Office (GAO) alone issued at least forty-seven reports on the census between January 1995 and March 2003. We used a lot of staff, time, and resources to collect, analyze, and document our decision not to adjust Census 2000, and the GAO concluded that the two coverage measurement programs did not meet their objectives.[1] The U.S. Constitution gives Congress the authority to determine how the census will be conducted, but congressional oversight is influenced by the tension between decisions affecting how the census will be conducted and the political consequences of those decisions. While most technical and operation decisions are made by the Census Bureau, Congress continues to direct specific census operations (Lowenthal, 2000:83).

1.3 Research questions

The major objectives of this Topic Report are to synthesize results from the Census 2000 Testing, Experiment, and Evaluations Program research relevant to race and ethnicity, and to find answers to the following questions:

1. What was the overall effect on reporting of race and Hispanic origin engendered by the changes in question sequencing, wording, questionnaire layout, and dropping examples that were included in 1990? Was completeness of reporting adversely affected?

2. Did sequencing of Hispanic origin ahead of race have the desired effect of reducing nonresponse to Hispanic origin? Did the sequencing of Hispanic origin ahead of race result in proportionately fewer "Some other race" responses in race and did Hispanics have more complete reporting of race?

3. How do the decennial data on race compare to data collected in other sources, such as in the Accuracy and Coverage Evaluation (A.C.E.), the American Community Survey (ACS), the

[1] The GAO references the Accuracy and Coverage Evaluation (A.C.E.) and the Integrated Coverage Measurement (ICM) programs.

Census 2000 Supplementary Survey (C2SS), and the Current Population Survey?

4. Given the changes in the race and Hispanic-origin questions in 2000, how can these data be compared to data from 1990? What are the limitations of such comparisons? What lessons have we learned about bridging the Census 2000 race data so that they are more comparable to those collected prior to 1990 and in other data collections that do not allow for more than one race response?

5. Given that the Census 2000 of Puerto Rico was the first decennial census to ask a question on race in many decades, what were the issues in collecting those data? What were the general attitudes and problems expressed by the Puerto Rican public in terms of the race question? How do the race and ethnic data collected in Puerto Rico compare to those collected state-side for the total population, Hispanics, and Puerto Ricans in the United States?

6. What research and testing should be conducted before the 2010 Census in order to improve upon the Census 2000 questions on race and Hispanic origin?

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2. Census 2000 Alternate Questionnaire Experiment

The Alternate Questionnaire Experiment (AQE) was one of the more effective evaluations conducted for Census 2000. Although its main limitation is that it can only inform us about the mail responses, Martin's (2002a) AQE-based findings are significant for our understanding about the total effect of the changes in the census mail questionnaire from 1990 to 2000. A summary of Martin's (2002a) findings follows:

2.1 Study design

During Census 2000, the Alternative Questionnaire Experiment 2000 mailed 1990-style short forms to an experimental sample of 10,500 households. The 1990-style form preserves 1990 question wording, categories, order, and format, but incorporates some recognizable elements of the Census 2000 design. Race and Hispanic-origin responses were coded and pre-edited using a simplified version of Census 2000 procedures, but were not fully edited and imputed. A control panel of about 25,000 households received Census 2000 questionnaires. Mail return rates were very similar for both panels (72-73 percent) (Martin, 2002a:iv).

2.2 Limitations

Results of the experiment are generalizable only to the Census 2000 mailout/mailback universe. Excluded are mail nonrespondents enumerated in nonresponse followup, and segments of the population enumerated in other operations (such as American Indians on reservations and Alaska Natives) (Martin, 2002a:iv). Race and Hispanic-origin responses were coded and edited using simplified versions of Census 2000 edit and imputation procedures. For example, reports of more than one race would not have been allowed in the 1990 census but were allowed in the 1990-style panel in the AQE. Furthermore, missing data were not imputed for race or for Hispanic origin.

One limitation listed prominently in Martin's study is the relatively small sample size – "...so statistical inferences about small differences between forms, or small population groups" may not be reliable (Martin, 2002a:5).

2.3 Findings in brief

2.3.1. Changes to the Census 2000 questionnaire resulted in "substantially improved completeness of race and Hispanic origin reporting" (Martin, 2002a:iv) as measured by item nonresponse.

- *Hispanic origin:* Overall item nonresponse to the question on Hispanic origin was **3.33 percent** in the Census 2000-style questionnaire, compared with **14.46 percent** in the 1990-style questionnaire.
- *Race:* Overall item nonresponse to the question on race was **3.27 percent** in the Census 2000-style questionnaire, and **5.95 percent** in the 1990-style questionnaire.
- *Race nonresponse by Hispanics:* Item nonresponse to the question on race by Hispanics was **20.79 percent** in the Census 2000-style questionnaire, compared with **30.53 percent** in the 1990-style questionnaire.
- *Race nonresponse by non-Hispanics:* Item nonresponse to the question on race was **0.60 percent** by non-Hispanics in the Census 2000-style questionnaire, and **1.53 percent** in the 1990-style questionnaire.

2.3.2 Discussion of item nonresponse

Item nonresponse is one of the main indicators of data quality because, in the absence of a response by the respondent, we must impute the missing information. Traditionally, Hispanic origin had one of the highest allocation rates among the short-form items (Edmonston and Schultze, 1995:150). One of the major changes in Census 2000 was to sequence Hispanic origin ahead of race in order to reduce the nonresponse to the Hispanic-origin question (OMB, 1997:58789). Census Bureau research showed that most people who did not answer the Hispanic-origin question in 1990 were non-Hispanics (Martin, 2002a:1). In addition, Census Bureau research showed that about 6 percent of those who did not respond to the Hispanic-origin item in the 1990 census were reported as Hispanic in the 1990 Content Reinterview Survey compared to about 7 percent of those who answered the question on Hispanic origin (McKenney, Bennett, Harrison, and del Pinal, 1993:5).

The 2000 Content Reinterview Survey (CRS) showed that 25 percent of people who left the question on Hispanic origin blank in Census 2000 but answered it in the CRS were of Hispanic origin (Singer and Ennis 2002:52). By implication, the overwhelming proportion of those who did not answer the question on Hispanic origin in AQE were likely to be non-Hispanic.

Several Census Bureau tests conducted in 1987 and published in 1990 showed that reversing the order of the race and Hispanic origin items, and adding instructions to answer both questions resulted in improved Hispanic origin response rates (Martin, 2002a:1). According to Peterson (1987:207), a Census Advisory Committee had recommended that the Census Bureau reverse the order of race and Hispanic-origin questions for the 1980 census. However, many saw this as an attempt "to raise the maximum the number that would be classified" as Hispanic (Petersen, 1987:207). As we will see in a section below, that fear appears to be unfounded. In any case, implementing this change came about only after the Office of Management and Budget's (OMB) mandated sequencing change (Martin, 2002a:1).

From the standpoint of item nonresponse to the Hispanic-origin item, the changes in the Census 2000 questionnaire were highly successful. Compared to the 1990-style form, the 2000-style form may have reduced nonresponse by about eleven percentage points or 77 percent (see Table 2.1). However, as we will discuss later, reporting of specific groups may have been adversely affected by the questionnaire changes. On the other hand, race nonresponse shows a much more moderate level of improvement with the 2000-style form: a change of less than three percentage points or about 45 percent lower. As shown above, race nonresponse varies quite a bit by Hispanic origin. Nonresponse to race by Hispanics was reduced by almost 10 percentage points with the 2000-style form, but represented a change of 32 percent. On the other hand, nonresponse by non-Hispanics was reduced by 0.93 percentage points with the 2000-style form, but represents a 61 percent reduction. One downside to the 2000-style form, from the perspective of nonresponse, was a higher race nonresponse by people who did not respond to Hispanic origin either. Race nonresponse when Hispanic origin was missing was higher by 3.5 percentage points or about 36 percent in 2000-style forms compared with the 1990-style forms. However, this was a much smaller group than it was for the 1990-style form.

Table 2.1
Alternative Questionnaire Experiment (AQE) Item Nonresponse for Hispanic Origin and Race by Hispanic Origin

Item	2000-Style (1)	1990-Style (2)	Difference (3=1-2)	Percent difference (4=3/2)
Hispanic origin	3.33	14.46	**–11.13**	–77.0
Race	3.27	5.95	**–2.68**	–45.0
Non-Hispanics	0.60	1.53	**–0.93**	–60.8
Hispanics	20.79	30.53	**–9.74**	–31.9
Origin missing	13.18	9.72	**3.46**	35.6

Note: **Bold** numbers in Column 3 indicate significant differences at the p<.05 level.
Source: Derived from Martin (2002a:7,11 Table 2 and Table 4)

2.3.3 Conclusion on item nonresponse

It is worth mentioning again that the previously discussed results may only apply to mail responses. The changes to the 2000 questionnaire appear to have produced a very salutary effect on Hispanic-origin nonresponse, at least in mail returns. Although the response rates to the question on Hispanic origin are vastly improved in the 2000-style questionnaire (3.3 percent compared with 14.5 percent), nonresponse to Hispanic origin remains on the high side. Nonresponse to the race question is very low for non-Hispanics (0.6 percent on the 2000-style form, and 1.5 percent on the 1990-style form). On the other hand, race nonresponse remains unacceptably high for Hispanics at over 20 percent despite a significant improvement in race reporting by Hispanics in 2000-style forms. **Future research is needed to address this persisting issue.**

2.4 Overall race reporting

2.4.1 "Changes to the Census 2000 questionnaire also affected race reporting" (Martin, 2002a:iv,12).

- *Reporting of Two or more races:* In the Census 2000-style questionnaire **2.03 percent** of respondents reported Two or more races compared with **0.82 percent** in the 1990-style questionnaire.
- *Reporting of Native Hawaiian and Other Pacific Islander*: In the Census 2000-style questionnaire **0.17 percent** of respondents reported Native Hawaiian and Other Pacific Islander

compared with **0.05 percent** in the 1990-style questionnaire .

- *Reporting of Some other race:* In the Census 2000-style questionnaire **3.72 percent** of respondents reported Some other race compared with **4.42 percent** in the 1990-style questionnaire.

2.4.2 Discussion of overall race reporting

Compared to the 1990-style, the 2000-style form yields a higher proportion of responses of more than one race. We expected this finding because the 2000-style form allows reporting of more than one race but the 1990-style does not. This was also one of the changes called for by the new OMB standards (OMB, 1997:58789). What is more interesting is that nearly one percent of respondents to the 1990-style form also gave more than one race. While it is well known that people have responded in this manner in past censuses (Edmonston, Goldstein, and Tamayo Lott, 1996:23), our procedures edited multiple race responses into single responses (Cresce, 2003).

Another issue of concern is the reporting of "Some other race," which is not a standard OMB race category (OMB, 1997:58789). The "Some other race" category was added for respondents who were unable to identify with one or more of the OMB categories (White; Black or African American; American Indian or Alaska Native; Asian; and Native Hawaiian and Other Pacific Islander). One difficulty is that "Some other race" (SOR) has become the third largest category after "White" and "Black or African American" (Grieco and Cassidy, 2001:2-3). Another difficulty is that for all other federal statistical purposes we have reclassified the SOR responses into the OMB categories, and there is "no way to evaluate how this reclassification corresponds to people's self-perception" (Edmonston, Goldstein, and Tamayo Lott, 1996:39). As in previous censuses, the vast majority of people in the SOR category in Census 2000 were of Hispanic origin (Grieco and Cassidy, 2001:11). For all these reasons, it is important to examine race reporting separately by Hispanic origin (Martin, 2002a:13,14).

2.4.3 Race reporting by Hispanics

- *Reporting of Two or more races by Hispanics:* In the Census 2000-style questionnaire **7.84 percent** of Hispanics reported Two or more races compared with **4.59 percent** in the 1990-style questionnaires.
- *Reporting of Some other race by Hispanics:* In the Census 2000-style questionnaire **39.03 percent** of Hispanics reported Some other race compared with **51.47 percent** in the 1990-style questionnaire.
- *Reporting of White by Hispanics:* In the Census 2000-style questionnaire **48.98 percent** of Hispanics reported White compared with **39.88 percent** in the 1990-style questionnaire.

2.4.4 Discussion of race reporting by Hispanics

There are several significant differences in race reporting by Hispanics in the 2000 and 1990-style forms, as can be seen in Table 2.2. First, Hispanics were much less likely to report as SOR (about 24 percent less), and much more likely to report as White in the 2000-style forms (about 23 percent more). They were also more likely to select more than one race (about 71 percent) than in the 1990-style, as expected. Other research (del Pinal, Martin, Bennett, and Cresce, 2002:3) shows that much of the Two or more races reporting by Hispanics involves SOR in combination with other races as one of the races. Thus, eliminating SOR responses reduces Hispanic reporting of Two or more races to about the same level as non-Hispanics.

Another interesting finding is that Hispanics are more likely (about 106 percent more) to report as American Indian in 2000-style than in 1990-style forms, and much less likely (about 93 percent less) to report as Native Hawaiian and Other Pacific Islander. But overall these differences are not statistically significant. However, Martin (2002a:13) reports that the

Table 2.2
Alternative Questionnaire Experiment (AQE) Race Responses by Hispanics

Race	2000-Style (1)	1990-Style (2)	Difference (3=1-2)	Percent difference (4=3/2)
White	48.98	39.88	**9.10**	22.8
Black	2.07	2.32	–0.25	-10.8
American Indian and Alaska Native	1.48	0.72	0.76	105.6
Asian	0.58	0.88	–0.30	-34.1
Native Hawaiian and Other Pacific Islander	0.01	0.15	–0.14	-93.3
Some other race	39.03	51.47	**–12.44**	-24.2
Two or more races	7.84	4.59	**3.25**	70.8

Note: **Bold** numbers indicate significant differences at the p<.05 level.
Source: Derived from Martin (2002a:13 Table 6).

difference is significant in the low coverage area (LCA) strata (2.08 vs. 0.79 percent, or about a 163 percent difference) but not in the high coverage area (HCA) strata. The 2000-style form captured more Native Hawaiian and Other Pacific Islander responses, although the percentages are small. At this point it may be worth reminding readers that small categories are "more vulnerable to inaccuracies" due to both sampling and non-sampling error (Edmonston, Goldstein, and Tamayo Lott 1996:24,39). Indeed, Martin (2002a:5) prominently lists among the limitations of this study the relatively small sample size – "so statistical inferences about small differences between forms, or small population groups" may not be reliable. In view of this limitation Martin's (2002a) findings are remarkable indeed.

Table 2.3
Alternative Questionnaire Experiment (AQE) Race Responses by Non-Hispanics and Hispanic Origin Not Ascertained[2]

Race	2000-Style (1)	1990-Style (2)	Difference (3=1-2)	Percent difference (4=3/2)
White	81.15	82.43	***–1.28***	-1.6
Black	12.28	12.02	0.26	2.2
American Indian and Alaska Native	0.38	0.48	–0.10	-20.8
Asian	4.39	4.34	0.05	1.2
Native Hawaiian and Other Pacific Islander	0.18	0.04	**0.14**	350.0
Some other race	0.17	0.20	–0.03	-15.0
Two or more races	1.45	0.48	**0.97**	202.1

Note: **Bold** numbers indicate significant differences at the p.05 level; ***bold italic*** number indicates significant differences at the .10 level.

Source: Derived from Martin (2002a:14 Table 7)

2.4.5 Race reporting by non-Hispanics

- *Reporting of Native Hawaiian and Other Pacific Islander by non-Hispanics:* In the Census 2000-style questionnaire **0.18 percent** of non-Hispanics reported Native Hawaiian and Other Pacific Islander compared with **0.04 percent** in the 1990-style questionnaire.
- *Reporting of White by non-Hispanics:* In the Census 2000-style questionnaire **81.15 percent** of non-Hispanics reported White compared with **82.43 percent** in the 1990-style questionnaire.
- *Reporting of Two or more races by non-Hispanics:* In the Census 2000-style questionnaire **1.45 percent** of non-Hispanics reported Two or more races compared with **0.48 percent** in the 1990-style questionnaire.

2.4.6 Discussion of race reporting by non-Hispanics

There are several significant differences in race reporting by non-Hispanics and respondents who did not report a Hispanic origin in the 2000 and 1990-style forms (see Table 2.3). First, non-Hispanics were slightly less likely to report as White (about 1.6 percent less), and much more likely to report as Pacific Islander in the 2000-style forms (about 350 percent more). As expected, and similar to Hispanics, non-Hispanics were also more likely to select more than one race (about 202 percent more) in the 2000-style form.

Martin (2002a:14) explains the slightly lower reporting of White among non-Hispanics in 2000-style forms as an effect of the option of reporting more than one race, yet there was no measurable downward effect on other categories. If this proposition is true, it suggests that people of more than one race tend to report as White when only one race response is allowed, but report as Two or more races when multiple race responses are allowed. In a later section I examine the propensity to report White among respondents who report more than one race, which may shed light on this issue.

Another interesting finding is that "contrary to what might have been expected, there is little evidence that allowing respondents to report more than one race reduced the single race reporting in the 5 major race categories" (Martin, 2002a:iv). This may allay some fears among those who thought that the reported size of some minority categories may be smaller because of the reporting of more than one race. However, one reason that the non-White categories appear not to be as affected is that the 1990-style forms also had some (0.82 percent) respondents report more than one race despite the instruction to report one. These multiple responses would have been edited into a single race category in 1990. In addition, almost one-third (30.5 percent) of Hispanics did not report a race, so it is unknown how their responses would have impacted the results.

[2] This table included both non-Hispanics and respondents who did not answer the Hispanic-origin question, which makes sense because our previous research suggests that most of the non-responders are not Hispanic (McKenney, Bennett, Harrison, and del Pinal, 1993:5).

The actual effect in published race data may be affected by how these responses are allocated. In addition, as Martin (2002a:5) reminds us, these findings are generalizable only to the Census 2000 mailout/mailback universe.

2.5. Overall Hispanic-origin reporting

According to Martin (2002a:v), "despite the reversed sequence of Hispanic origin and race question wording differences, the same percentage (slightly over 11.1 percent) reported as Hispanic in both forms."

Martin (2002a:7) reports that both the 2000- and 1990-style forms yielded nearly identical proportions of Hispanic respondents – about 11 percent. However, the high rates of missing data create uncertainty about the overall percentage of Hispanics identified by each form. On the other hand, the proportion of non-Hispanics in the 2000-style form was about 85 percent compared to about 74 percent in 1990-style forms. The remaining difference is due to people who did not respond – about 3 percent did not respond in 2000-style forms compared to about 14 percent in 1990 style forms.

2.5.1 Discussion of overall Hispanic-origin reporting

As discussed above, our previous research suggests that in the past non-Hispanics were much more likely to omit answering the Hispanic-origin question. Martin (2002a:7) concludes that "under this assumption, the results suggest the 2000-style questionnaire did not affect reporting as Hispanic, except to reduce the number of non-Hispanics who would have left the item blank in a 1990-style questionnaire." The ultimate distributional effect would depend on how the missing data are edited and imputed. Martin (2002a:7) notes that the "difference in rates of missing data is very large, and was expected based on previous tests of effects of item sequence and an added instruction."

This finding is very important because of the concerns that sequencing Hispanic origin ahead of race might have the effect of artificially inflating the number of Hispanics (Petersen, 1987:207). The equal proportions of Hispanics in the 2000-style and 1990-style forms (about 11 percent) strongly suggest that this was not the case. This supports Martin's (2002:v) conclusion that "any changes from 1990 to 2000 in the fraction of the population identifying as Hispanic are not due to changes in the design of mail questionnaire. However, there were questionnaire effects on reporting a detailed Hispanic origin," as I discuss next. We should note that the high rates of missing data create uncertainty about the overall fraction of Hispanics that would be identified by each form after the data were fully edited and imputed.

Table 2.4
Alternative Questionnaire Experiment (AQE) Detailed Hispanic Origin Responses by Form Type

Race	2000-Style (1)	1990-Style (2)	Difference (3=1-2)	Percent difference (4=3/2)
Total people identified as Hispanic (percent)	100.00	100.00		
"Check box groups"	70.25	73.23	–2.98	-4.1
Mexican, Mexican American, Chicano	54.26	58.68	**–4.42**	-7.5
"Example groups"	6.41	11.16	**–4.75**	-42.6
All other specific Hispanic groups	4.20	8.68	**–4.48**	-51.6
Write-in general descriptor ("Hispanic"/"Latino"/"Spanish")	11.90	1.90	**10.00**	526.3
Other Hispanic, no write-in	7.25	5.03	**2.22**	44.1

Note: **Bold** numbers indicate significant differences at the p<.05 level.
Source: Derived from Martin (2002a:9 Table 9).

2.6 Detailed Hispanic-origin reporting

According to Martin (2002a:v), "the 2000-style questionnaires elicited fewer reports of specific Hispanic groups, and more reports of general Hispanic identity (e.g., Hispanic, Latino, Spanish) than the 1990-style questionnaires."

Martin's (2002a:10) AQE findings point out that "about 92 percent of Hispanics reported a specific group in 1990-style forms, compared with 80 percent who filled out 2000-style forms."[3] Martin (2002a:10) broke out these responses into five categories (shown in Table 2.4 below), and reported that the 2000-style forms produced more general or non-specific Hispanic responses (e.g., "Hispanic," "Latino," "Spanish"; or "Other Hispanic" without providing a write-in response) and fewer specific groups ("check box groups,"[4]

[3] GAO (2003:14) reported "93 percent of Hispanics given the 1990-style form reported a specific subgroup, compared to 81 percent of Hispanics given the 2000-style form," but that was based on preliminary AQE findings.

[4] Groups with their own specific checkbox included: 1) Mexican, Mexican Am., Chicano; 2) Puerto Rican; and 3) Cuban.

"example groups,"[5] and all other specific national origin groups). Table 2.4 summarizes the final AQE results regarding Hispanic subgroup reporting.

The largest difference between the 2000-style and 1990-style forms is the proportion of general Hispanic responses ("Hispanic," "Latino," and "Spanish"). The 2000-style forms produced 10 percentage points or 526 percent more of these responses than did the 1990-style forms. Similarly, the 2000-style form also produced another 2.22 percentage points or 44 percent more "Other Hispanic" responses with no write-in (see Table 2.4). On the other hand, the 2000-style forms produced fewer specific Hispanic groups than the 1990-style forms. The 2000-style form had about 43 percent (4.75 percentage points) fewer of the example groups and about 52 percent (4.48 percentage points) fewer of the specific non-example groups. Although 2000-style forms had 4 percent (2.98 percentage points) fewer specific checkbox groups overall than did the 1990-style form, that difference was not statistically significant. However, when compared separately, the Mexican-origin check box group was 7.5 percent (4.42 percentage points) lower in the 2000-style forms, and that difference is statistically significant.

Martin (2002a:10) concludes:

> ...the experiment does offer evidence that the questionnaire affected reporting of detailed Hispanic origin. Hispanics who filled out 2000-style mail questionnaires were less likely to report a specific Hispanic group and more likely to report a general descriptor (such as Hispanic, Latino, or Spanish) than those who filled out 1990-style questionnaires. Although the cause of the effect is uncertain, it is probably due to the combined effect of question wording and the elimination of examples in the Census 2000 questionnaire.

2.6.1 Discussion of detailed Hispanic-origin reporting

Are the AQE results just a fluke or is there other evidence of differences in reporting? I believe the AQE results for detailed Hispanic reporting do, in fact, explain much of what was noticed from the Census 2000 data. In a report about the Hispanic population from Census 2000, Guzmán (2001:2) also noted that "17.3 percent (6.1 million) of the total Hispanic population" did not give a specific national origin group; and these responses "were second in size" behind the population that reported Mexican origin.

As additional information from Census 2000 became available at more local levels during the summer of 2001, community advocates, journalists and researchers noted unexpectedly low numbers of specific Hispanic groups. According to Suro (2002:3), two competing explanations emerged: "either a large number of people had chosen to identify themselves with a broad ethnic designation, such as Hispanic or Latino, rather than a specific national origin, such as Dominican or Salvadoran, or these results were a product of changes in the way the census questionnaire asked about Hispanic origin."

After examining the Hispanic-origin data, Logan (2002:3,4) concluded that "Census 2000 did an excellent job of counting Hispanics, but performed poorly in identifying their origin." Among the likely causes, Logan noted that "no examples" and a "change in wording of the question itself" in Census 2000 resulted in "a severe underestimate of the numbers of specific Hispanic groups in 2000." Logan also noted a more dramatic effect in states and metropolitan areas with large concentrations of specific Hispanic groups. Another reason Logan (2001:4) has for finding the Census 2000 results implausible is a comparison with the Census 2000 Supplementary Survey (C2SS). In the C2SS (which was taken the same year), about 9.6 percent of Hispanics did not report a specific national origin, compared with about 17.6 percent in Census 2000. Similarly, Suro (2002:8) finds the distribution of specific Hispanic groups more plausible in C2SS.

Responding to complaints from community groups, local government officials, and researchers, members of Congress asked the U.S. General Accounting Office (GAO) to look into the issue. The GAO (2003a:1) report expresses concerns that the "deletion of Hispanic subgroup examples" from the Census 2000 questionnaire was the cause of lower than expected "counts of Dominicans and other Hispanic subgroups." GAO concluded that for "Census 2000, the [Census] Bureau removed the subgroup examples as part of a broader effort to simplify the questionnaire and help improve response rates." GAO (2003a:14), as noted above, found that early AQE results and C2SS data seemed to indicate a problem with the Census 2000 detailed Hispanic distribution.

While the debate about how to identify the Hispanic population

[5] Groups given as specific examples in the 1990-style form included: Argentinean, Columbian, Dominican, Nicaraguan, Salvadoran, and Spaniard.

dates back to the 1960s (see Choldin, 1986:403), as seen above, the issue in Census 2000 is the distribution by specific national-origin groups. Choldin (1986:404) noted that "national statistics must change in response to sociopolitical changes" and that "the role of the statistician is not simply scientific, but is also conditioned by events in the political environment." However, up until Census 2000, the differential undercount was controversial, not the distribution of specific groups.

Table 2.5
Comparison of Specific Hispanic-Origin Distributions From Census 2000 Long Forms and Simulated Totals Using Supplemental Information on Place-of-Birth and Ancestry

Race	Census 2000 Long Form (1)	Simulated totals (2)	Difference (3=2-1)	Percent difference (4=3/1)
Total people identified as Hispanic (percent)	100.0	100.0		
"Check box groups"—total	72.5	77.2	4.6	6.4
Mexican, Mexican American, Chicano	59.3	63.4	4.1	6.9
"Example groups"	6.9	9.2	2.4	34.7
All other specific Hispanic groups	4.9	6.3	1.4	28.4
Write-in general descriptor ("Hispanic"/"Latino"/"Spanish")	9.9	4.8	-5.1	-51.8
Other Hispanic no-specific	5.8	2.5	-3.3	-56.5

Source: Derived from Cresce and Ramirez (2003:11 Table 6).

2.6.2 Analysis of general Hispanic responses in Census 2000

At the request of members of Congress, the Census Bureau undertook the task of using information on place of birth and ancestry from the Census 2000 long form to supplement the general Hispanic-origin responses (Cresce and Ramirez, 2003). These new estimates "do not fully reflect self-identification" and are not meant to replace the official Census 2000 figures. Still, this "simulation" produced interesting results: of an estimated 5.7 million individuals who provided a general Hispanic response, 54 percent (3.1 million) also provided more information about their specific origin in either place of birth or ancestry. That left about 2.6 million individuals who gave no additional information about their specific Hispanic origin (Cresce and Ramirez, 2003:9).

This simulation suggests that *every single specific category* (check box and specific write-in groups) could be increased using additional information from place of birth and ancestry (see Table 2.5). The simulation increases the proportion in all specific groups from 84 percent to 93 percent of all Hispanics, an increase of about 10 percent. However, example groups increased by 35 percent (2.4 percentage points) and other specific groups increased by 28 percent (1.4 percentage points). And by design, the general responses declined by 52 percent (5.1 percentage points) and the other non-specific responses declined by 57 percent (3.3 percentage points). These results are very similar to those of Martin (2002), Logan (2001), and Suro (2002), which all use slightly different data sources and methods. Cresce and Ramirez (2003:19) specifically compare the simulation total to Logan (2001) and Suro (2002), and find that the former overshoots and the latter undershoots the simulation totals.

2.6.3 Discussion of general Hispanic responses in Census 2000

Cresce and Ramirez (2003:7) list several limitations to their simulation analysis, some of which also apply to the research by Logan (2001) and Suro (2002). These analyses only add to specific groups by subtracting from the general groups, and don't use contradictory information to reduce specific groups. All three analyses assume the total Hispanic population is correct and do not add or subtract from that total. The Martin (2002) analysis does not have this limitation, but is limited to a relatively small sample of mail returns. While Cresce and Ramirez (2003) use Census 2000 long form data, Logan (2001) models the distribution of specific groups with Current Population Survey (CPS) data, and Suro (2002) uses C2SS data. For a more detailed discussion of these differences, see Cresce and Ramirez (2003:7-8,19-20). All of these studies seem to indicate that the observed changes in the distribution of Census 2000 detailed Hispanic groups compared with changes seen in other sources were not due entirely to a shift in how people of Hispanic origin define themselves, but rather to some product of the changes in the way we asked the Hispanic origin question. We are left with the question of whether the elimination of examples was the probable cause of the reporting differences in detailed Hispanic groups.

2.6.4 Conclusions about detailed Hispanic responses in Census 2000

In discussing the reporting changes in Hispanic groups, Martin (2002a:16) speculates:

> Although the cause of the effect is uncertain, it is probably due to the combined effect of question wording and the elimination of examples in the Census 2000 questionnaire. The examples next to the write-in box provided cues about the type of answer intended by the question in the 1990-style form. In the Census 2000 questionnaire, the instruction to "print group" right after the "Yes, other Spanish/Hispanic/Latino" response category may have suggested to some respondents that they should print whichever of these three terms they preferred.

Although the elimination of examples is commonly assumed to be the main cause of this problem (see GAO 2003:2 for example), Martin (2002a:16) argues that "the hypothesis of example effects does not account for the higher reporting of Mexicans in the 1990-style form. This difference requires a different explanation, because the specific examples (Mexican, Mexican Am., Chicano) are identical in both forms." Similarly, the analysis by Cresce and Ramirez (2003:11) suggests that all check box groups (Mexican, Puerto Rican, and Cuban) may have been affected, which also argues that something other than removing examples was at work.

Martin (2002a:16) goes on to argue that:

> The wording change from "Is this person of Spanish/Hispanic origin?" to "Is this person Spanish/Hispanic/Latino?" may have contributed to the reporting difference. The Census 2000 question appears directed to an overarching identification as Hispanic (or Spanish or Latino), and the absence of specific Hispanic examples would reinforce this wording effect.

Reflective of the issue of examples as they may have affected both Hispanic and race reporting, Martin (2002b:4) notes:

> The apparent contrast between the effects of examples in the Hispanic origin and race items merits further analysis and consideration. The examples in the 1990 Hispanic origin question may have served to clarify that the intent of the question was to collect detailed Hispanic origin, while the race question may not have suffered from the same ambiguity, hence may not need examples. In addition, the examples were placed differently in the two questions. In the 1990 form, the Hispanic examples were prominently placed, just below the "other Spanish/Hispanic" response option, above the write-in space. The race examples were off to the left, below the question and remote from the write-in space, where they were less likely to be seen than the Hispanic examples were. This difference in placement would likely reduce their impact in the race item compared to the Hispanic origin item.

Unfortunately, as Martin (2002a:16) suggests, "the experiment was designed to evaluate the effects of all the wording and design differences between the 1990 and 2000 mail questionnaires, it is not well suited to isolating the causes for this or other differences." We speculate that in effect we changed the "sense" of the Hispanic-origin question by removing examples, dropping "origin" from the question, using three general terms separated by slash marks (Spanish/Hispanic/Latino), and using a write-in instruction ("Yes, other Spanish/Hispanic/Latino – Print group") that seems to request one term should be printed. All of these combined changes may have caused respondents to select among the terms listed (or even reject these terms) rather than report their specific origin. In later sections, I will present other evidence to support this contention. In any case, the AQE provides the most important and telling evidence to date on the effect of questionnaire changes in Census 2000.

As reflected in the GAO (2003a:10) report, neither the 1997 OMB revisions to Directive No.15 nor Public Law 94-311 require us to collect data on detailed Hispanic groups but we have done so in the best effort to get an accurate overall count of the Hispanic population. All evidence points to the achievement of this goal in Census 2000. However, the fact we publish data on detailed Hispanic-origin groups indicates to data users that we have some confidence in the accuracy of the reported data. As GAO (2003a:3) summarized the issue, "while the [Census] Bureau reported ***what respondents marked*** on their questionnaires, because of ***confusion*** over the wording of the question, the subgroup data could be misleading" [***emphasis added***]. It may no longer be possible for us merely to publish what respondents provided without a thorough assessment of the data and a decision process about whether to publish or not. However, the public demand for census data, no matter how flawed or inconclusive, may give us no recourse but to make the data available. This point is well illustrated by the demand for group quarters (see GAO, 2003b) and adjustment data

(see GAO, 2003c) from Census 2000.

While respondent confusion may play a role in producing differences in detailed Hispanic reporting, it is also likely that our instructions were not clear in communicating what we wanted from the respondent. As Martin (2002c:592) reminds us, "questionnaire changes that seem minor can have important effects" on our data. Therefore, we need to "pretest and evaluate all questionnaire changes," and although we did conduct tests prior to the changes in the census questionnaire, "perhaps the test design and ***sample size*** were not adequate to detect" any effects that would illuminate these complex and important issues. It seems that an inadequate and small sample size, in particular, may limit our ability to detect the effect of changes. I will address these concerns in subsequent sections of this report. The GAO report emphasizes the need for further improvements in the quality of detailed Hispanic data, and highlights the need for consistency among data sets in this regard.

2.6.5. Reporting of detailed Asian and Pacific Islander responses in Census 2000

Given the concern about the effects of dropping examples on the reporting of specific Hispanic groups, Martin (2002b:1) undertook an examination of the AQE data to see how the changes in the questionnaire affected the reporting of specific race groups. Looking first at the race example groups (Hmong, Fijian, Laotian, Thai, Tongan, Pakistani, and Cambodian) taken as a whole, Martin (2002b:2) found a statistically significant difference in the reporting of these specific groups. However, the 2000-style form, ***which did not list examples,*** showed a higher proportion of these example groups than the 1990-style form (0.356 vs 0.106 percent). Martin (2002b:3) also notes that "in general, the 2000-style form elicited more reports of both the Asian and the Pacific Islander example groups, although only the overall differences for Asians and for Pacific Islanders are statistically significant at the .05 level." One difficulty with the analysis was that there were no responses of specific Pacific Islander groups in the 1990-style forms (see Martin 2002b:3, Table 2), indicating that this sample may have been too small to conclude anything about example effects in this case. Martin (2002b:3) also notes that a larger sample is needed, but points out that "the difference is consistent for all the groups, and marginally significant for several ($t > 1.645$ is significant at $p<.10$ with a 2-tailed test), despite very small cell frequencies." Additional research on the use of examples is addressed by Martin, Gerber, and Redline (2003).

Among Martin's (2002:3-4) other findings was the discovery that there was no difference in overall reporting of the Asian category (4.04 percent in 2000-style and 4.06 percent in the 1990-style forms), but there were significantly more Pacific Islanders in the 2000-style forms (0.17 percent vs 0.05 percent). Martin (2002b:4) concludes that the "results do not indicate that dropping the examples had any negative effects on reporting of the [Asian and Pacific Islander] example groups in 2000-style forms," but that "differences in reporting probably arise from other design features of the questionnaire, and are probably not a (perverse) effect of examples."

Martin's (2002b:4) preliminary conclusions are as follows:

> Other questionnaire features are probably influencing the results for Pacific Islanders, in particular, splitting the API [Asian and Pacific Islander] category into two separate categories ["Asian"; "Native Hawaiian and Other Pacific Islander"]. The Pacific Islander category is probably more populated in 2000-style forms because it is easier for Pacific Islanders to report when the Pacific Islander boxes are grouped together rather than interspersed among Asian boxes, as they are in the 1990-style form, and when they have their own "Other Pacific Islander" response box associated with a write-in space.
>
> Both Asian and Pacific Islander respondents may have been confused by the label "Other API" used in the 1990-style form, which requires close attention and skilled reading to decode, and which may have contributed to the difference in write-ins of example groups. I have not yet examined whether there are also form differences in write-ins of non-example Asian groups, which might shed light on whether the revisions made to the 2000-style forms led to a *general* increase in write-ins of specific Asian groups.

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3. Census 2000 Content Reinterview Survey

Content reinterview surveys conducted during decennial censuses have traditionally been an important tool in assessing the quality of census data (Thomas, Dingbaum, and Woltman, 1993:5). The Census 2000 Content Reinterview Survey (CRS) is no exception (Singer and Ennis, 2002). The purpose of the Census 2000 CRS was to evaluate the consistency of responses to Census 2000 through a reinterview of a sample of respondents. A summary of the Census 2000 CRS findings follows (Singer and Ennis, 2002).

3.1 Study design

The CRS randomly selected 30,000 households that were scheduled to receive the Census 2000 long form. Upon receipt of the long form from these households, they became eligible for a reinterview. The CRS randomly chose one sample person from each household to be reinterviewed via phone (from the roster collected at the beginning of the CRS) by an experienced census field representative. If a respondent could not be reached by phone, a personal visit interview was attempted. About 78.2 percent of interviews were conducted by telephone and 21.5 percent by personal visit; the remaining interviews utilized both modes, or the mode could not be determined (Singer and Ennis, 2002:3).

The primary goal of the CRS was to evaluate the quality of data collected in Census 2000 using simple response variance as measured by the index of inconsistency (Singer and Ennis, 2002:1). A discussion of interpreting the index of inconsistency appears below in section 3.3.2. While the index of inconsistency is a point estimate, the level of inconsistency was considered low if the index was less than 20, moderate if between 20 and 50, and high if greater than 50. A low level of inconsistency for an item was interpreted as meaning that there is "usually not a major problem," a moderate level as "somewhat problematic," and high as "very problematic" (Singer and Ennis, 2002:9).

Singer and Ennis (2002:9) point out that:

> The index of inconsistency may be substantially higher for rare categories[6] when only a few individuals among the small number reporting the characteristic change their response (interview vs. reinterview). This may also be a problem for small sample sizes, even when they don't have rare characteristics. We may observe high indexes for rare categories in a distribution even though the gross difference rate (the proportion of individuals in the sample changing their minds) may be small.

Ultimately, the CRS analyzed data for about 20,000[7] preselected households (Singer and Ennis, 2002:4). The CRS used edit procedures similar to Census 2000 for race, Hispanic origin, and ancestry, but did not go as far as imputing for nonresponse (Singer and Ennis, 2002:4).

3.2 Limitations

This study does not address response bias because, unlike previous census CRS studies, no probing questions were asked. The test-retest response evaluation used in this study measures simple response variance (Singer and Ennis, 2002:10). The fact that no probing questions were asked is not necessarily a limitation because in order to measure bias one must know the "true" value of the characteristic being measured. The presumption had been that the probe or the CRS answer was true. The CRS questionnaire closely followed the enumerator questionnaire for Census 2000, but, unlike Census 2000, most interviews were conducted by telephone.

The mailback universe was overrepresented in the 2000 CRS – about three-quarters of the cases analyzed in CRS completed mailback forms in Census 2000 compared with 58 percent of the preselected households. For a majority of cases, then, there is a difference in the mode of collection between the census and the CRS. As consequence this study may ***overestimate inconsistency*** in Census 2000 because "data collected by mailback may be ***less inconsistent*** than data collected by enumerators" (Singer and Ennis, 2002:xxi,10-11). Additionally, the respondent answering the CRS was not always the census respondent.

[6] For CRS, a characteristic is rare when 5 percent or less cases fall in the category.

[7] After removing census non-interviews, CRS non-interviews, and non-matches, CRS had 19,554 sample-person matches.

About 68.4 percent of the respondents were the same in CRS and census, although 48.2 answered for themselves in both and 20.2 were proxy[8] respondents in both. About 22 percent were different respondents on CRS and census, and we were not able to determine the respondent in about 9.6 percent of the cases (Singer and Ennis, 2002:11). The data in this report are self-weighted and not weighted up to national estimates. Each housing unit had the same weight because the sample was selected with a single-stage systematic sample. The sampled person was selected at random within each household, so each person had an equal probability of selection within the household. So "sample persons within households of the same size had the same weight" (Singer and Ennis, 2002:11).

The CRS study compares CRS and Census 2000 data before consistency edits and imputations. Race, Hispanic origin, and ancestry were edited based only on the information of the sampled person. Among the possible contributors to response error are the questionnaire design, question wording, interview mode, interviewer effects, inadequate instructions, scanning errors, and deliberate falsification (Singer and Ennis, 2002:11). The CRS questionnaire mimicked the census enumerator questionnaire. Collection of information on race and Hispanic origin may have been affected by administration mode because responses may have been affected by the presence or absence of the flash card (Singer and Ennis, 2002:11-12).

[8] In this report, "proxy" refers to a respondent who was a household member but not the sample person.

3.3 Findings in brief

In this topic report, I focus primarily on the consistency of race and Hispanic-origin reporting, and to a lesser extent on place of birth and ancestry, which are also of interest in racial and ethnic research. The remaining population and housing items are covered in the companion Content and Data Quality Topic Report. Of the 58 population characteristics evaluated by the CRS, 16 showed good consistency, 26 moderate consistency, and 16 poor consistency.[9] The CRS report considered Hispanic-origin and place-of-birth reporting to be of good consistency, and race and ancestry reporting to be of moderate consistency.

Over 95 percent of respondents answered both the race and Hispanic-origin question in Census 2000 and CRS. When answering 28 of the 58 population questions, including ancestry, households with non-Hispanic sample persons showed more consistency[10] than households with Hispanic sample persons. From most consistent to least consistent, households with White sample persons showed more consistency than households with Asian sample persons, households with sample persons reporting Two or more races, households with Black sample persons, and households with sample persons reporting other single races. However, households with Hispanic sample persons were more consistent in reporting place of birth than households with non-Hispanic sample persons (Singer and Ennis, 2002:19-20).

[9] For simplicity of expression, the following terms used in the CRS report were modified: 1) low inconsistency = good consistency; 2) moderate inconsistency = moderate consistency; and 3) high inconsistency = poor consistency.

[10] The phrase "more consistency" is used in this report instead of "less inconsistency," and so on from the CRS report, for ease of expression.

3.3.1 Consistency of Hispanic-origin reporting

According to Singer and Ennis (2002:xxii-xxiii), the edited data for the Hispanic-origin question displayed good consistency. But the lack of instructions for Hispanic origin may have caused some respondents to "choose multiple categories" although the intent was to get only one category.

Singer and Ennis (2002:52-53) note that the changes in the Hispanic-origin question, including sequencing it ahead of race, the dropping of examples, changing the question wording and adding "Latino," and the new instructions to answer both Hispanic origin and race may have influenced consistency. They analyzed the Hispanic-origin responses in two ways. First, they treated each response category as a "Yes/No" question, using the unedited data. Second, they grouped the responses, including write-in entries, into eight categories, using the edited data.

The first analysis suggested good consistency for the "non-Hispanic" and the "Mexican" categories, but only moderate consistency for the "Puerto Rican," "Cuban," and "Other Hispanic" categories (see Table 3.1). The second analysis with eight categories (see Table 3.2) also showed good consistency with only about 3.3 percent of respondents changing their answers, and an aggregate index of inconsistency of 17.2. However, as Singer and Ennis (2002:53-54) remind us, all categories were "rare" except the "Non-Hispanic" and "Mexican" categories. They also noted that about 20 percent of those who changed answers went from non-Hispanic in the

Table3.1
Aggregate Response Variance Measures for Hispanic Origin (Unedited Data)

Reinterview classification	Net difference rate	Consistency level	Index of inconsistency	
			Estimate	90-percent confidence interval
Not Hispanic	*02	Good	10.2	9.3 to 11.1
Mexican	*–0.9	Good	18.0	16.6 to 19.5
Puerto Rican	*–0.3	Moderate	22.7	19.4 to 26.6
Cuban	*–0.3	Moderate	41.7	34.6 to 50.3
Other Hispanic	0.0	Moderate	42.2	39.0 to 45.7

* NDR significantly different from zero.

Source: Adapted from Singer and Ennis (2002:53 Table 33).

Table 3.2
Response Variance Measures for Hispanic Origin (Edited Data)

Reinterview classification	Net difference rate	Consistency level	Index of inconsistency	
			Estimate	90-percent confidence interval
Non-Hispanic	*0.6	Good	10.1	9.2 to 11.0
Mexican	*-0.3	Good	13.4	12.2 to 14.8
Puerto Rican	0.0	Good	14.2	11.5 to 17.6
Cuban	*-0.1	Good	13.7	9.3 to 20.1
Other Hispanic	* 0.4	Moderate	33.8	30.7 to 37.3
Multiple non-Hispanic	0.0	Poor	100.0	42.5 to 100.0
Multiple Hispanic	*-0.1	Poor	80.5	62.4 to 100.0
Mixed non-Hispanic and Hispanic	*-0.6	Poor	98.6	88.0 to 100.0
Aggregate		Good	17.2	16.1 to 18.4

* NDR significantly different from zero.

Source: Singer and Ennis (2002:55 Table 36).

census to a mix of non-Hispanic and Hispanic in CRS, and about 53 percent of those chose "non-Hispanic" and "Mexican." About 16 percent of those who changed answers were "Other Hispanic" in census and "Mexican" in CRS. What is clear is that most of the inconsistency arises in the "Other Hispanic" category and the multiple reports, as can be seen in Table 3.2.

One caution noted by Singer and Ennis (2002:55) was that the "net difference rates for all categories except 'Puerto Rican' and 'Multiple non-Hispanic' were statistically different from zero suggesting that the CRS was not independent of the census and/or did not replicate the census conditions as well as desired." Net difference rates (NDRs) give the difference between the original percent in a specific answer category and the reinterview percent in the same category. An NDR that is statistically different from zero suggests that the assumption of replication is not satisfied.

Among Singer and Ennis' (2002:55-56) other findings about Hispanic-origin reporting were:

- households with foreign-born sample persons showed good consistency compared with moderate consistency of households with native-born sample persons.
- both respondents who reported on mailback forms and to enumerators also showed good consistency and were not statistically different (with index of 17.6 and 16.9 respectively).
- when the data were analyzed as single response versus multiple response, they showed poor consistency. Giving multiple responses was a "rare" category, which as stated above, can affect the index of inconsistency. Only about 1.4 percent of responses were multiple.
- about 77 percent of those who changed their answers reported a single response in the census and multiple responses in the CRS; and about 23 percent reported multiple responses in the census and a single response in the CRS.

3.3.2 Discussion of Hispanic-origin reporting

According to Thomas, Dingbaum, and Woltman (1993:8-9), there are several ways to interpret the index of inconsistency, depending on the methodology used to collect reinterview data.

1. If each of the two observations (the census and the reinterview in this case) is regarded as an independent repetition of the same survey procedure under the same general conditions, the index of inconsistency estimates the ratio of simple response variance to the sum of sampling variance and simple variance. In this case, as noted by Biemer (1985), the ***index of inconsistency measures the impact of mis-classification errors on total variance of an observation*** **(emphasis added).**

2. ***The index of inconsistency may also be interpreted as a complement of a measure of agreement between the census and the reinterview responses.*** Viewed in this way, the index is the ratio of the observed number of response differences to the number that would occur if the cell counts were formed by a random agreement mechanism based on the observed marginal distributions (census and reinterview).

So ***"when the second observation is not an attempt to repeat the original interview procedure*** but may represent an 'improved' data source," the first interpretation of the index of inconsistency may be questionable. The second interpretation is appropriate "***even when the second observation is not an attempt to repeat the original interview procedure identically"*** (Thomas, Dingbaum, and Woltman 1993:9). In this regard, it may be more appropriate to regard the 2000 CRS indexes of inconsistency in this fashion rather than as simple response variance estimators.

Table 3.3
Hispanic-Origin Index of Inconsistency: 2000 and 1990

Hispanic-origin category	2000 CRS	1990 CRS
Not Hispanic	10.1	9.3
Mexican	13.4	8.5
Puerto Rican	14.2	8.6
Cuban	13.7	13.6
Other Hispanic	33.8	34.1
Multiple non-Hispanic	100.0	(X)
Multiple Hispanic	80.5	(X)
Mixed non-Hispanic and Hispanic	98.6	(X)
Aggregate	17.2	12.2

(X) Not applicable.

Source: Adapted from Singer and Ennis (2002:55 Table 36) and Thomas, Dingbaum, and Woltman (1993:36 Table 3; 17 Table 4.1).

Table 3.4
Hispanic-Origin Question by Questionnaire Type

Census 2000 questionnaire	Hispanic-origin question
Census 2000 Form D-2 (mailback long form)	Is this person Spanish/Hispanic/Latino? Mark X the "No" box if not Spanish/Hispanic/Latino.
Enumerator Questionnaire Form D-2(E)	Are any of the persons that I have listed Mexican, Puerto Rican, Cuban, or of another Hispanic or Latino group?
Content Reinterview Survey Form D-1010 (5-10-2000)	(Are you/Is...) Mexican, Puerto Rican, Cuban, or of another Hispanic or Latino group?

How does the 2000 CRS compare to the 1990 CRS? Looking first at the aggregate index of inconsistency[11] in Table 3.3, the 2000 index (17.2) is greater than the 1990 index (12.2), although both are still low.

One reason for the difference in indexes is that more categories were used in the calculation in 2000 than in 1990. As Thomas, Dingbaum, and Woltman (1993:9) remind us, "the level of index is sensitive to the ***number and detail*** of categories in a classification system as well as to the ***distribution of the population*** over these categories" [***emphasis added***]. Similarly, as discussed previously, Singer and Ennis (2002:53-54) remind us that all categories were "rare" except the 'Non-Hispanic' and 'Mexican' categories. Although the total sample size should have no effect on the difference in indexes, the total sample size in the 1990 (n=29,647) was about 52 percent larger than in 2000 (n=19,554) (see Thomas, Dingbaum and Woltman, 1993:30; Singer and Ennis, 2002:4). A larger sample in 2000 may have yielded a greater number of observations in the rarer categories.

[11] In 1990 the aggregate index was referred to as an L-fold index and was defined as "a weighted average of the individual indexes computed for each category of a distribution" (Thomas, Dingbaum, and Woltman 1993:9).

Turning to individual categories, we see in Table 3.3 that there was much more consistent reporting in 1990 in the "Mexican" and "Puerto Rican" categories, but about the same consistency in reporting for the "Cuban" and "Other Hispanic" categories. One explanation for the difference in reporting consistency is that the 1990 CRS used exactly the same question in census and CRS (Thomas, Dingbaum, and Woltman, 1993:6), but the 2000 CRS did not, as we will see below. Another reason is that the 2000 CRS used telephone interviews (78 percent; see Singer and Ennis, 2002:3) to a much greater extent than was probably the case in 1990.

Unlike the 1990 CRS, the questions asked in the 2000 CRS differed from the ones used in the census. In case of Hispanic origin in particular, the CRS question is quite different from the mail form, but more similar to the Census 2000 interviewer form (see Table 3.4).

A reasonable person might conclude that the mailback Hispanic-origin question is really asking if a person is "Spanish/Hispanic/Latino," whereas the enumerator and CRS questions are asking about specific groups (e.g., "Mexican," "Puerto Rican," "Cuban," or of another Hispanic or Latino group). All had very similar response categories, with the possible exception of the "Other

Table 3.5
"Other Hispanic" Category by Questionnaire Type

Census 2000 questionnaire	Hispanic-origin question
Census 2000 Form D-2 (mailback long form)	Yes, other Spanish/Hispanic/Latino—*Print group.*
Enumerator Questionnaire Form D-2(E)	Yes, other Spanish/Hispanic/Latino—*What is this group?*
Content Reinterview Survey Form D-1010 (5-10-2000)	Yes, other Spanish/Hispanic/Latino—*What is this group?*

Hispanic" category (see Table 3.5). Furthermore, the mailback question could also be seen as asking a person to select among the choices "Spanish/Hispanic/Latino." The "print group" instruction on the mail form may have reinforced this because no examples were listed.

In addition, the instruction "Mark X the **"No"** box if not Spanish/ Hispanic/Latino" on the mailback form may be interpreted as instructing the respondent to mark "No" if he/she does not identify with any or all of the terms. Either of these interpretations could have led to some of the multiple responses and the "switching" observed in CRS.

Consider a hypothetical example of a respondent of Mexican origin who might have reasonably concluded that the "proper" answer to the mailback form was one of the following:

1. "No, not Spanish/Hispanic/ Latino" because he/she did not identify with any or all of the terms; or
2. "No..." ***and*** "Yes, Mexican, Mexican Am., Chicano" because he/she **did not** identify with any or all of the general terms, but does identify as Mexican – or it could because he/she is of mixed heritage; or
3. "Yes, other Spanish/Hispanic/ Latino" and a write-in of "Spanish," "Hispanic," or "Latino" because he/she identifies with one of the general terms; or
4. "Yes, Mexican ..." ***and*** "Yes, other ..." and a write-in of "Spanish," "Hispanic," or "Latino" because he/she identifies as Mexican and also identifies with one of the general terms (in essence votes for a favorite rubric).

Yet, during the reinterview the respondent may have selected the "Yes, Mexican ..." category or another inconsistent choice. Dropping examples in Census 2000 may have also led to the impression we were asking respondents to select, or even reject, the general responses (see Martin, 2002:16).

Using the edited data from the 2000 CRS study, Table 3.6 shows the distribution of general Hispanic responses (such as Spanish, Hispanic, or Latino).[12] These data suggest that some portion of respondents shift between a general Hispanic response and specific responses. Most of the time the shift is towards a specific Hispanic national origin. For example, about 205 respondents in CRS gave a general response in Census 2000. Of those, about 24 percent (weighted) gave a general response, 12 percent switched to non-Hispanic, and 64 percent to a specific Hispanic national origin. From the opposite perspective, there were 138 respondents in CRS that gave general Hispanic responses. Of those, about 35 percent gave general responses in the census, 17 percent non-Hispanic, and 48 percent specific Hispanic national-origin responses. In any case, any confusion arising from the issues discussed above would lead to a much poorer consistency,

[12] The general terms used included: Hispanic, Latino, Spanish, Spanish American, Other Central American, Other South American, Other Hispanic check box with no write-in, Spaniard (including specific terms), and all other non-specific national origins.

Table 3.6
General Hispanic Responses in Census 2000 and Content Reinterview Survey

Hispanic-origin category	Number of general Hispanic responses in the census question by CRS response	Weighted distribution	Number of general Hispanic responses in the CRS question by census response	Weighted distribution
Total	205	100.0%	138	100.0%
Not Hispanic	32	12.3%	27	16.7%
Mexican	72	35.8%	35	28.5%
Puerto Rican	7	14.6%	7	4.4%
Cuban	5	6.7%	-	-
Central and South American	42	6.9%	22	15.2%
General responses	47	23.8%	47	35.1%

- Represents zero.

Source: Special tabulation of the 2000 CRS micro data.

as measured by the CRS. Many of these types of responses are treated as a "change in response" although they may reflect unintended effects of question design changes and methodological differences rather than inaccuracies of reporting.

3.4 Consistency of race reporting

The race questions changed substantially between 1990 and 2000. Among the most significant changes were that in Census 2000 respondents were allowed to select more than one race, whereas in 1990 they were only allowed to select one; in Census 2000 Hispanic origin was sequenced ahead of race, while in the 1990 census it followed, with two other questions in between the two; the 1990 category "Asian and Pacific Islander" was split into separate "Asian" and "Native Hawaiian and Other Pacific Islander" categories; the 1990 categories "American Indian," "Eskimo," and "Aleut" were combined into an "American Indian and Alaska Native" category; and the 1990 examples for Asian and Pacific Islander groups were removed (see Singer and Ennis, 2002:56, and Martin, 2002:2).

As with Hispanic origin, Singer and Ennis (2002:56) analyze the race data in two ways. In the first analysis, Singer and Ennis (2002:57) examine only the check box entries and treat them as "Yes/No" responses. They note that "all categories were rare except 'White,' 'Black or African Am. or Negro' and 'Some other race,'" and that "the net difference rates for eleven of the fifteen categories were statistically different from zero, suggesting that the CRS was not independent and/or did not replicate the census conditions very well." Only the "White," "Black," "Filipino," and "Korean" categories have good consistency. Next, Singer and Ennis (2002:57) look at edited (but not imputed) race data grouped into seven categories. The edited data showed moderate consistency, with 7.6 percent of respondents changing their race and an aggregate index of 23.1. "American Indian and Alaska Native (AIAN)," "Native Hawaiian and Other Pacific Islander (NHPI)," and "Two or more races" categories were considered rare. In addition, the net difference rates for the "White," "Some other race," and "Two or more races" categories are statistically different from zero, meaning at least one of the model assumptions of independence or replication was not met.

About 14 percent of the respondents who changed their race between the census and the CRS reported as "White" in the census and "Some other race" in CRS. About 32 percent reported just the opposite – "Some other race" in census and "White" in CRS. Analysis of these responses indicated that the "majority of the persons in these two inconsistent categories were of Hispanic origin" (Singer and Ennis, 2002:58).

Singer and Ennis (2002:59) then analyzed the data by Hispanic origin and found that households with non-Hispanic sample persons showed more consistency (good) than households with Hispanic sample persons (poor). Therefore, Singer and Ennis (2002:59) conclude that "this suggests that the Hispanic population are contributing greatly to the variability in the race data."

3.4.1 Discussion of race reporting

Although the consistency of reporting race leaves much to be desired, it is quite clear that respondents of Hispanic origin are less likely to report consistently

Table 3.7
Response Variance Measures for Race by Hispanic Origin (Edited Data)

Race categories	Non-Hispanic			Hispanic		
		Index of inconsistency			Index of inconsistency	
	Consistency level	Estimate	90-percent confidence interval	Consistency level	Estimate	90-percent confidence interval
White	Good	9.1	8.4 to 9.8	Poor	88.6	84.8 to 92.8
Black, African Am., or Negro	Good	3.9	3.3 to 4.5	Moderate	47.8	36.6 to 62.4
Am. Indian or Alaska Native	Moderate	32.1	26.1 to 39.5	Poor	72.0	50.5 to 100.0
Asian	Good	7.1	5.9 to 8.6	Moderate	30.5	11.7 to 79.8
Native Hawaiian or Pacific Islander	Moderate	38.5	26.0 to 57.0	Poor	100.0	44.4 to 100.0
Some other race	Poor	90.5	74.5 to 100.0	Poor	90.5	86.2 to 95.2
Two or more races	Poor	72.9	67.5 to 78.7	Poor	85.5	74.5 to 98.2
Aggregate	Poor	12.6	11.8 to 13.5	Poor	86.9	83.4 to 90.6

Source: Adapted from Singer and Ennis (2002:59 Table 41)

than non-Hispanics. However, among non-Hispanics, only Blacks, Asians, and Whites showed good consistency, while American Indians and Pacific Islanders showed only moderate reporting consistency (see Table 3.7). The "Some other race" and "Two or more races" categories showed poor reporting consistency. As was discussed extensively in the Hispanic-origin reporting section, there are many reasons why we see such inconsistent reporting in race.

Research by Jones and Smith (2003:4) found that the potential number of children in interracial families who could have been reported as more than one race approaches the number of children who were actually reported as more than one race in Census 2000. Thus, Census 2000 does not reflect the potential number of "multiracial" children.[13] This suggests there is, and will be, a substantial proportion of respondents who at any one time may move in and out of the multiple race population, making the exact measurement of this group challenging indeed.

How does race reporting in Census 2000 compare to 1990? Thomas, Dingbaum, and Woltman (1993:21) reported good consistency for Whites (13.5 index of inconsistency), Blacks (3.9), and Asian and Pacific Islanders (9.4); moderate consistency for American Indian, Eskimo, and Aleut (41.2); and poor consistency for "Other Asian and Pacific Islander" (82.9) and "Other race" (70.3).

Table 3.8
Race Question by Questionnaire Type

Census 2000 questionnaire	Race question
Census 2000 Form D-2 (mailback long form)	What is this person's race? Mark X one or more races to indicate what this person considers himself/herself to be.
Enumerator Questionnaire Form D-2(E)	Now choose one or more races for each person. Which race or races does each person consider himself/herself to be?
Content Reinterview Survey Form D-1010 (5-10-2000)	Now choose one or more races for (yourself/...). Which race or races (do you/does) consider yourself/himself/herself) to be?

Similar to Singer and Ennis (1993), Thomas, Dingbaum, and Woltman (1993:21) reported that the majority of the respondents switching between "White" and "Other race" and vice versa were Hispanic. Unlike the Hispanic question in 1990, the race data were "evaluated using a response-bias (probing) type reinterview," and "the CRS may be viewed as the 'preferred' measurement technique" (Thomas, Dingbaum, and Woltman, 1993:6). Given the assumption that the CRS is the preferred measure of race, Thomas, Dingbaum, and Woltman (1993:21) concluded that "the Hispanic population are contributing most of the bias in the race data in the census" by over-reporting as "Other" and under-reporting as "White." This may have been the result of "respondent confusion" or "interviewer behavior in the reinterview survey." In any case, it is clear in both studies that Hispanic respondents had trouble answering the race question.

What accounts for the difference in the reporting of race? One, there is some evidence based on observations[14] from nonresponse follow-up (NRFU) interviews that "a significant number of enumerators did not always read questionnaire items as written, and often did not use the flashcards provided," particularly in the race and Hispanic-origin questions (Hough and Borsa, 2003:39). Two, similar to the Hispanic question, the race question was different in the mail-back and CRS forms, as can be seen in Table 3.8. Additionally, the CRS (and enumerator) forms may be perceived by some respondents as suggesting or encouraging reporting of more than one race.

Three, the sample size of CRS may be too small to properly measure differences in reporting patterns both because of rare categories and/or because the number of respondents answering a particular question is small (Singer and Ennis, 2002:9). Four, as suggested by Singer and Ennis (2002:56,59), CRS methods do not replicate census methodology well for race and Hispanic origin. Furthermore, as Martin (2002c:592) reminds us, even small questionnaire changes can, and do, affect study results, and "test design and sample size" may not be adequate to detect these effects. It is quite possible that differences in modes of data collection and interviewer effects may account for some of these differences as well.

[13] Jones and Smith (2002:24-25) found that more than 1.6 million additional children could have been reported as more than one race based on their interracial parentage. Coupled with the actual number of children (2.1 million) in the four groups examined who were reported as more than one race, the total number of children reported as more than one race could be nearly 4 million or higher. The authors refer to this population as the "potential pool of 'multiracial' children."

[14] It should be noted that observations were not based on a scientifically selected sample, and were based on subjective judgments of individual observers.

3.5 Consistency of ancestry reporting

One of the changes to the ancestry question in Census 2000 was the restructuring of the list of examples from 21 to 16 example ancestries. German, Croatian, Ecuadorian, Cajun, Irish, Thai, and Slovak were dropped from the 1990 list, and Cambodian and Nigerian were added for 2000. In order to analyze these data, we collapsed the ancestry responses into 58 categories. Single ancestry responses were reported with moderate consistency (about 29 percent of respondents changed their answers in CRS; the aggregate index of inconsistency was 30.7). Some of the key findings are:

- respondents who reported on mailback forms showed more consistency than those who reported to enumerators, although both were moderate;
- households with foreign-born sample people showed more consistency than those with native-born sample people (moderate);
- households with non-Hispanic sample people showed more consistency than those with Hispanic sample people (both moderate).

One of the difficulties with ancestry data is that many respondents leave the item blank, but the question was more likely to be unanswered in Census 2000 (n=4,159 or about 21.3 percent) compared with CRS (n=1,603 or about 8.2 percent). Leaving ancestry blank may be a result of "perceived redundancy" by many respondents who felt they had already provided this information when they answered the race and Hispanic-origin questions (Martin, Demaio, and Campanelli, 1990:555-556).

Table 3.9
Single Ancestry Responses From Content Reinterview Survey (CRS) and Census 2000

CRS ancestry response	Number	Same country in Census 2000	Hispanic or Spanish in Census 2000	All other responses in Census 2000	Level of consistency
Colombian	28 (100%)	85.7%	-	14.3%	Good
Cuban	43 (100%)	95.3%	2.3%	2.3%	Good
Dominican	45 (100%)	84.4%	8.9%	6.7%	Good
Ecuadorian	22 (100%)	95.5%	-	4.5%	Good
Guatemala	32 (100%)	68.8%	31.2%	-	Moderate
Honduran	22 (100%)	77.3%	13.6%	9.1%	Good
Mexican	901 (100%)	92.1%	5.8%	2.1%	Good
Puerto Rican	144 (100%)	80.6%	15.3%	4.2%	Good
Salvadoran	36 (100%)	72.2%	11.1%	16.7%	Moderate
Hispanic	**62 (100%)**	**8.1%**	**25.8%**	**66.1%**	**Poor**
Spanish	**102 (100%)**	**29.4%**	**8.8%**	**61.8%**	**Poor**

- Represents zero.

Source: Adapted from Singer and Ennis (2002:E11-E15 Table E.29; C15-C16 Table C.29).

3.5.1 Discussion of ancestry reporting

Although ancestry was reported with moderate consistency, it was less consistently reported in households with Hispanic sample people, but also more consistently in households with foreign-born respondents. Yet it is also true that proportionately more Hispanic households have foreign-born people than non-Hispanic households. How can this be reconciled?

Table 3.9 shows nine specific single-ancestry Hispanic national-origin entries, and only two ("Guatemalan" and "Salvadoran") had moderate levels of consistency.[15] On the other hand, two general single ancestries ("Hispanic" and "Spanish") showed even poorer levels of consistency, meaning that respondents answered differently in the census and CRS.

Of 62 respondents who reported as "Hispanic" in CRS, only 8.1 percent also did so in Census 2000; 25.8 percent had reported as "Spanish" in Census 2000, and 66.1 percent reported other responses (some of which could be other specific Hispanic-origin categories). Similarly, of 102 respondents who reported as "Spanish" in CRS, 29.4 percent also did so in Census 2000; 8.8 percent had reported as "Hispanic" in Census 2000, and 61.8 percent reported other responses. Clearly, "Hispanic" and "Spanish" are not consistently reported.

Table 3.10 shows how respondents who reported "Hispanic" and "Spanish" in the Census 2000 ancestry question reported in the CRS ancestry question. Of 116 "Hispanic" entries in Census 2000, only 4.3 percent reported "Hispanic" in CRS. Nearly two-thirds (62.9 percent) reported "Mexican" in CRS and 13.8 percent reported "Spanish." About 1.7 percent reported "U.S. or American," and only 4.3 reported "other groups" (some of which could be other specific Hispanic origin categories). Among 84 who reported as "Spanish" in Census 2000, 35.7 percent as reported "Spanish" in CRS, 10.7 percent reported

[15] However, the lack of consistency may be related to switching to general responses such as "Hispanic" or "Spanish," as shown in Tables 3.9 and 3.10.

Table 3.10
"Hispanic" and "Spanish" Single Ancestry Responses in Census 2000 and Content Reinterview Responses

CRS ancestry response	"Hispanic" in Census 2000 ancestry question	"Spanish" in Census 2000 ancestry question
Columbian	-	3.6%
Cuban	-	8.3%
Dominican	2.6%	-
Mexican	62.9%	25.0%
Puerto Rican	7.8%	3.6%
Salvadoran	2.6%	1.2%
U.S. or American	1.7%	1.2%
Hispanic	4.3%	10.7%
Spanish	13.8%	35.7%
Other groups	4.3%	10.7%
Total	100.0%	100%
Number	116	84

- Represents zero.

Source: Adapted from Singer and Ennis (2002:E11-E15).

"Hispanic," and 25.0 percent "Mexican."

These results suggest that much of the inconsistency in the reporting of Hispanic ancestries is related to shifting between general terms ("Hispanic" or "Spanish")[16] and specific terms ("Mexican" or "Puerto Rican"), and between general terms themselves. Table 3.11 shows similar results when comparing "Hispanic" and "Spanish" responses in the CRS ancestry question with the matched Census 2000 ancestry question responses. Clearly, some respondents switch between specific and general Hispanic group terms, but relatively few switch between Hispanic and non-Hispanic ancestries.

3.6 Consistency of place-of-birth reporting

The Census 2000 question on place of birth included: 1) check boxes for respondents to indicate whether they were born in the United States or outside the United States, and 2) write-in spaces to report their state of birth or country of birth. With respect to the check box responses, place of birth was reported very consistently (only about 0.5 percent of respondents reported a different place of birth for the sample person, for an index of inconsistency of 2.7). Among the findings are:

- respondents who reported on mailback forms showed more consistency than those who reported to enumerators, although both were low;
- households with native-born sample persons (as identified by the check box on the citizenship question) showed more consistency than households with foreign-born sample persons;
- households with Hispanic sample persons showed more consistency than households with non-Hispanic sample persons.

3.6.1 Discussion of place-of-birth reporting

Generally speaking, the consistency of place-of-birth reporting (as identified by the write-in response) is quite good (Singer and Ennis, 2002:32). Sample individuals born outside of the United States were asked to report the country of birth. All responses to place of birth were grouped into 68 categories, which included the 50 states, the District of Columbia, United States territories, and other countries and regions. Approximately 3 percent of CRS respondents changed answers during the CRS, yielding an aggregate index of 3.2.

Table 3.11
"Hispanic" and "Spanish" Single Ancestry Responses in Content Reinterview and Census 2000 Responses

Census 2000 ancestry response	"Hispanic" in CRS ancestry question	"Spanish" in CRS ancestry question
Cuban	0.9%	-
Dominican	-	3.9%
Guatemalan	1.7%	7.8%
Honduran	0.9%	2.0%
Mexican	25.9%	21.6%
Puerto Rican	10.3%	9.8%
Salvadoran	-	3.9%
U.S. or American	-	1.0%
Hispanic	4.3%	15.7%
Spanish	7.8%	29.4%
Other groups	1.7%	6.0%
Total	100.0%	100.0%
Number	62	102

- Represents zero.

Source: Adapted from Singer and Ennis (2002:E11-E15).

[16] "Latino" was not tabulated separately and may be tabulated with "Other groups."

As shown in Table 3.12, place-of-birth reporting from Central and South America appears to be quite consistent. These results for place of birth and the previously discussed results for ancestry suggest that, at least for Hispanic groups, these questions may be considered reliable supplements to the Hispanic-origin data, as shown by Cresce and Ramirez (2003). However, their use for supplementing race data needs to be explored further.

Table 3.12
Content Reinterview Survey (CRS) Place-of-Birth Reporting for Central and South America

Area	Consistency level	Index of inconsistency
Puerto Rico	High	3.8
Mexico	High	1.2
Other Central America	High	1.5
Caribbean	High	5.0
South America	High	2.1

Source: Adapted from Singer and Ennis (2002:C23 Table C.34).

4. Census Quality Survey to Evaluate Responses to the Census 2000 Question on Race: An Introduction to the Data

The main objective of the Census Quality Survey (CQS) was to assist data users in comparing race data obtained by asking respondents to "mark one or more races" with data obtained by asking respondents to "mark one race." The CQS collected race data using both methods from the same people, so potentially it could be used to evaluate how respondents reporting multiple races respond when asked to report a single race. For example, the data could be used determine the proportion of people who report as 'Black' when asked to report only one race but report as 'White and Black' when asked to report one or more races. This information could be used "to 'bridge' the two methods by constructing statistical adjustments to race distributions obtained using one method to make them more comparable to race distributions obtained using the other" (Bentley, Mattingly, Hough and Bennett, 2003:1).

4.1 Study design

According to Bentley, Mattingly, Hough and Bennett (2003:11) sample households were contacted twice during the CQS survey to provide information on race. Both a "mark one race" 1990 census instruction and a "mark one or more races" Census 2000 instruction were administered in a split panel design. A total sample of 55,000 addresses was selected.

The sample households received a mailed initial questionnaire in June 2001. Households that did not return the initial questionnaire were mailed a second questionnaire in early July 2001. Households that did not respond to the first or second mailings were contacted with nonresponse follow-up (NRFU) procedures similar to those used for Census 2000.

The sample universe was split into two panels (A and B). Panel A, consisting of respondents from about 27,500 housing units (HUs), were asked the Census 2000 race question. Panel B, consisting of respondents from about 27,500 housing units, received a similar questionnaire but the instruction to the question on race was to "mark one race." During the initial contact, about 54 percent of households in both panels responded by mail and the remainder were interviewed in NRFU personal visits. As in Census 2000, enumerators used flashcards showing the instructions and the categories for the questions on race and ethnicity in CQS initial contact NRFU visits.

Respondents were also asked whether a Census 2000 form had been filled out for the household and, if so, who completed the form. This information was used to assess consistency of reporting when race was reported by the same or a different respondent. The CQS also collected information on the address where each person in the household was living on April 1, 2000 to assist in matching CQS respondents to their Census 2000 data. Four to six weeks after the second mailout, households responding to the initial contact phase of the data collection were then re-contacted by telephone to collect data on race from the alternate race question as well as other data, such as education and income.

In the "re-contact" phase of data collection, Panel A households that received the "mark one or more races" instruction in the initial data collection were asked to "choose one race" in the re-contact interview. Conversely, Panel B households that received the "mark one race" instruction in the initial contact were asked to "choose one or more races" in the re-contact interview.

More than 70 percent of the re-contact interviews were conducted by telephone. Personal interviews were conducted to collect the re-contact information for households that were not contacted by telephone. In both cases, every effort was made to speak with the individual who completed the initial questionnaire. The Panel A questionnaire included a probe for additional information in instances where respondents were reluctant to report a single race when asked to do so. Respondents in both panels were asked to provide additional social and demographic information, such as relationship, veteran's status, educational attainment, household income, and language spoken at home, which might be relevant to the issue of differential race reporting.

The final sample size of the CQS was approximately 50,000 interviewed housing units and 155,000 respondents. About 25 percent of

the sample was allocated to each of the four cells created by crossing panel (A or B) by census form type (short or long). Each state was treated as an independent sampling stratum and four distinct sampling strata were identified within each state.[17] In order to maximize the likelihood of contacting households in CQS with individuals reporting more than one race, 90 percent of the initial sample was selected from among households containing at least one individual who reported more than one race in Census 2000.

Because most of the responses that are coded as "Some other race" (SOR) in Census 2000 are Hispanic ethnicities, the CQS focused primarily on the OMB race combinations[18]. In order to produce greater reliability for the combinations of two OMB race categories, combinations including SOR were sampled at one-third the rate of the other combinations. As a result, 18 percent of the CQS sample consisted of SOR combinations, compared with 42 percent in Census 2000. Finally, Census 2000 records were linked to CQS records in order to facilitate comparisons between CQS and Census 2000 race data. This linking process matched a record in the 100-percent Census Unedited File (HCUF) to records in the CQS file by comparing fields such as first name, last name, middle initial, suffix, sex, date of birth, age, street name, and zip code.

This match also provides another set of observations which can be used to estimate "bridging parameters," as can be seen in Table 4.1.

Table 4.1
Census Quality Survey Data Collection Sequence: Race Instruction by Panel

CQS Panel	Census 2000	CQS initial contact	CQS re-contact
A . . .	"mark one or more races"	"mark one or more races"	"choose one race"
B . . .	"mark one or more races"	"mark one race"	"choose one or more races"

Source: Bentley, Mattingly, Hough and Bennett (2003:10, Table 1).

For example, in Panel A, one would compare the "mark one or more races" response in the CQS initial contact with the single-race response in the CQS re-contact.

4.2 Limitations

According to Bentley, Mattingly, Hough and Bennett (2003:21-22), there are operational and qualitative limitations to this evaluation: 1) the design of the CQS could not repeat the Census 2000 environment; 2) different collection methods were used in the CQS initial contact and re-contact; 3) the response to a subsequent question on race can be influenced or conditioned by the response to the previous question; 4) proxy reporting; 5) effects of movers on the sample;[19] and 6) possible error associated with linking Census 2000 data.

4.3 Findings in brief

4.3.1 What were the response rates for each panel?

After excluding vacant housing units, Bentley, Mattingly, Hough and Bennett (2003:23-24) report that response rates were about 97 percent for the initial contact. In the re-contact, about 87 percent of Panel A housing units responded, compared with about 94 percent of Panel B.

4.3.2 Was the CQS representative of Census 2000 data?

Because "analytical results can be biased if the interviewed sample is not representative of the population of interest," Bentley, Mattingly, Hough and Bennett (2003:24) compared aggregate CQS distributions with Census 2000 reporting for each panel and concluded (2003:vi):

> The results from the question on race suggest that ***each panel appears to be representative of Census 2000***. Aggregated reporting of race among non-Hispanic respondents to the "mark one or more races" instruction closely resembles Census 2000 reporting of race for each panel. No race group appears to be significantly different from Census 2000 ($p < 0.1$ level) in either panel, including the Two or more races population. Reporting of race for Hispanic respondents is also similar to that in Census 2000, though in Panel A a smaller proportion of Hispanics chose "White" as a single race and a larger proportion chose "Some other race" compared with Census 2000 data.

4.3.3 Persistence of more-than-one-race reporting

The effect of the probe question in Panel A reduced reporting of more than one race from 1.4 percent to 0.4 percent. To the authors this indicated "that there is a sizeable

[17] For additional information about these four strata see Bentley, Mattingly, Hough and Bennett (2003:15-16).

[18] White; Black or African American; American Indian and Alaska Native; Asian; and Native Hawaiian and Other Pacific Islander.

[19] Movers created problems with sample weighting because of differential sampling of racial combinations. For additional information about this issue see Bentley, Mattingly, Hough and Bennett (2003:27-28).

portion of people who will persistently report Two or more races when asked to report only one" (Bentley, Mattingly, Hough and Bennett, 2003:25). The authors also note that "in general, unless a probing question is asked, it appears that about half of all Two or more race respondents do not give a single race response. Nonetheless, the data suggest that the race distributions do not change much with the follow up probe results" (Bentley, Mattingly, Hough and Bennett, 2003:27).

4.3.4 Consistency of race reporting between the CQS and Census 2000 data

Bentley, Mattingly, Hough and Bennett (2003:vi) report a "generally low consistency of reporting more than one race between Census 2000 and the CQS":

> Only 40 percent of the non-Hispanic respondents in Panel A who reported more than one race in Census 2000 also reported more than one race in the initial contact ("mark one or more races" instruction). Similarly, only 41 percent of those in Panel B who reported more than one race in the census also reported more than one race in the re-contact. The other 60 percent reported a single race. In contrast, 97 percent to 98 percent of those who reported a single race of White, Black, or Asian in Census 2000 reported the same race in the Census Quality Survey. For American Indian or Alaska Natives, Native Hawaiian or Other Pacific Islanders, and Some other race respondents, the reporting of race consistency ranges from 55 percent to 58 percent in Panel A, and 72 percent to 78 percent in Panel B.

Table 4.2
Overall Consistency of Race Reporting for Non-Hispanics for Panel A*

Census 2000 race	CQS initial contact ("mark one or more races")		
	Single race	Two or more races	Total
Single race	96,987,813 n=34,839	1,286,746 n=1,978	98,274,559 n=36,817
Two or more races	1,089,924 n=9,089	**724,686** **n=8,035**	1,814,610 n=17,124
Total	98,077,737 n=43,928	2,011,432 n=10,013	100,089,169 n=53,941

* The data in Table 4.2 were restricted to matched people who did not have an imputed race in Census 2000; that is, only those cases where the final edited race was "as reported," or where the code was changed "through consistency edit." The CQS initial-contact Hispanic-origin response was used. Additionally, the weighted data were obtained using the inverse of the original sampling probabilities with no adjustment (Z_WGT1).

Source: Bentley, Mattingly, Hough and Bennett (2003:28, Table 9).

Table 4.3
Overall Consistency of Race Reporting for Non-Hispanics for Panel B*

Census 2000 race	CQS re-contact ("mark one or more races")		
	Single race	Two or more races	Total
Single race	89,881,179 n=32,848	935,610 n=1,476	90,816,789 n=34,324
Two or more races	825,761 n=8,994	**565,422** **n=7,148**	1,391,183 n=16,142
Total	90,706,940 n=41,842	1,501,032 n=8,624	92,207,972 n=50,466

* The data in Table 4.3 were restricted to matched people who did not have an imputed race in Census 2000; that is, only those cases where the final edited race was "as reported," or where the code was changed "through consistency edit." The CQS initial-contact Hispanic-origin response was used. Additionally, the weighted data were obtained using the inverse of the original sampling probabilities with no adjustment (Z_WGT1).

Source: Bentley, Mattingly, Hough and Bennett (2003:30, Table 11).

Tables 4.2 and 4.3 (Bentley, Mattingly, Hough and Bennett, 2003:28,30) show the lack of consistency among non-Hispanics.

Among the consequences of the low level of consistency in the reporting of more than one race, the authors' list:

- The ***effective sample size*** for computing bridging parameters is reduced and the parameters are sensitive to which data are used to compute them.
- The ***stability of bridging parameters*** may be unclear given the observed instability in reporting more than one race.

4.3.5. Tabulating "mark one race" responses by specific combinations of "mark one or more races"

Bentley, Mattingly, Hough and Bennett (2003:vii,32) find that "even with the 'mark one race' instruction, a significant portion of respondents report Two or more races," and "even with a followup,

a significant portion of respondents report Two or more races." Data users must in the end decide how to deal with the "reluctant cases when computing bridging parameters" which may in turn depend "on the particular purpose and uses."

4.4 Discussion of Census Quality Survey findings

The CQS is very impressive in four respects:

- ***large sample size*** - about 25,000 housing units per panel and 155,000 respondents.
- ***very high housing unit response rates*** - about 97 percent for the initial contact in both panels, and re-contact response rates of 87 percent in Panel A and 94 percent in Panel B.
- ***representativeness*** - each panel appears to be representative of Census 2000. Aggregated reporting of race by non-Hispanics closely resembles Census 2000 reporting in both panels. Race reporting by Hispanics is also similar to Census 2000, but in Panel A a smaller proportion chose White and a larger proportion chose SOR compared with Census 2000 data.
- ***high matching rate*** - about 86 percent of CQS person records were matched to their respective Census 2000 record.

Despite the enviable survey execution described above, for the purposes of studying possible bridging parameters, the CQS has several limitations:

- ***too few cases reporting more than one race*** - despite very high housing unit response rates, and a high rate of oversampling of households who reported more than one race, the number of cases who reported more than one race in CQS is quite low. Among Hispanics and non-Hispanics there were about 21,501 cases[20] (or about 17.8 percent of 120,522 total cases) reporting more than one race in CQS (Panels A and B) and it is those cases that are of most interest for computing bridging parameters.
- ***fewer cases of Two or more races due to inconsistent race reporting*** - as mentioned in the results section, there is additional attrition to the cases of major interest due to inconsistent race reporting (Bentley, Mattingly, Hough and Bennett, 2003:28-30). Jones and Smith (2002) also note that there is a substantial pool of children who could have been reported as multiracial but were not, suggesting that there may be some instability associated with measuring this population. However, it may be possible to overcome this limitation by selecting portions of the inconsistent responses and pooling data from both panels.
- ***fewer cases due to reluctance to select one race*** - in Panel A about 2.0 percent of non-Hispanics reported more than one race in the initial contact. After the re-contact (which asked for one race) there were still 1.4 percent reporting more than one race. Even after probing for one race, 0.4 percent remained.
- ***fewer cases due to split panel design*** - unless there is some statistically valid method to pool Panels A and B, the effective sample size is reduced to the observations available in each panel. An ameliorating factor is that a good portion of the CQS cases were successfully matched to their respective Census 2000 records.
- ***complex methodology and multiple modes of data collection*** - in selecting the CQS methodology, a panel design and contact/re-contact methodology was selected over a method of one instrument with two questions. Study designers were worried about the lack of independence and the conditioning effects of the latter method (see Attachment 3 in Bentley, Mattingly, Hough and Bennett, 2003:54-56 for the six options considered). They believed "that substantial, but unmeasurable, interactions will take place between the collected data for both measurements with both race questions in the same instrument" (Bentley, Mattingly, Hough and Bennett, 2003:56).

In retrospect, it seems that the CQS methodology may have introduced many more sources of bias, such as time lag, mover gains and losses, interviewer effects, mode differences, proxy reporting, and possibly matching problems (all of which may give rise to apparently inconsistent reporting) without entirely eliminating conditioning effects or ensuring the independence of observations.

Tables 4.4 and 4.5 show CQS respondents reporting selected combinations of races[21] and how they reported on the alternative measurement.

[20] Note, these figures do not include individuals who did not report a Hispanic origin.

[21] Most of these combinations are numerically the largest in each panel and are also of policy interest, but were selected primarily for illustrative purposes.

Table 4.4
Non-Hispanics Reporting Selected Combinations of Two Races in Panel A Initial Interview by Re-contact Response Including Probe

CQS initial contact	Number	First race	Second race	Same combination	Different response	No response
White - Black	105,222	11.9%	33.8%	20.5%	19.3%	14.5%
White - AIAN	129,101	50.1%	26.7%	8.1%	2.9%	12.2%
White - Asian	175,034	36.9%	24.3%	18.5%	6.7%	13.7%
White - SOR	32,634	69.7%	10.1%	3.6%	3.2%	13.4%
Black - AIAN	20,880	56.2%	10.1%	11.5%	9.0%	13.2%
Asian - NHPI	24,900	25.4%	47.0%	10.0%	5.5%	12.2%

Source: Derived from Bentley, Mattingly, Hough and Bennett (2003:32, Table 13).

Table 4.5
Non-Hispanics Reporting Selected Combinations of Two Races in Panel B Re-contact Interview by Initial Contact Response

CQS re-contact	Number	First race	Second race	Same combination	Different response	No response
White - Black	137,126	13.3%	35.6%	29.1%	20.6%	1.4%
White - AIAN	230,566	58.0%	23.8%	14.3%	2.9%	0.9%
White - Asian	211,546	25.2%	31.5%	31.0%	11.8%	0.4%
White - SOR	171,512	76.1%	14.7%	2.4%	6.3%	0.4%
Black - AIAN	37,927	65.8%	13.4%	11.8%	6.5%	2.5%
Asian - NHPI	35,543	34.9%	26.6%	25.3%	12.2%	0.9%

Source: Derived from Bentley, Mattingly, Hough and Bennett (2003:33, Table 14).

Table 4.6
Percent of Non-Hispanics Reporting Selected Combinations of Two Races Providing or Not Providing One Consistent Race by Panel

Combination reported in CQS	Panel A—one consistent race	Panel A—no consistent race	Panel B—one consistent race	Panel B—no consistent race
White - Black	45.7%	54.3%	48.9%	51.1%
White - AIAN	76.8%	23.2%	81.8%	18.2%
White - Asian	61.1%	38.9%	56.7%	43.3%
White - SOR	79.8%	20.2%	90.9%	9.1%
Black - AIAN	66.3%	33.7%	79.2%	20.8%
Asian - NHPI	72.4%	27.6%	61.6%	38.4%

Source: Derived from Bentley, Mattingly, Hough and Bennett (2003:32-33, Tables 13 and 14).

First, we can see that many more respondents did not answer in Panel A (more than 12.0 percent) – where the initial contact asked "mark one or more races" and the re-contact (and probe question) asked "mark one race" – than in Panel B (no more than 2.5 percent). This is not surprising because CQS deliberately over-sampled the "Two or more races" population, so it is reasonable to expect that in Panel A respondents may have been reluctant to report only one race. On the other hand, in Panel B, one might have expected that, having been restricted to one race initially, these respondents would have been eager to report more than one race.

In both panels, the proportions giving the ***same response*** in both measurements was 10 percent or higher (except for "White ***and*** Some other race" and "White ***and*** American Indian and Alaska Native"). "White ***and*** Black" and "White ***and*** Asian" were most likely to provide the same response (about 20 percent in Panel A to about 30 percent in Panel B). Fairly substantial proportions in both panels gave different or inconsistent responses (ranging from 2.9 to 20.6 percent). "White ***and*** Black" respondents were particularly susceptible to this (19.3 percent in Panel A and 20.6 percent in Panel B), while "White ***and*** American Indian and Alaska Native" respondents were among least susceptible (2.9 percent) in both panels. Often, when asked to report more than one race, respondents may report their race as "multiracial," "mixed," or "biracial," which in census procedures get coded as "Some other race." Additional analysis of these responses should be done.

Table 4.6 shows CQS respondents reporting selected combinations of races and whether they reported one consistent race in the alternative measurement – for example, someone reporting "White ***and*** Asian" in one question and "White" or "Asian" in the other is a consistent answer. Although some respondents did report one race in the alternate question, sometimes that race was not consistent (e.g., someone reporting "White ***and*** Asian" in one question and "Black" in the other is an inconsistent answer). Additional research on these inconsistent responses needs to be done.

In general, "White ***and*** Black or African American" respondents in both panels were most resistant to selecting one consistent race (54.3

Table 4.7
Example "Bridging" Parameters for Non-Hispanics Reporting Selected Combinations of Two Races and One Consistent Race by Panel

Combination reported in CQS	Panel A - first race	Panel A - second race	Panel B - first race	Panel B - second race
White - Black	26.0%	74.0%	27.3%	72.7%
White - AIAN	65.2%	34.8%	70.9%	29.1%
White - Asian	60.3%	39.7%	44.4%	55.6%
White - SOR	87.3%	12.7%	83.8%	16.2%
Black - AIAN	84.8%	15.2%	83.0%	17.0%
Asian - NHPI	35.1%	64.9%	56.8%	43.2%

Source: Derived from Bentley, Mattingly, Hough and Bennett (2003:32-33, Tables 13 and 14).

and 51.1 percent in Panel A and B respectively), while "White ***and*** Some other race" respondents were least resistant (20.2 and 9.1 percent respectively). The significance of these findings is that substantial proportions of respondents refused or were unable to give us the information we need to calculate "bridging" parameters, and thereby further reduce the number of useful cases.

Considering only those cases which provide the necessary information for computing bridging parameters (that is, race questions are answered in both instruments, a multiple race response is provided in one instrument, and a "consistent" single race response is provided in the other instrument), what proportion of selected combinations select one race over the other? Table 4.7 shows some example bridging parameters computed by ignoring all cases that did not report one consistent race. For example in Panel A, among "White ***and*** Black or African American" respondents ***who do*** select one consistent race, 26.0 percent select "White" and 74.0 percent select "Black or African American." Despite the different methodologies, Panel B shows very similar proportions – 27.3 percent select "White" and 72.7 percent select "Black or African American." However, these calculations ignore ***over half*** of the "White ***and*** Black or African American" respondents, as seen in Table 4.6 above. We see similar consistency between panels for "Black or African American ***and*** American Indian and Alaska Native." About 84.8 percent select "Black or African American" in Panel A and 83.0 percent in Panel B. Among "White and American Indian and Alaska Native" respondents, 65.2 percent selected White in Panel A, and 70.9 percent in Panel B. About 87.3 percent (Panel A) and 83.8 percent (Panel B) of "White ***and*** Some other race" respondents select "White." In the case of "White ***and*** Asian" and "Asian ***and*** Native Hawaiian and Other Pacific Islander" Panel A and B produce contradictory parameters. In Panel A, 39.7 percent of "White ***and*** Asian" select "Asian," while in Panel B that proportion is 55.6 percent. Similarly in Panel A, 35.1 percent of "Asian ***and*** Native Hawaiian and Other Pacific Islander" select "Asian," compared with 56.8 percent in Panel B.

Although much more analysis needs to conducted, a question that needs to be answered is which bridging parameter should be used for any race combination. Should it come from Panel A or Panel B, or from a pooled sample of A and B? In addition, matching Census 2000 records to CQS records affords us at least two more possible sources of bridging parameters (Census 2000 to Panel A re-contact and Census 2000 to Panel B initial contact). It is unknown whether these may yield either different parameters or, worse, inconsistent parameters. Unfortunately, at this stage there is no *a priori* way to decide which approach yields the best bridging parameters. In any event, we lose cases because significant proportions of respondents do not provide one consistent race in the alternate question.

5. Comparing the Race and Hispanic-Origin Data From the American Community Survey and Census 2000

One of the main objectives of the American Community Survey (ACS) is to serve as a replacement for the long form in the 2010 Census. Another is to provide a continuously updated source of demographic, socioeconomic, and housing data for small areas and population groups, either as single-year estimates or multi-year averages (Bennett and Griffin 2002:206). In this chapter, I will concentrate on how race and Hispanic origin differ in Census 2000 and the Census 2000 Supplementary Survey (C2SS) based on the work of Bennett and Griffin (2002); Leslie, Raglin, and Schwede (2002); Raglin and Leslie (2002); and Schwede, Leslie, and Griffin (2002).

5.1 Study design

The primary objective of C2SS "was to evaluate the feasibility of collecting long-form data outside the decennial census" during Census 2000 (Bennett and Griffin, 2002:206). The C2SS was a survey of about 700,000 housing units using the ACS methodology. It was an operational feasibility test to learn how to collect long-form data at the same time as, but separately from, Census 2000. The C2SS was the first large-scale national data collection using the ACS methods (Raglin and Leslie, 2002:2826). The C2SS used the questionnaire and methods developed for the ACS to collect demographic, social, economic, and housing data from a national sample of households. C2SS data collection began in January 2000 and ran through December 2000. The C2SS was conducted in 1,203 counties, and when the original 31 sites were added, the full sample size was large enough to produce data for every state, and most counties and metropolitan areas with populations of 250,000 or more (Bennett and Griffin, 2002:206).

Data were collected in three phases. First, a pre-notice letter was sent to each sampled unit, followed by a questionnaire in the mail a week later. If necessary, the initial mail questionnaire was followed by a reminder card, and after three weeks, a replacement questionnaire was sent. Second, a telephone follow-up was attempted to obtain information from households that did not return the replacement questionnaire. Third, a sample of nonrespondents was selected for a personal visit interview. Nonresponse follow-up (NRFU) interviews were conducted by permanent survey field representatives using computer assisted technology (Bennett and Griffin, 2002:207).

5.2 Limitations

One might have expected differences between Census 2000 and the C2SS because they had different purposes and, therefore, had different design and implementation methods. The C2SS collected data continuously throughout the year using a combination of mail, telephone, and personal visit follow-up which lasted over a three-month period. Census 2000, on the other hand, was a single massive data collection over a very short period from late March 2000 to July 2000 that included an initial mail out mode and subsequent personal visit NRFU interviews in as many non-responding households as possible. As a final resort, Census 2000 allowed proxy responses from non-household respondents, such as neighbors, while the C2SS did not.

There were several other important differences between Census 2000 and the C2SS: the C2SS had follow-up procedures for missing items on mail returns, while Census 2000 did not; questionnaires differed, residence rules and reference periods differed, and some editing and allocation procedures varied. Additionally, followup data were collected in-person using paper questionnaires in Census 2000, but by phone or in person using automated instruments in C2SS. In addition, census enumerators were temporary workers and were not as well trained or as experienced as C2SS field representatives (FRs). Finally, the C2SS estimates are subject to sampling error because they are based on a sample of the population, while the short-form census totals are not (Bennett and Griffin, 2002:208). Moreover, comparisons between Census 2000 and C2SS are limited to the household population because by design the C2SS did not include the population living in group quarters.

5.3 Findings in brief

Although other 100-percent items are available for comparison between Census 2000 and C2SS,

Table 5.1
Census 2000 and Census 2000 Supplementary Survey (C2SS) Hispanic Responses (Household Population Only)

Hispanic Origin	Census 2000 (1)	C2SS (2)	Difference (3=2-1)	Percent difference (4=3/1)
Hispanic or Latino:	12.6%	12.6%	-	-
Mexican	7.4%	7.9%	**0.5**	6.8%
Puerto Rican	1.2%	1.3%	0.1	8.3%
Cuban	0.4%	0.5%	0.1	25.0%
Other Hispanic or Latino . .	3.6%	3.0%	**-0.6**	–16.7%

Note: **Bold** numbers in Column 3 indicate significant differences at the p<.10 level.

Source: Adapted from Bennett and Griffin (2002:210 Table 6).

Table 5.2
Hispanic-Origin Question by Questionnaire Type

Questionnaire	Hispanic-origin question
Census 2000 Form D-2 (mailback long form) — person based or linear layout	Is this person Spanish/Hispanic/Latino? Mark X the "No" box if not Spanish/Hispanic/Latino.
American Community Survey Form ACS-1 (2000)—matrix layout	Is this person Spanish/Hispanic/Latino? Mark X the "No" box if not Spanish/Hispanic/Latino.
Enumerator Questionnaire Form D-2(E)	Are any of the persons that I have listed Mexican, Puerto Rican, Cuban, or of another Hispanic or Latino group?
American Community Survey CATI/CAPI instrument	Part 1. Is <name>/ Are you Spanish, Hispanic, or Latino? Part 2. Is <he/she>/ Are you of Mexican origin, Puerto Rican, Cuban or some other Spanish/Hispanic/Latino group?

the discussion in this chapter focuses on the Hispanic-origin and race variables.

5.3.1 Reporting of Hispanic origin

Bennett and Griffin (2002:210) found no discernible differences in the proportion of Hispanic-origin responses, although there were significant differences in the detailed Hispanic-origin responses. Table 5.1 shows that, compared with Census 2000, C2SS produced about 6.8 percent more Mexicans. On the other hand, the "Other Hispanic" category was about 16.7 percent less. The proportion of Cubans and Puerto Ricans were not statistically different.

5.3.2 Discussion of Hispanic origin

Presumably the lower proportion in the "Other Hispanic" category in C2SS reported by Bennett and Griffin (2002:210) reflects fewer general Hispanic responses ("Hispanic," "Spanish," and "Latino"), as shown in other research (see Cresce and Ramirez, 2003; Logan 2002; and Suro 2002). Bennett and Griffin (2002:210) speculate that the observed differences are due to the use of examples in the C2SS. During telephone and personal visit interviewing, respondents were read or shown examples for the "Other Spanish/Hispanic/Latino" category similar to those used in the 1990 census. These aids were not provided during Census 2000 operations, although one could argue that the presence of the Hispanic-origin checkbox groups act as examples. This does not explain why the Mexican percentage is also lower in Census 2000 – these categories were present in all data collections. The Puerto Rican and Cuban proportions also shows the same pattern but were not statistically significant.

Although the format and wording of the Hispanic-origin question on the mail questionnaire used in C2SS and Census 2000 were similar, there were differences in the other instruments (see Table 5.2). The ACS CATI/CAPI instruments had examples for the 'other Spanish/Hispanic/Latino' category (e.g., Argentinean, Columbian, Dominican, Nicaraguan, Salvadoran, Spaniard), but the decennial mail and enumerator instruments did not have examples. The basic response categories were similar, but the Census 2000 mail questionnaire categories were double-banked (Bennett and Griffin, 2002:207). Having the one question split into two separate questions in CATI/CAPI would presumably make it easier to ask and answer in interview situations. This effectively reduces the double negative statement "Mark [X] '**No**' box if **not** Spanish..." found on the mail questionnaires (Schwede, 2003-personal communication). It makes sense that the use of experienced interviewers to probe for responses in other data collections may have contributed to getting more detail in C2SS than Census

2000. This argument is explored more vigorously in explaining the differences in race reporting.

5.3.3 Race reporting

Both Census 2000 and the C2SS allowed respondents to report one or more races. Bennett and Griffin (2002:208-210) found significant differences between C2SS and Census 2000 distributions for both the *race alone* and *race alone or in combination* categories.[22] While the authors found a number of differences in the race distributions, the percent of respondents reporting "*White alone*" and "*Some other race alone*" showed the greatest difference in the distributions. In addition, the C2SS distribution had a significantly lower proportion of respondents reporting "*Two or more races*." Small but significant differences also exist for "*Black or African American alone*" "*American Indian or Alaska Native alone*," and "*Asian alone*" (Bennett and Griffin 2002:208).

It is important to compare the race distributions for Hispanics and non-Hispanics because reporting patterns tend to be quite different for Hispanic respondents. Table 5.3 shows that the race distribution for non-Hispanics in C2SS is not very different from that of Census 2000. There were significant differences for all of the race groups, except for "*Native Hawaiian and Other Pacific Islander.*" The largest difference between Census 2000 and C2SS was for the "*Some other race alone*" population. Compared with Census 2000, C2SS had slightly more reports of "*White alone*" (0.4 percent) and "*Asian alone*" (3.9 percent), and fewer reports of "*American Indian and Alaska Native*" (9.5 percent) and "*Two or more races*" (7.9 percent). When "*Two or more races*" is broken into "*Two races which include Some other race*" and "*All other race combinations*," we see that Census 2000 had proportionately more race combinations that included "*Some other race*" as one of the races than did C2SS (0.50 versus 0.15 percent). On the other hand, C2SS had proportionately more reports of all other race combinations than did Census 2000 (1.59 and 1.39 percent, respectively).

Table 5.4 shows the race distribution for Hispanics. Compared with Census 2000, C2SS has about 31 percent more reports of "*White alone*," about 30 percent fewer "*Some other race*" reports, and about 24 percent fewer reports of "*Two or more races*" among Hispanics. When "*Two or more races*" were broken into "*Two races which include Some other race*" and "*All other race combinations*," Census 2000 had proportionately more two race combinations that included "*Some other race*" as one of the races than did C2SS (5 per-

Table 5.3
Census 2000 and Census 2000 Supplementary Survey (C2SS) Selected Race Responses by Non-Hispanics (Household Population Only)

Race	Census 2000 (1)	C2SS (2)	Difference (3=2-1)	Percent difference (4=3/1)
White	79.30%	79.58%	**0.28**	0.4%
Black or African American	13.49%	13.21%	**–0.28**	–2.1%
American Indian and Alaska Native	0.84%	0.76%	**–0.08**	–9.5%
Asian	4.15%	4.31%	**0.16**	3.9%
Native Hawaiian and Other Pacific Islander	0.14%	0.16%	0.02	14.3%
Some other race	0.19%	0.25%	**0.06**	31.6%
Two or more races	1.89%	1.74%	**–0.15**	–7.9%
Two races which include Some other race	0.50%	0.15%	**–0.35**	–70.0%
All other race combinations	1.39%	1.59%	**0.20**	14.4%

Note: **Bold** numbers in column 3 indicate significant differences at the p<.10 level.
Source: Adapted from Bennett and Griffin (2002:208-209 Table 2 and Table 4).

Table 5.4
Census 2000 and Census 2000 Supplementary Survey (C2SS) Selected Race Responses by Hispanics (Household Population Only)

Race	Census 2000 (1)	C2SS (2)	Difference (3=2-1)	Percent difference (4=3/1)
Hispanic or Latino:	100.00%	100.00%	-	-
White	47.89%	62.91%	**15.02**	31.4%
Some other race	42.21%	29.39%	**–12.82**	–30.4%
Two or more races	6.31%	4.79%	**1.52**	–24.1%
Two races which include Some other race	5.09%	3.35%	**–1.74**	–34.2%
All other race combinations	1.22%	1.45%	**0.23**	18.9%

Note: **Bold** numbers in column 3 indicate significant differences at the p<.10 level.
Source: Adapted from Bennett and Griffin (2002:210 Tables 3 and 4).

[22] The *race alone* categories represent respondents who reported one race (plus a category with all respondents who reported Two or more races). *Race alone or in combination* categories represent respondents who selected a particular race regardless of the number of other races selected (i.e., "the combination of people who reported one race and people who reported that same race in addition to one or more other races").

cent versus 3 percent), and proportionately fewer of "*All other race combinations*."

5.3.4 Discussion of race reporting

Question Wording. While the wording and response categories of the mail questionnaires for Census 2000 and C2SS were identical (see Table 5.5), there were differences in the format of the questionnaires. With the exception of the nonresponse followup questionnaire, Census 2000 questionnaires were person based (several questions asked of each individual), while C2SS was matrix based (characteristics of all respondents in a household were collected in a column format). The wording of the race questions used in telephone and personal visits in C2SS and Census 2000 differed from the mail versions and from each other. Some of the differences were needed to accommodate the data collection mode, but other differences did not appear to be necessary. One of the most notable differences was that both the mail and the enumerator decennial questionnaires asked for the race or races that a respondent ***considers*** himself/herself to be, while the C2SS CATI/CAPI questionnaire asked the category or categories that ***best indicate*** the respondent's race, which may be measuring different cognitive domains. The C2SS CATI/CAPI instruments also had examples for the "Other Asian" (e.g., Cambodian, Hmong, Thai, Indonesian) and "Other Pacific Islander" (e.g., Tahitian, Fijian) categories, while the other three did not (Bennett and Griffin, 2002:207).[23]

Table 5.5
Race Question by Questionnaire Type

Questionnaire	Race question
Census 2000 Form D-2 (mailback long form) —person based or linear layout	What is this person's race? Mark X one or more races to indicate what this person considers himself/herself to be.
American Community Survey Form ACS-1 (2000)—matrix layout	What is this person's race? Mark X one or more races to indicate what this person considers himself/herself to be.
Enumerator Questionnaire Form D-2(E)	Now choose one or more races for each person. Which race or races does each person consider himself/herself to be?
American Community Survey CATI / CAPI instrument	{Show respondent flashcard B} I'm going to read you a list of race categories. Please/Using this list, please/choose one or more categories that best indicate {Name}/your race.

Despite the subtle differences in the methodologies, Schwede, Leslie, and Griffin (2002:3136) note these race questions share a common characteristic:

> The response categories for race on the census and ACS present a strange pastiche of skin color (white and black), internal indigenous ethnic groups (e.g., American Indian/Alaska Native), U.S. Island Areas (e.g., Samoa), nationality (e.g., Japanese), and geographical region for many countries (other Asian).

Interviewer Effects. In examining data from Census 2000 and C2SS, Schwede, Leslie, and Griffin (2002:3134) found unexpectedly large differences in the distribution of race, particularly among Hispanics in interviewer-administered data collections. They note that about the same percentage (46 percent) of Hispanics reported a race of "*White*" as reported "*Some other race*" in enumerator-collected data in Census 2000. On the other hand, more than twice as many Hispanics reported as "*White*" (64 percent) as reported "*Some other race*" (30 percent) in the C2SS data collected by interviewers.

Based on that finding, the Census Bureau conducted two studies. The first was a semi-structured debriefing study of ACS interviewers (Leslie, Raglin, and Schwede, 2002). The authors hypothesize that the race reporting differences may be due to "interviewer behavior" caused by differences in experience and training:

- C2SS interviewers are experienced, well-trained, and long-term interviewers who work on other demographic surveys, but Census 2000 interviewers were hired just for Census 2000.
- Most Census Bureau demographic surveys ask pre-Census 2000 race and Hispanic- origin questions which do not ask for more than one race and do not allow reporting of "Some other race."
- In some surveys, interviewers "have been trained to mark race by observation if the respondents refuse in certain situations."
- Unlike the Census 2000, the C2SS flashcard does not include an instruction that respondents may select more than one race.

Although this study occurred well after Census 2000 and is based on *reported not observed behavior*, it suggests the possibility that some interviewers may have used active probes which might have influ-

[23] For a comprehensive list of differences, see Table 2 in Leslie, Raglin, and Schwede (2002:2064).

enced reporting of specific races responses (Leslie, Raglin, and Schwede, 2002:2068). The authors hypothesize that the race reporting differences may be due to "interviewer behavior." In another study of the debriefing data, Schwede, Leslie, and Griffin (2002) found that fewer years of experience, region of the country, and interviewer interpretation of what the race question was asking were associated with FRs (field representatives) accepting and recording "Hispanic" as a response in "other race."

What is particularly interesting about this study is that "wide differences in FRs' interpretations of what the race question is asking for" suggest interviewers' interpretations of the race question may differ from region to region as well (Schwede, Leslie, and Griffin, 2002:3136). In fact, in focus groups, FRs "pressed... researchers hard to explain just what it is headquarters wants to collect with the race question." The questions themselves leave some doubt as to what is wanted: in mail questionnaires the race question asks for the race or races the respondent ***considers*** him/herself to be, while the ACS CATI and CAPI ask for one or more categories that ***best indicate*** the respondent's race.

The second study examined a matched sample of Census 2000 and C2SS records. Raglin and Leslie (2002:2827) matched respondents interviewed in the C2SS in March, April, and May 2000 to their respective Census 2000 records and compared responses with the race question. The advantage of this study is the "ability to compare the paired responses for people as opposed to looking at totals" (Raglin and Leslie, 2002:2829). The authors found much more consistent race responses among respondents – both Hispanics and non-Hispanics – who answered Census 2000 and C2SS via mail, than those who were interviewed in each data collection (Raglin and Leslie, 2002:2831). In explaining the finding, Raglin and Leslie (2002:2831) note that households were not assigned randomly to mail versus interview, but rather were interviewed because they did not respond to the mail questionnaire. "Therefore, these people are the hardest to collect data from." Raglin and Leslie (2002:2831) also note that census interviewers were allowed to use proxy respondents outside the household, were inexperienced, and used paper and pencil, as opposed to computer-aided instruments. They also note that C2SS interviewers who did not work on Census 2000 were more likely to probe when "Hispanic" was given in answer to race and that many of these interviewers work on other surveys that do not allow "Some other race" (Raglin and Leslie, 2002:2830).

Among non-Hispanics, Raglin and Leslie (2002:2831) also noted good consistency in reporting when both the Census 2000 and C2SS data were collected via mail for White, Black, and Asian respondents. They found only moderate consistency for American Indian and Alaska Native, Some other race, and Two or more races respondents. Raglin and Leslie (2002:2831) conclude:

> There is often concern about the consistency of race reporting, but these data indicate that for a large share of the population – non-Hispanics who are willing to fill out the mail forms – race reporting is consistent with the exception of people reporting Two or more races.

According to Raglin and Leslie (2002:2830), there was a notable difference between Census 2000 and C2SS race data for Hispanics collected by interviewers. This suggested that interviewers probably affected the reporting of race by Hispanics. The authors suggest that the reason for this was that many Census 2000 enumerators were temporary employees with little interviewing experience, while C2SS enumerators were permanent Census Bureau employees with more experience.

Thus, it seems likely that enumerators and interviewers may have caused differences in the reporting of "Some other race" alone or in combination with other races. To the extent that C2SS interviewers had experience with other data collection that does not have a "Some other race" category, it is likely that they were less willing to accept "Some other race" responses. As discussed previously, an observation study[24] reported by Hough and Borsa (2003:42) showed that some census enumerators had difficulty asking about race. Some did not show the flashcard, read the question as worded, or read all of the race categories.

Processing Differences. A difference in the processing of enumerator forms (which had only one write-in area for race) compared to mail forms (which had three write-in areas for race), led to an overstatement of Some other race by 6 percent, and Two or more races responses by about 15 percent (see Cresce, 2003 for a more detailed discussion).

[24] It should be noted that observations were not based on a scientifically selected sample, and were based on subjective judgments of individual observers.

Discussion of Differences. Perhaps the question we should be asking is why there aren't **more differences** between Census 2000 and C2SS race distributions, not why there are any differences (to paraphrase sociologist Kingsley Davis). Even if we took two independent decennial censuses at the same time, it would be reasonable to expect differences due to non-sampling error. In comparing Census 2000 and C2SS, we know there are substantial wording and methodological differences, and some processing differences, as discussed above. However, the involvement of interviewers probably had a large effect on race reporting, particularly that of Hispanic respondents. Self-selection by the "difficult-to-enumerate" through not responding via the mail questionnaire may just complicate the task of enumerators. But as noted by Leslie, Raglin, and Schwede (2002:2065):

> Probing is one part of the question-and-answer process that cannot be completely standardized and thus, there is an opportunity for interviewers to be inconsistent across respondents and across interviews. That is the one situation in which interviewer-related error can occur (Mangione, Fowler, and Louis, 1992).

We should note that there are many other situations where interviewer-related error can occur, but it is clear that responses tend to be most consistent when collected via mail (Raglin and Leslie, 2002:2830-2831). Thus, it seems imperative that the Census Bureau study ways to maximize mail response, and to ensure that interviewers have a standardized approach to collecting race in all its surveys in order to minimize interviewer effects on data collection.

6. Puerto Rico Census 2000 Race and Ethnicity Questions

Census 2000 was the first time that residents of Puerto Rico were asked to complete and return their questionnaires by mail (Berkowitz, 2001:1). It also marks the first time questions on race and Hispanic origin were asked of individuals in Puerto Rico, although race was collected by enumerators through observation in the 1950 census. The decision to include the race and Hispanic-origin questions "occurred because the government of Puerto Rico requested the same questionnaire content as stateside in order to speed the processing and release of Puerto Rico census data and so that Puerto Rico could be included in statewide statistics" (Christenson, 2003:1).

According to Berkowitz (2001:iv):

> Almost everyone had heard something about Census 2000 from television and radio ads, newspapers, schools, or from informal sources such as relatives, neighbors, and "brothers" or "sisters" in their churches. Most had also discussed some aspect of the process with someone else. Many participants indicated they had consulted with family members or neighbors while trying to complete their questionnaires, sometimes in an effort to reach a consensus as to what was being asked or how they should answer.

Because of the newness of the questions, it is probably not surprising that Berkowitz (2001:21-22) found that there were "concerns that some questions were too private," and that "the race/ethnicity questions inspired the most strenuous negative reactions of any questions on the Census 2000 questionnaire" in more urban coastal communities of Puerto Rico. It is also possible that the role of interviewers in Puerto Rico might be different from that role stateside. About 53 percent of Puerto Rico's households returned their Census 2000 questionnaires by mail, compared with 65 percent stateside (Berkowitz 2001:1).[25] Berkowitz (2001:16) found "a strong preference for the more personal, door-to-door approach taken in the 1990 census. They found the idea of dropping off the questionnaire at the gate too impersonal and bureaucratic for their taste."

6.1 Study design and limitations

The basic method followed by Christenson (2003:2-3) was to compare race and Hispanic-origin distributions based on Census 2000 100-percent data collected stateside and in Puerto Rico. The main limitation of the evaluation of Puerto Rico's race and Hispanic-origin data is the "lack of any previous quantitative measures" for comparison. The lack of cognitive studies prevents drawing "definitive conclusions about what led" respondents to answer the way they did. Finally, we may not know "the extent to which the responses of Puerto Ricans were shaped by their understanding of their racial identity as opposed to the way they interpreted and reacted to the question itself."

[25] Fifty states and the District of Columbia constitute the stateside data.

6.2 Nonresponse to race and Hispanic origin

Table 6.1 shows that the nonresponse to race is higher in Puerto Rico than in the United States (5.0 and 4.1 percent, respectively), but just the opposite is true of the response to Hispanic origin (3.4 and 4.8 percent, respectively).

Table 6.1
Nonresponse to Race and Hispanic Origin in the United States and Puerto Rico

Question	United States	Puerto Rico
Race	4.1%	5.0%
Hispanic Origin	4.8%	3.4%

Source: Tabulation of Census 2000 Hundred-Percent Data File (HDF).

Table 6.2 shows that Hispanics overall and Puerto Ricans in the U.S. are much more likely not to answer the race question than their counterparts in Puerto Rico.

Table 6.2
Nonresponse to Race by Hispanics and Puerto Ricans in the United States and Puerto Rico

Hispanic group	United States	Puerto Rico
All Hispanics	14.3%	3.4%
Puerto Rican	17.5%	3.4%

Source: Tabulation of Census 2000 Hundred-Percent Data File (HDF).

Nonresponse to race by Hispanics[26] in the United States was over 14 percent, and over 17 percent by Puerto Ricans in the United States, compared with under 4 percent each on the island of Puerto Rico.[27]

6.3 Hispanic-origin reporting

It is not surprising that 98.8 percent of Puerto Rico's residents were identified as Hispanic or that 95.1 percent were identified as Puerto Rican. Another 1.5 percent were of Dominican origin; 1.4 percent were identified as "Other Hispanic or Latino"; Cubans were about 0.5 percent, and Mexicans 0.3 percent (Christenson, 2003:4). Less than 4 percent of the Hispanic-origin responses in Puerto Rico were write-in entries, and 37.6 percent of those reflected the check box responses (Mexican, Puerto Rican, etc.). Another 52.8 percent of the write-in responses were detailed Hispanic responses; 6.5 percent were multiple-responses; and 3.1 percent were other responses. Among the specific Hispanic groups written-in, 71.4 percent were "Dominican;"11.6 percent were South American entries; 5.7 percent were Spaniard; 4.8 percent were Central American; and only 6.4 percent were general descriptors (e.g., Hispanic, Latino, etc.) (Christenson, 2003:5).

6.3.1 Reporting of Hispanic origin by enumerators

In general, the distribution of Hispanic-origin responses that were enumerator-filled does not vary much from those that were respondent-filled. Table 6.3 shows no differences in the proportion Hispanic and non-Hispanic in Puerto Rico by mode of collection, but there are some differences in the specific categories. Compared with respondent-filled returns, enumerator- filled returns showed proportionately fewer Puerto Ricans (-0.7 percent), Cubans (-33.0 percent), and all other Hispanic groups (-33.0 percent), but more Dominicans (110 percent) and Mexicans (150 percent).

Table 6.3
Distribution of Hispanic Origin in Puerto Rico by Mode of Data Collection

Hispanic Origin	Respondent-filled (1)	Enumerator-filled (2)	Percent difference 3=(2-1)/1
Hispanic	98.8%	98.8%	0.0%
Puerto Rican	95.5%	94.8%	–0.7%
Dominican	1.0%	2.1%	110.0%
Cuban	0.6%	0.4%	–33.0%
Mexican	0.2%	0.5%	150.0%
Other Hispanics	1.5%	1.0%	–33.0%
Non-Hispanic	1.2%	1.2%	0.0%

Source: Adapted from Christenson (2003:14, Table 9).

Table 6.4
Distribution of Hispanic Origin in the United States by Mode of Data Collection

Hispanic Origin	Respondent-filled (1)	Enumerator-filled (2)	Percent difference 3=(2-1)/1
Hispanic	11.0%	16.8%	52.7%
Puerto Rican	1.1%	1.6%	45.5%
Dominican	0.2%	0.3%	50.0%
Cuban	0.5%	0.4%	–20.0%
Mexican	6.1%	11.0%	80.3%
Other Hispanics	3.1%	3.5%	12.9%
Non-Hispanic	89.0%	83.2%	–6.5%

Source: Adapted from Christenson (2003:14, Table 9).

Table 6.4 shows more striking differences in the proportion of Hispanics and non-Hispanics in the United States by mode of collection. Enumerator-filled returns in the United States showed proportionately fewer non-Hispanic (-6.5 percent) and more Hispanic (52.7 percent) responses than respondent-filled returns. Enumerator-filled returns in the United States showed proportionately fewer Cubans (-20.0 percent), but more Puerto Ricans (45.5 percent), Dominicans (50.0 percent), Mexicans (80.3 percent), and all other Hispanic groups (12.9 percent) than respondent-filled returns.

6.3.2. Discussion of Hispanic-origin reporting

Although there is no benchmark to evaluate the reporting of Hispanic origin in Puerto Rico, the results from Census 2000 appear to be reasonable prima-facie, and there appears to be no particular bias in comparisons of respondent-filled returns and enumerator-filled returns in Puerto Rico. In contrast, there are significant differences in the distributions stateside: enumerator-filled returns showed proportionately more Hispanics (with the exception of Cubans among the groups examined). In terms of reporting of detailed Hispanic groups, there did not appear to be excessive reporting of general

[26] Hispanics overall and Puerto Ricans whose origin was not edited or imputed.

[27] Hereafter, I will refer to the island of Puerto Rico as "the Island."

Hispanic terms probably because the overwhelmingly dominant group on the Island (Puerto Rican) appears as a reporting category in all data collections. Cresce and Ramirez (2003:11) suggest that the Puerto Rican category, along with the Cuban category, were the least affected by changes in the Hispanic-origin question used in Census 2000 (see Chapter 2 for a more detailed discussion).

6.4 Race reporting

Despite the newness of race reporting in Puerto Rico, reporting was very complete, as seen in the section above, and quite different than might have been expected. Table 6.5 shows the distribution of race in Puerto Rico for all people. About eight in every ten people (80.5 percent) were reported as "White alone," and 84.0 percent reported "White alone or in combination with one or more other races." Nearly one in twelve (8.0 percent) reported as "Black or African American alone," but 10.9 percent reported "Black alone or in combination with one or more other races." About 6.8 percent reported as "Some other race alone," and 8.3 percent did so in combination with other races. One in 25 (4.2 percent) reported being of more than one race.

Table 6.5
Race Distribution in Puerto Rico

Selected race categories	Race alone	Race alone or in combination with other races
White	80.5%	84.0%
Black or African American	8.0%	10.9%
American Indian and Alaska Native	0.4%	0.7%
Asian	0.2%	0.5%
Some other race	6.8%	8.3%
Two or more races	4.2%	-

Source: Summary File 1, Table P3 and Table P9.

Table 6.6
Race Distribution of Hispanics in Puerto Rico and the United States

Selected race categories	Puerto Rico (1)	United States (2)	Percent difference 3=(1-2)/2
White alone	80.7%	47.9%	68%
Black or African American alone	7.9%	2.0%	295%
American Indian and Alaska Native alone	0.3%	1.2%	–75%
Some other race alone	6.9%	42.2%	–84%
Two or more races	4.1%	6.3%	–35%

Source: Adapted from Christenson (2003:6) Table 3.

Table 6.7
Race Distribution of Puerto Ricans in Puerto Rico and the United States

Selected race categories	Puerto Rico (1)	United States (2)	Percent difference 3=(1-2)/2
White alone	81.4%	47.4%	72%
Black or African American alone	7.6%	6.5%	17%
American Indian and Alaska Native alone	0.3%	0.6%	–50%
Some other race alone	6.6%	37.3%	–82%
Two or more races	4.0%	7.4%	–46%

Source: Adapted from Christenson (2003:9-10) Table 5a and Table 5b.

Because most residents of Puerto Rico are Hispanic, it is important to compare their race distribution to that of stateside Hispanics and Puerto Ricans. Table 6.6 shows the race distributions of Hispanics in Puerto Rico and the United States. Compared with the United States, Hispanics in Puerto Rico are much ***more likely*** to report "White alone" (68 percent) and "Black alone" (295 percent). On the other hand, Hispanics in Puerto Rico are much ***less likely*** to report "American Indian and Alaska Native alone" (75 percent), "Some other race" alone (84 percent), and "Two or more races" (35 percent). Christenson (2003:8) reports a similar pattern when looking at the "race alone or in combination" distribution of race.

How different are the responses of Puerto Ricans on the Island from those stateside? Table 6.7 shows similar results as for Hispanics overall. Compared to the United States, Puerto Ricans in Puerto Rico are also much more likely to report "White alone" (72 percent) but only somewhat ***more likely*** to report "Black alone" (17 percent). On the other hand, Puerto Ricans on the Island are also much ***less likely*** to report "American Indian and Alaska Native alone" (50 percent), "Some other race alone" (82 percent), and "Two or more races" (46 percent) than are Puerto Ricans stateside.

Table 6.8
Race Distribution of Hispanics in Puerto Rico by Mode of Data Collection

Selected race categories	Respondent-filled (1)	Enumerator-filled (2)	Percent difference 3=(2-1)/1
White alone	83.0%	77.1%	-8%
Black or African American alone	8.3%	7.1%	-17%
American Indian and Alaska Native alone	0.5%	0.1%	-400%
Some other race alone	4.7%	10.3%	54%
Two or more races	3.4%	5.2%	35%

Source: Adapted from Christenson (2003:15, Table 10).

Table 6.9
Race Distribution of Hispanics in the United States by Mode of Data Collection

Selected race categories	Respondent-filled (1)	Enumerator-filled (2)	Percent difference 3=(2-1)/1
White alone	49.2%	45.7%	-8%
Black or African American alone	2.0%	2.1%	5%
American Indian and Alaska Native alone	1.3%	0.8%	–63%
Some other race alone	40.0%	46.1%	13%
Two or more races	7.0%	4.9%	-43%

Source: Adapted from Christenson (2003:15, Table 10).

Christenson (2003:11) reports that 9.2 percent of the responses to race in Puerto Rico were write-ins. Of those, 82.8 were classified as "Some other race." Of the "Some other race" responses, 63.8 percent involved a Hispanic-origin answer (e.g., "Hispanic," "Puerto Ricans," etc.), 31.9 percent were a 'color' response (e.g. "Moreno," "Brown," etc.), 1.8 percent an undefined mixed race response (e.g., "Mixed," "Mulatto," "Multiracial," etc.), and the rest were other responses.

6.4.1 Reporting of race by enumerators

Unlike Hispanic origin, race data collected by enumerators show reporting that is moderately distinct from that in respondent-filled returns. As shown in Table 6.8, enumerator-filled returns for Hispanics in Puerto Rico are proportionately ***less likely*** to be "White alone" (-8 percent), "Black alone" (-17 percent), and "American Indian and Alaska Native alone" (-400 percent), but ***more likely*** to be "Some other race alone" (54 percent) and "Two or more races" (35 percent).

Enumerator-filled returns for Hispanics in the United States (as shown in Table 6.9) are proportionately ***less likely*** to be "White alone" (-8 percent), "Two or more races" (43 percent), and "American Indian and Alaska Native alone" (63 percent), but ***more likely*** to be "Black alone" (5 percent) and "Some other race alone" (13 percent). Unlike Hispanic origin, race data collected by enumerators showed moderately distinct reporting.

6.4.2 Discussion of race reporting

At least in some areas of Puerto Rico (urban coastal areas), the race question[28] "elicited the strongest negative reactions" from participants in four focus groups. Berkowitz (2201:17) notes that several participants reported that they "stopped filling out their questionnaire" upon reaching the race question. Some participants felt the questions were discriminatory, divisive, and not appropriate for "the Creole or 'mixed' realities of Puerto Rico." For example, Berkowitz (2201:17-18) reports some participants' reactions [***emphasis added***]:

> "I have received training on equal employment. I understand that about the races. When I saw the census form and read the race question I thought ***I am not White or Black or anything else because I am Hispanic*** and so I was upset and decided not to fill it out."
>
> "***I did not find an alternative answer for my race*** because we are neither African Blacks nor American Indians. The census did not have the optional answer of 'Puerto Rican,' our race. The question upset me because I thought why do we have to be divided as a race, if we have all kinds of races living here: Chinese, Arabs, Dominicans, Cubans. It occurred to me that this question was somewhat racist and I did not want to fill out the form and so I did not."
>
> "There was ***no option for Latino, or Puerto Rican, or Hispanic.*** This badly designed question demonstrated that our culture does not exist. I felt offended and said I would not fill it out. My wife told me I had

[28] Although Berkowitz (2001:17) reports strong reactions to the "race/ethnicity questions," most of the reactions she reports seem directed solely at race.

to fill it out, according to law. I said let them come and get me and have them put me in jail!"

Despite the strong reactions to the race question cited above, it is clear that the race reporting in Puerto Rico is good in terms of completeness (about 5 percent did not respond). Unlike stateside Hispanics and Puerto Ricans, Island residents were much more likely to respond to race (see Table 6.2). Residents of Puerto Rico were much more likely to report as "White" and much less likely to report as "Some other race" than their stateside counterparts. It is possible that the higher proportion of "Some other race" stateside is partly a function of the much larger race nonresponse among Hispanic stateside, and the consequent imputation. Hispanic residents in Puerto Rico were also more likely to self-report as "Black" on respondent-filled returns than their stateside counterparts (8 percent and 2 percent, respectively; see Table 6.8), but Puerto Ricans in the United States were only slightly less likely to report "Black" than their Island counterparts (6.5 and 7.6 percent, respectively; see Table 6.7).

Because of the large role that enumerators played in Puerto Rico, there was some concern that enumerators may have affected race reporting. Were enumerators somehow responsible for the large proportion reporting "White" in Puerto Rico? That does not appear to be the case.

As seen in Table 6.8, enumerator-filled returns show slightly less reporting of "White," and more reporting of "Some other race." They also show slightly less reporting of "Black" than respondent-filled returns. Interestingly, enumerator-filled returns in the United States showed the opposite: slightly higher proportions of "Black" than respondent-filled returns (see Table 6.9). In any case, it is hard to conclude that enumerators somehow significantly biased or distorted the race data of Hispanics. The race reporting pattern of respondent-filled returns is similar, although certainly not identical, for Hispanic respondents both in the United States and in Puerto Rico.

On the other hand, the race reporting pattern is very different among Hispanic and Puerto Rican respondents in Puerto Rico compared with their stateside counterparts (see Table 6.6 and Table 6.7). It is also clear that these differences are not explained by enumerator behavior. The differences in the race reporting pattern of Puerto Ricans on the Island and in the United States suggest that, despite the controversy, "race" is conceptualized and understood differently on the Island than in the United States.

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7. Conclusion

The major objective of this Topic Report is to synthesize results from the Census 2000 Testing, Experiment, and Evaluations Program research relevant to race and Hispanic origin and, if possible, to answer some or all of the research questions that guided the report.

7.1 Effects of questionnaire changes

What was the overall effect on reporting of race and Hispanic origin engendered by the changes in question sequencing, wording, questionnaire layout, and dropping examples that were included in 1990? Was completeness of reporting adversely affected?

The lesson we learned, once again, from the **Alternative Questionnaire Experiment (AQE)**[29] (see chapter 2) is that changes in the questionnaire (in this case the mailout form) have unintended consequences. Some of the changes had a perverse effect and did not fully resolve the issues they were designed to address, as explained below.

7.1.1 Sequencing and instructions

In Census 2000, Hispanic origin was sequenced ahead of race and an instruction was added to answer both questions. These changes had two main objectives: a) decrease nonresponse to Hispanic origin; and b) increase reporting in standard race categories by Hispanics. While the AQE could not differentiate exactly what effects were produced by a specific change, there is evidence that all the changes had an effect. First, nonresponse to the Hispanic-origin question dropped quite dramatically in the 2000-style form compared to the 1990-style form. Second, the 2000-style form elicited better race reporting by Hispanic respondents, although nonresponse to race is still much too high. Proportionately fewer Hispanic respondents reported as "Some other race" in the 2000-style form, but this change did not even come close to eliminating the problem. Also, more Hispanic respondents responded "White" in the 2000-style form than in the 1990-style form.

7.1.2 Two or more races

One of Martin's (2002a:iv) interesting conclusions is that, "contrary to what might have been expected, there is little evidence that allowing respondents to report more than one race reduced the single race reporting in the 5 major race categories." However, one reason is that, even with instructions to report one race, some respondents to the 1990-style form reported two or more races anyway. In addition, almost one-third of Hispanic respondents did not report a race. So, the actual impact on published race data depends on how these responses are imputed.

It is important to remember that these findings are generalizable only to the mailout universe.

It is also possible that, with a much larger sample, we might have reached different conclusions because we had few cases in the smaller categories. Small samples are a recurring problem with all research on these types of questions.

7.1.3 Question wording and examples

One unintended effect of re-designing the mail form to be more user-friendly was to change the reporting of specific Hispanic groups. Fortunately, Martin (2002a:v) reports no evidence of any difference in the proportion of people reporting as Hispanic, but this conclusion could change if nonresponses are imputed. Nonetheless, there was probably more complete reporting by non-Hispanics in the 2000-style form. The problem is that the 2000-style form elicited fewer reports of specific Hispanic subgroups, and more reports of general Hispanic identity (Martin 2002:v). Data users were disturbed by the reduced detail for the Hispanic population in Census 2000 (see GAO 2003a, Logan 2002:3, and Suro 2002:8).

Many of our critics blame the problem on the dropping of examples and the change in question wording, but it is not clear that this is totally true. First, Martin (2002a) showed that the "Mexican" category was affected, but logically this category should not have been

[29] Martin, Elizabeth, 2002, "Questionnaire Effects on Reporting of Race and Hispanic Origin: Results of a Replication of the 1990 Mail Short Form in Census 2000," Alternate Questionnaire Experiment.

affected since it appeared as a checkbox in both forms. As Martin points out, some of these differences may have resulted from other changes to the form. Second, Cresce and Ramirez's (2003) work suggests that "Puerto Rican" and "Cuban" groups may have been affected even though both appeared as checkboxes in both forms. Third, Martin (2002b:2) showed the opposite effect among Asian and Pacific Islander categories: the 2000-style form had higher proportions among the example groups than the 1990-style form. However, it is important to consider that these results may be an artifact of the relatively small sample size for the smaller race categories. Had the sample size been much larger, we might have reached different conclusions. Cresce and Ramirez (2003) did not undertake a similar analysis for Asian and Pacific Islander groups, but it should be done for completeness sake.

Dropping examples in the question on Hispanic origin may have given some respondents the impression that we were attempting to get them to select among the terms "Spanish," "Hispanic" or "Latino." The "print group" instruction may have reinforced that notion, resulting in fewer specific and more general responses. It may have also created inconsistent reporting, as explored below. In any case, the 2003 National Census Test data should be able to shed additional light on the effect of examples and revised instructions on the responses to the Hispanic-origin and race questions.

7.2 Consistency in reporting

The **Content Reinterview Survey (CRS)**[30] (see chapter 3) allows us to assess the consistency of reporting race, Hispanic origin, place of birth and ancestry, among other items. The CRS report considered Hispanic-origin and place-of-birth reporting to be of good consistency, and race and ancestry reporting to be of moderate consistency.[31] Over 95 percent of respondents answered both the race and Hispanic-origin question in Census 2000 and CRS.

Hispanic-origin reporting. According to Singer and Ennis (2002:xxii-xxiii), the edited Hispanic- origin data were of good consistency, but the lack of clear instructions on the question may have caused some respondents to report multiple categories when the question was intended to elicit one. Based on unedited data, there was good consistency for the "Not Hispanic" and the "Mexican" checkbox categories, but moderate consistency for the "Puerto Rican," "Cuban," and "Other Hispanic" checkbox categories when considered separately. Examining eight categories also showed good consistency – about 3.3 percent of respondents changed their answers. However, as Singer and Ennis (2002:53-54) remind us, all but the "Not Hispanic" and "Mexican" categories were "rare," which can cause measurement error in the indexes. Singer and Ennis (2002) also noted that some respondents changed answers between Census 2000 and CRS, but what is clear is that most of the inconsistency arises in the "Other Hispanic" category and the multiple reports.

Examining the differences in the questions used in Census 2000 and CRS, a respondent might conclude that the mailback Hispanic-origin question is asking if a person is "Spanish" or "Hispanic" or "Latino," whereas the enumerator and CRS questions are asking about specific groups (e.g., "Mexican," "Puerto Rican," "Cuban," or of another Hispanic or Latino group). The "print group" instruction on the mailback form may have reinforced the notion that we were asking respondents to select, or even reject, the general responses. If so, a respondent in Census 2000 may have replied "No, not Spanish/Hispanic/Latino" and "Yes, Cuban," meaning a Cuban who does not identify with the general terms, but during reinterview in CRS the respondent said, "Yes, Cuban," thus creating an apparently inconsistent response. Similarly, a respondent might have identified as "Latino" in Census 2000, and then identified as "Yes, Puerto Rican" in CRS, also creating an apparent inconsistency.

Race reporting. By examining reporting of Hispanic respondents separately, Singer and Ennis (2002:59) concluded that the Hispanic population contribute greatly to the race data variability. This finding reconfirms that Hispanic respondents have more difficulty answering the race question than do non-Hispanics. However, among non-Hispanics, only Blacks, Asians, and Whites show good consistency, while American Indians and Pacific Islanders show only moderate reporting consistency. "Some other race" and "Two or more races" showed poor reporting consisten-

[30] Singer, Phyllis, and Sharon R. Ennis, 2002, "Census 2000 Content Reinterview Survey: Accuracy of Data for Selected Population and Housing Characteristics as Measured by Reinterview," Census 2000 Evaluation B5.

[31] For simplicity of expression, the following terms used in the CRS report were modified: 1) low inconsistency = good consistency; 2) moderate inconsistency = moderate consistency; and 3) high inconsistency = poor consistency.

cy. There is some evidence from observations that enumerators did not always read the question as worded and may have failed to show flashcards (Hough and Borsa 2003:42). As with Hispanic origin, there were differences in questionnaires. But one reoccurring difficulty is a sample size that is insufficient to properly measure differences in reporting, especially for the smaller or rare groups.

Ancestry reporting. One of the interesting findings reported by Singer and Ennis (2002:27) was that responses collected by mail showed more consistency than those collected by enumerators, although both were in the moderate range. In examining the data for specific Hispanic origins of sufficient size, we noted more consistency. There was more inconsistency in reporting "Hispanic" and "Spanish," and some of the inconsistency came from moving between general Hispanic and specific Hispanic responses.

Place-of-birth reporting. Generally speaking, the consistency of place-of-birth reporting as identified by the write-in response was quite good. But Singer and Ennis (2002:32) warn of evidence that the model assumptions were not met for some categories. Even so, subgroups showed good consistency. When we examined place-of-birth reporting from Central and South America, these responses appeared to be reported consistently. These results suggest, for Hispanic groups at least, that place of birth and ancestry may be considered reliable supplements for Hispanic origin. Their use for supplementing race responses, however, needs to be further explored.

7.3 Sequencing and nonresponse

Did sequencing of Hispanic origin ahead of race have the desired effect of reducing nonresponse to Hispanic origin? Did the sequencing of Hispanic origin ahead of race result in proportionately fewer "Some other race" responses in race and did Hispanics have more complete reporting of race?

There is very clear evidence that sequencing of Hispanic origin ahead of race did reduce nonresponse to Hispanic origin. There is some evidence based on the AQE that sequencing of Hispanic origin ahead of race resulted in proportionately fewer "Some other race" responses. Nonetheless, it is still the third largest race category after "Black or African American," and shows no indication of disappearing. The AQE also offers some evidence that Hispanics reported race more completely in 2000-style forms, but very large proportions (about 21 percent) of Hispanics still did not answer the race question. In Census 2000, about 17 percent of race responses for Hispanics were imputed.

7.4 Comparing Census 2000 to other data sources

How do the decennial data on race compare with those collected in other sources?

Several recent studies compare Census 2000 data on race and ethnicity to data from other sources. Based on the work of Bennett and Griffin (2002); Leslie, Raglin, and Schwede (2002); Raglin and Leslie (2002); and Schwede, Leslie, and Griffin (2002), we examined how race and Hispanic origin differ in Census 2000 and the Census 2000 Supplementary Survey (C2SS). One of the main objectives of the ACS is to serve as a replacement for the long form for the 2010 Census. Therefore, it is very important to understand how Census 2000 and C2SS differ for race and Hispanic origin, and what revisions to procedures and the questionnaires can reduce these differences.

Hispanic-origin reporting. Bennett and Griffin (2002:210) found no discernible differences in the proportion of Hispanic-origin responses, but found significant differences in the detailed Hispanic-origin responses. Specifically, they found that compared with Census 2000, C2SS produced proportionately more Mexicans. On the other hand, the "Other Hispanic" category declined by about 17 percent. Presumably this reflects proportionately lower reporting of general Hispanic responses, as shown in other research by Cresce and Ramirez, 2003; Logan 2002; and Suro 2002.

Bennett and Griffin (2002:210) speculate that the observed differences are due to the use of examples in the C2SS during telephone and personal visit interviewing. These aids were not provided during Census 2000 operations, although one could argue that the presence of the Hispanic origin checkbox groups act as examples. This reasoning does not explain why the Mexican percentage is also lower in Census 2000.

Race reporting. Bennett and Griffin (2002:208-210) found significant differences between C2SS and Census 2000 distributions for both the race alone and race alone or in combination categories. The authors found a number of differences in the race distributions, but the percentage of "*White alone*" and "*Some other race alone*" showed the greatest difference. The C2SS showed proportionately more "*White alone*" responses and

fewer "*Two or more races*" responses. Census 2000 showed proportionately more "*Some other race alone*" responses, as explained in more detail below. Small but significant differences also existed for "*Black or African American alone*," "*American Indian or Alaska Native alone*," and "*Asian alone*" (Bennett and Griffin 2002:208). The authors also examined the race distributions for Hispanics and non-Hispanics because reporting patterns tend to be quite different for Hispanic respondents.

Race reporting by Non-Hispanics. Compared with Census 2000, C2SS had slightly more reports of "*White alone*" and "*Asian alone*," and fewer reports of "*American Indian and Alaska Native alone*" and "*Two or more races*." The largest difference between Census 2000 and C2SS was for the "*Some other race alone*" population. When "*Two or more races*" is broken into "Two races which include Some other race" and "*All other race combinations*," Census 2000 had proportionately more race combinations that included "*Some other race*" as one of the races than did C2SS. On the other hand, C2SS had proportionately more reports of all other race combinations than did Census 2000.

Race reporting by Hispanics. Compared with Census 2000, C2SS has about 31 percent more reports of "*White alone*," about 30 percent fewer "*Some other race*" reports, and about 24 percent fewer reports of "*Two or more races*" among Hispanics. Looking at "*Two or more races*" broken into "T*wo races which include Some other race*" and "*All other race combinations*," Census 2000 had proportionately more two race combinations that included "*Some other race*" as one of the races than did C2SS, and proportionately fewer that included "*All other race combinations*."

Based on the apparent reporting differences, the Census Bureau conducted two studies. The first, a semi-structured study of debriefing data, suggested some C2SS interviewers used active probes that may have influenced reporting of specific race responses (Leslie, Raglin, and Schwede, 2002:2068). In another study of the debriefing data, Schwede, Leslie, and Griffin (2002) found that fewer years of experience, region of the country, and interviewer interpretation of what the race question was asking may have affected the responses. These studies also found differences in interviewers' interpretations of "what" the race question is asking, and noted that interviewers pressed researchers to explain "just what it is headquarters wants to collect with the race question."

Raglin and Leslie (2002:2827) matched respondents interviewed in the C2SS to their Census 2000 records and compared responses to the race question. The authors found much more consistent race responses among respondents who answered both Census 2000 and C2SS via mail than among those who were interviewed in both. This was true for both Hispanics and non-Hispanics. In explaining the finding, Raglin and Leslie (2002:2831) note that households were not assigned randomly to mail vs. personal interviews, but rather were interviewed because they did not respond to the mail questionnaire and may represent the hard-to-enumerate population.

Among non-Hispanics, Raglin and Leslie (2002:2831) noted good consistency in reporting when both the Census 2000 and C2SS data were collected via mail for White, Black, and Asian respondents. They found only moderate consistency for American Indian and Alaska Native, Some other race, and Two or more races respondents. Raglin and Leslie (2002:2831) concluded that, for "non-Hispanics who are willing to fill out the mail forms – race reporting is consistent with the exception of people reporting two or more races."

According to Griffin et al., (2002:63) these studies suggest that differences in interviewing techniques used in Census 2000 and C2SS may have led to more reporting of "*White*" in the C2SS and more reporting of "*Some other race*" in Census 2000 for Hispanics. This research did not explain the differences seen for non-Hispanics. These findings led researchers to investigate processing differences between Census 2000 and ACS. One processing difference in the race edits for enumerator forms in Census 2000 may have led to an overstatement of the number of respondents in the "*Some other race*" and "*Two or more races*" categories. Other research suggests this may not be the entire explanation, although it may account for some of the differences in distributions. This processing difference may have exaggerated the Two or more races category by about 15 percent (see Cresce, 2003).

7.5 Comparing Census 2000 and the 1990 census

Given the changes in the race and Hispanic-origin question in 2000, how can these data be compared to data from 1990? What are the limitations of such comparisons? What lessons have we learned about bridging the Census 2000 race data so that they are more comparable to data collected previously and to data in other

data collections that do not allow for more than one race response?

Hispanic origin. Although there were what turned out to be significant differences in the Census 2000 and the 1990 census Hispanic-origin questions, the overall total Hispanic population data are reasonably comparable. For example, Logan (2002:3,4) concluded that Census 2000 had a good count of Hispanics, but did not do well in identifying their specific origin. Several studies indicate that the observed changes in the distribution of detailed Hispanic groups in Census 2000 were not due entirely to a shift in how people of Hispanic-origin define themselves. Rather, this may have been affected by some change in the way we asked the Hispanic-origin question. We are left with the question of whether the elimination of examples was the probable cause of the reporting differences in detailed Hispanic groups. The GAO report (2003a) highlighted the discontent with the reporting of specific Hispanic subgroups in Census 2000. This report marks an important turning point in feedback given to the Census Bureau. Public concern is now focused on a very complete count of specific subgroups within minority categories, rather than the concern in previous censuses (e.g., Choldin, 1986) with the differential undercount of minority groups.

Race. The fundamental changes to the race question in Census 2000 which allowed respondents to report more than one race have complicated comparisons with past collections that allowed only one race. The Census Bureau conducted the Census Quality Survey (CQS) to assist data users in comparing race data obtained under the new schema with that collected under the former format.

The CQS is very impressive because of its large sample size, high response rates, representative sample, and the high matching rate with Census 2000 records. But despite an enviable survey execution, the CQS has several limitations: too few cases reporting more than one race, which are further diminished by inconsistent race reporting, reluctance to select one race, and the split-panel design. The complex methodology and multiple modes of data collection will make it difficult for users to decide how best to "bridge" multiple-race data from Census 2000 to other single-race data collections. But before we dismiss the CQS, we need to conduct additional research and analysis, and we need to explore how to pool the panel data.

In retrospect, it seems that the CQS methodology may have introduced many more sources of bias, such as time lag, mover gains and losses, interviewer effects, mode differences, proxy reporting, and possibly matching problems (all of which may give rise to inconsistent reporting) without entirely eliminating conditioning effects or ensuring the independence of observations. It is quite clear that much more analysis is required to fully explore the CQS data and understand its implications for race reporting and bridging.

7.6 Puerto Rico

Given that the Census 2000 of Puerto Rico was the first to ask race in a decennial census in many decades, what were the issues in collecting those data? What were the general attitudes and problems expressed by the Puerto Rican public in terms of the race question? How do the race and ethnicity data collected in Puerto Rico compare with data collected state-side for the total population, Hispanics, and Puerto Ricans in the United States?

Hispanic origin. Although there is no benchmark for Hispanic origin in Puerto Rico, the results from Census 2000 appear to be reasonable prima-facie, and there appears to be no particular bias in comparisons of respondent-filled and enumerator-filled returns in Puerto Rico. In contrast, there are significant differences in the distributions stateside: enumerator returns show proportionately fewer Hispanics (with the exception of Cubans among the groups examined). In terms of reporting of detailed Hispanic groups, there did not appear to be excessive reporting of general Hispanic terms, probably because the overwhelmingly dominant group on the Island (Puerto Ricans) appears as a reporting category in all data collections. Cresce and Ramirez (2003:11) suggest that the Puerto Rican category, along with the Cuban category, were the least affected by changes in the Hispanic-origin question used in Census 2000.

Race. Berkowitz (2201:17) reported that at least in some urban coastal areas of Puerto Rico the race question elicited strong negative reactions from participants in focus groups. She reports that several participants reported that they "stopped filling out their questionnaire" upon reaching the race question. Some participants felt the questions were discriminatory, divisive, and not appropriate for "the Creole or 'mixed' realities of Puerto Rico." There is no evidence on how, or even if, these negative reactions affected response rates. What we do know is that, in spite of these reactions, race reporting in Puerto Rico was

quite good in terms of completeness.

Unlike stateside Hispanics and Puerto Ricans, Island residents were much more likely to respond to race. Island residents were also much more likely to report as "White alone" and much less likely to report as "Some other race alone." The higher proportion of "Some other race alone" responses stateside may be a function of the much larger race nonresponse among Hispanics in the United States, and consequently the need to impute race data for nonrespondents. Hispanic residents of Puerto Rico were also more likely to self-report as "Black alone" than their stateside counterparts, but Puerto Ricans in the United States were only slightly less likely to self-report "Black alone" than their Island counterparts.

There was concern that enumerators may have affected race reporting because of the large role enumerators played in Puerto Rico. Enumerator returns show slightly less reporting of "White," and more reporting of "Some other race." They also show slightly less reporting of "Black" than self-reported returns. Interestingly, enumerator returns in the United States showed the opposite: slightly higher proportion of "Black" than in mail returns. In this case, it is hard to conclude that enumerators somehow significantly biased or distorted the race data of Hispanics. The race reporting pattern of mail returns is similar, although certainly not identical, for Hispanic respondents both in the United States and in Puerto Rico. The differences in race reporting suggest that the understanding and conceptualization of race is different for Puerto Ricans on the Island than in the United States. Despite the controversy that asking race engendered, a higher percentage of Puerto Ricans on the Island reported a race than did Puerto Ricans in the United States.

7.7 Future research

What research and testing should be conducted before the 2010 Census in order to improve the Census 2000 questions on race and Hispanic origin?

The suggestions arising from this review are consistent with those already underway with the 2003 National Census Test (e.g., examining the role of examples, changing question wording and instructions, dropping "Some other race," changing response categories, and examining new approaches to collecting data on race and ethnicity).

Examples. We need to test the effect of examples in getting better information about detailed Hispanic-origin and race groups. The detail will help not only to ensure a complete count but also to get the detailed tabulations that data users are expecting us to be able to generate.

Question wording and instructions. We need to test the effect of restoring "origin" in the Hispanic-origin question, improving the instruction for the "Other Hispanic" category, and clarifying the instructions to respondents to answer both questions and to not give an ethnicity response in race.

"Some other race" (SOR). We need to test the feasibility of eliminating the SOR category because it is not very consistently reported or useful, except as a collection category, and because we have to eliminate it for other purposes, such as survey controls and population estimates. However, we must also understand what will happen if respondents, especially Hispanics, continue to report an identity which is not one of the OMB races.

Fewer Response Categories. We need to continue to test approaches to reduce the "national" origin categories in both race and Hispanic origin. Some of these issues are being explored in the 2003 National Census Test, but additional research needs to be conducted. The CRS findings suggest that detailed categories tend to be less consistently reported. Part of this may be due to the confusion associated with the presence of some Asian and Pacific Islander national-origin groups in the race question, and Hispanic national-origin groups in the Hispanic question. This creates confusion for some respondents about the purpose of both questions. As noted by Schwede, Leslie, and Griffin (2002:3136), our response categories are "a strange pastiche of skin color (white and black), internal indigenous ethnic groups (e.g., American Indian/ Alaska Native), U.S. Island Areas (e.g., Samoa), nationality (e.g., Japanese), and geographical region for many countries (other Asian)." The authors also note that even our Census Bureau field representatives expressed some confusion about exactly what headquarters intended to collect with these questions. Previous experience suggests that removing some of the categories would be difficult because many constituents expect that existing groups will be retained on the form, and in fact we have been under pressure to expand the number of categories shown. But, as with other questions, before changes can be made, extensive research and testing needs to be done.

8. Recommendations

Based on the studies reviewed in this report, we make the following recommendations (please note that we do not attach any particular importance to the order in which they appear):

8.1 Pretest and evaluate all questionnaire changes, reduce uncontrolled variation in the questions that are asked, and conduct more research on mode and methodological influences on the data.

It is important that we pretest and evaluate all questionnaire changes prior to implementation. We need to reduce uncontrolled variation in the questions that are asked and we need to understand how mode and other methodological differences affect the data that we collect. Census 2000 had 54 different types of forms, and many forms had different race and Hispanic-origin questions than the "standard" mail form. The AQE showed that even what appear to be minor changes on the Hispanic-origin question produced noticeable differences in the responses we collected. The studies contrasting Census 2000 and C2SS data suggest that we do not understand how mode and other methodological differences affected the responses in each data collection. (See chapter 2 for more discussion.)

8.2 Use larger sample sizes for tests.

As the AQE, CRS, and CQS studies showed, there are many instances where larger sample sizes would have improved our ability to evaluate effects on numerically small groups. While smaller sample sizes may save money in the short run, they may end up costing more in the long run if the tests must be repeated to yield definitive results. On the other hand, large data sets, such as the matched Census 2000 and C2SS data, will often produce too many statistically significant differences to yield definitive results. However, on balance, it is better to have a lot of data rather than too little, particularly when we seek to understand how proposed changes will affect numerically small groups.

8.3 Avoid overly complex test designs – the simpler the better.

It is important that we avoid overly complex test designs. For example, the complex design of the CQS made it difficult to interpret the results and answer the questions the test was designed to explore. Having two panels in the CQS effectively reduced the sample size available for us to analyze. We need to do a lot more analysis of the CQS data, and we need to determine whether we can effectively pool the data in order to obtain larger sample sizes for analysis.

8.4 Explore ways to improve mail response – not only is it less expensive but we may also get more consistently reported race data.

A study of matched Census 2000 and C2SS records found much more consistent race responses among respondents who answered both Census 2000 and C2SS via mail. This was true both for Hispanics and non-Hispanics (Raglin and Leslie, 2002:2831). However, we know that households in Census 2000 and C2SS were not assigned randomly to mail or interview modes. In fact, households who were interviewed did not respond to the mail questionnaire and, therefore, may represent a particular segment of the population for whom it is hard to collect data. The combined benefits of lower cost and potentially more consistent race responses make the mail data collection mode even more desirable.

8.5 Explore ways to improve training and monitoring of enumerator and interviewer behavior.

No matter how much we improve mail response, there will still be a need for enumerators and interviewers to conduct non-response followup and other data collections. Therefore, interviewer behavior will always be an important issue for data collection. Based on a semi-structured debriefing study of ACS interviewers, Leslie, Raglin, and Schwede (2002) speculate that interviewer behavior caused by differences in experience and training may account for race reporting differences in Census 2000 and C2SS. Although this study was based on reported,

not observed, behavior, it suggests the possibility that some interviewers used active probes which may have influenced reporting of specific races responses (Leslie, Raglin, and Schwede, 2002:2068).

1. **Improve interviewer understanding of race and ethnicity questions.** In order to ensure that we collect reliable information on race and Hispanic origin, interviewers must have a good understanding of these concepts. In another study of interviewer debriefing data, Schwede, Leslie, and Griffin (2002) found variability in interviewer interpretations of "what the race question was asking." They found that this varied by years of experience, type of experience, and region of the country. Recognizing this, we need to explore ways of ensuring a common understanding among interviewers about the race and Hispanic-origin questions.

2. **Provide a standardized approach for collecting race and ethnicity data**. In order to obtain reliable information on race and Hispanic origin, interviewers must have training and standard methods for data collection. It is important to maintain consistency across data collections within mode so that interviewers have similar experience collecting these data.

3. **Improve methods to monitor enumerator and interviewer behavior**. In order to reduce the effect of interviewer behavior on the collection of consistent race and Hispanic-origin data, we need to explore ways to monitor interviewer behavior through training, feedback, and reward or punishment of behaviors.

8.6 Explore ways to minimize the differences between, if not standardize, race and ethnicity questions across data collections.

The studies reviewed in this report point out many differences in the methods and materials used for race and ethnicity in our data collections. In order to maximize our ability to collect consistent race and Hispanic-origin data, we need to consider standardizing the questions on race and ethnicity across our data collections as much as possible. We recognize that mode differences may require specific approaches, but the questions should be consistent within mode. This will also reduce variability arising from differences in the type of experience among interviewers.

8.7 Within each data collection, minimize or eliminate variation in response categories across forms to avoid introducing data processing differences.

We have one documented instance in which differences in the number of write-in areas for race responses caused differences in the output data. A difference in the processing of enumerator forms (which had only one write-in area for race) and to mail forms (which had three write-in areas for race) led to an overstatement of Some other race by 6 percent, and an overstatement of Two or more races responses by about 15 percent (see chapter 5 for more discussion). Reducing the number of forms and standardizing input fields will reduce the probability of spurious errors in data processing.

8.8 Consider removing "Other..." check boxes and keeping the write-in area.

Davis et al. (2001:III-16) note an inability of many respondents to use the existing categories. One source of incomparability arises when respondents check a box and write-in an entry in an inappropriate area. For example, Davis et al.(2001:III-18) noted the instance of a respondent who reported her American Indian tribal affiliation in the "Yes, other Spanish/Hispanic/Latino" write-in area, after marking the "No, not Spanish/Hispanic/Latino" box. By checking both boxes, the respondent created a "mixed Hispanic origin" response which was probably not intended.

Similarly, if a respondent were to mark the "Other Asian" checkbox and write "Irish" in the write-in area, we would have to make the decision of whether to classify the respondent as "Asian ***and*** White" or to remove the checkbox and keep the write-in response. Without the "Other..." checkboxes, write-in entries can be automatically evaluated and coded during the automated edit processing, without having to worry about whether the other checkbox marking was intended as an additional response or not.

8.9 Consider not using "Some other race" in combination with other specified races (e.g., change "White *and* SOR" responses to "White alone").

The CRS report suggests that "Some other race" is not consistently reported. Additionally, this category is not used in other federal government programs, and it is not an official OMB-recognized race category outside of the census. Therefore, we should consider

ignoring these responses when they appear in combination with one or more OMB categories. But even if the SOR category is eliminated from the census questionnaire, it is very likely that we will still get responses in other write-in areas that do not fit within the OMB-recognized race categories. What we decide to do with these non-OMB responses will affect the race distribution produced.

8.10 Consider using information from other items to improve edit procedures, limit 100-percent data tabulations to PL 94-171 race and Hispanic-origin groups, and derive detailed groups from American Community Survey data tabulations.

Cresce and Ramirez (2003) showed that information from place of birth and ancestry can be used successfully to supplement "general Hispanic" responses, and produce more detailed information about the respondent's particular Hispanic origin (e.g., Guatemalan). Cresce and Ramirez (2003) did not use this information to change a respondent from Hispanic to non-Hispanic (or vice versa). We also know that Census 2000 100-percent data show slightly different distributions than those based on Census 2000 sample data and C2SS distributions. In the future, we should consider releasing detailed race and Hispanic-origin tabulations from ACS data only, rather than 100-percent data.

This recommendation arises from three sources: 1) our inability to reconcile the differences between ACS and 100-percent distributions; 2) GAO admonishing us not to release detailed group data unless we can vouch for its accuracy; and 3) data users' desire to have the most complete data possible for detailed groups. Although the 100-percent data is the largest data collection we undertake, it also has the greatest probability of suffering from non-sampling error because everything that can go wrong will go wrong in the larger endeavor.

Under this proposal, the 100-percent data would be used for constitutionally mandated purposes and for enforcement of the Voting Rights Act; the sample data would be derived from the American Community Survey (once fully implemented). The 100-percent items on the ACS questionnaire could be edited with other data items on the questionnaire. For example, relationship could be edited with the assistance of marital status information. Similarly, place of birth and ancestry could be used to supplement the information about detailed race and Hispanic-origin groups. This does not imply that these items would be used to change a respondent from one major category to another. For example, you would not change a respondent from "Not Hispanic" to "Hispanic" based on their response to the place-of-birth question, but you could change a generic response of "South American" to "Columbian."

If we think of the 100-percent data as being a collection effort about the number of the nation's inhabitants and the race, Hispanic origin, and age of the population of each census block, then it makes sense to publish only the information we are required to at the block level.[32] The sample or long-form data derived from ACS then become the source of all other demographic, socioeconomic, and housing characteristics of the nation and of the geographic units we feel are appropriate for release, including detailed subgroups of the racial and ethnic populations.

8.11 Conduct additional analysis of the Census Quality Survey data.

As noted in chapter 4, the main objective of the Census Quality Survey (CQS) was to assist data users in comparing race data obtained by asking respondents to "mark one or more races" with data obtained by asking respondents to "mark one race." However, a great deal of further analysis needs to be conducted to determine how CQS data can be used to develop parameters for race bridging.

[32] Public Law 94-171, enacted in 1975, amended section 141 of title 13, United States Code, which directs the Census Bureau to provide redistricting data needed by the 50 states for their use in redrawing districts of the United States Congress and state legislatures

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