Meeting 21st Century Demographic Data Needs—Implementing the American Community Survey

Report 4: Comparing General Demographic and Housing Characteristics With Census 2000

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Report 4: Comparing General Demographic and Housing Characteristics With Census 2000

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EXECUTIVE SUMMARY

The American Community Survey (ACS) is one of three program components required to achieve the 2010 Census re-engineering strategy goals. The ACS would replace the once-a-decade collection of detailed demographic, housing, and socioeconomic data that occurs as part of the decennial census with an ongoing sample survey that produces annual and multi-year estimates of these same characteristics. The Census 2000 Supplementary Survey (C2SS) was a national implementation of ACS methods that the Census Bureau conducted as part of Census 2000 to demonstrate the operational feasibility of the ACS. To date, the Census Bureau has issued reports addressing questions of ACS operational feasibility, technical performance of the ACS, and the implications of changing the ACS to a voluntary survey (U.S. Census Bureau 2001b, U.S. Census Bureau 2002, and U.S. Census Bureau 2003b). This report is one of a series of reports focusing on validating the quality of the ACS by assessing how the results from the C2SS compare with results from Census 2000. Specifically, the report includes comparisons of the general demographic and housing data of age, sex, household relationship, Hispanic origin, race, occupancy status, and tenure. The report finds that the C2SS estimates are highly similar to the corresponding Census 2000 results, and suggests possible explanations for those differences that were found.

While the results of this comparison affirm the suitability of the ACS to replace the decennial long form sample, the results also identify several areas requiring improvement. First, the Census Bureau has determined that it should, whenever consistent with best survey practices, seek to ensure conformity between the decennial census and the ACS. This includes a review of data collection and data processing methods and procedures. Second, working groups must address several issues including the collection of race and Hispanic origin data and ACS weighting and estimation procedures. The Census Bureau must remain committed to the examination of performance and quality measures in the ACS to identify areas warranting improvement.

Major Findings

At the national level, distributions of the general demographic and housing characteristics from the C2SS were very similar to those produced from Census 2000 counts. A comparison of C2SS results before the use of population controls at the national level shows only minor differences between Census 2000 and the C2SS. As expected, published C2SS data (after population controls) were even more consistent with Census 2000 results.

The Census Bureau should conduct additional analysis at sub-national levels. This report included only a brief review of county-level data for a sample of counties. The sub-national data confirmed most national findings but identified a few questions about county-level differences. The goal of the ACS is to produce high quality data for small areas such as counties and census tracts. Therefore, future reports should include greater emphasis on lower levels of geography.

Additional efforts to extend this analysis of ACS and Census 2000 data (e.g., by studying data collection mode and using cross-tabulations) should be considered.

Questionnaire presentation, the way a question is asked, and the response categories provided can affect how a respondent answers a question. Differences in presentation and wording were found in the C2SS and Census 2000 and may explain some minor differences that we note in this study (see pages 30 and 37). The use of examples in the Hispanic origin question used during telephone and personal visit follow up in the C2SS, together with the higher percentage of personal visit and telephone interviews in the C2SS when compared with Census 2000, had an effect on the data collected on Hispanic subgroups. During C2SS telephone and personal visit interviewing, interviewers provide respondents with examples for "Other Spanish/Hispanic" that interviewers did not provide in Census 2000. Variations in the wording of the Hispanic origin question may have also had an effect. Similarly, inconsistent wording of the race question across data collection modes may have played a role in the differences found in the final race data. A working group is addressing the issues of collection of Hispanic origin and race data to determine optimal question wording for all of the Census Bureau's surveys and censuses. This group continues to examine issues associated with the collection of specific Hispanic origin and race data, including the use of examples of specific Hispanic groups.

The C2SS edits took advantage of the availability of detailed demographic and housing data, which may have led to differences in the final data for some items (see pages 26 and 45). Internal checks of related data items were an important component of the automated data collection instruments used by C2SS interviewers and contributed to the low allocation rate for the tenure (i.e., owner/renter) item. Data on such items as mortgage provided important information to assign missing values to the tenure question. The C2SS edits incorporated information on marital status in the edit of the relationship item, improving its overall quality. The vast majority of basic demographic data from Census 2000 come from census short forms on which such related data items were not asked. The use of this extra information by the ACS may result in minor differences in the results, depending on the extent of missing data. The Census Bureau is looking to make the edits for these general demographic and housing items consistent between the ACS and the 2010 Census while taking advantage of data that can improve ACS data quality.

These demographic and housing items showed little effect of either the different rules used to determine who should be interviewed in Census 2000 and the C2SS or the 3-month design of C2SS data collection (see page 41). For most demographic items like sex, relationship, race, and Hispanic origin there was no reason to believe that differing residence rules or collection of data over 12 months in a defacto manner, rather than as of an April 1st date, would affect the national results. We expected differences in the C2SS and Census 2000 housing unit occupancy rate because of the C2SS 3-month design and different residence rules, but the differences did not occur in the direction anticipated. Because vacant units are usually not interviewed by mail or telephone, it is only in the last phase of C2SS data collection for each sample panel (personal interviewing) that the ACS usually identifies sample units as vacant. Therefore, units in a C2SS sample panel had two months to change status from vacant to

occupied and only one month in which to be interviewed as a vacant unit. Therefore, we expected vacancy rates for the C2SS to be *lower* than for Census 2000. However, the vacancy rates in the C2SS were significantly *higher*, a result consistent with recent Census 2000 evaluations that identified problems with the misclassification as occupied, of vacant housing units. This misclassification can result when interviewers neglect to focus on obtaining occupancy status as of April 1st and instead collect the status as of the date of interview.

Coverage differences between the C2SS and Census 2000 may explain minor discrepancies that were found when comparing the characteristics of sex and age for the household population (see pages 17 and 20). Historically undercounted populations in household surveys include males and children. Lower proportions of males and children were found in the C2SS than in Census 2000. The adjustment of the C2SS published estimates to population controls corrected for most of these differences.

The Census Bureau should research the ACS weighting and estimation procedures to determine if changes can improve relationship data (see page 26). Minor differences were found in the C2SS and Census 2000 distributions for relationship and household type and are most likely due to the consequences of the weighting and estimation procedures used in the C2SS. The C2SS weighting and estimation procedures parallel procedures used in other household surveys and result in inconsistencies in the number of households and householders, while these values are always the same in the full count census. The weighting used for the census sample data was able to control for this, resulting in distributions more similar to those from the census count. The Census Bureau has established an inter-divisional team to research alternative ACS weighting and estimation procedures.

Proxy information and the lack of a content follow-up for mail returns in Census 2000 could have introduced error in the Census 2000 results. The priority for the C2SS was the collection of detailed sample data and data collection methods were designed to meet this objective. The priority for Census 2000 was the constitutional mandate to count the population. Census 2000 allowed proxy responses from people who were not members of the household, such as neighbors, to collect critical count data by the required deadlines. The C2SS did not allow proxy responses. Interviewers obtained all data from a member of the sample household. Also, Census 2000 did not implement a review and follow-up for missing content. The C2SS included a telephone follow-up to collect additional data for items missing from mail returns. The use of automated instruments in the C2SS, which could not be used in Census 2000, also improved the quality of C2SS data.

The experience and training of C2SS interviewers and Census 2000 enumerators appear to have had an effect on both data completeness and the actual survey responses (see page 37 and Appendix B). C2SS interviewers were more experienced in data collection and received different training than the short training provided to Census 2000 enumerators. C2SS interviewers were more successful in reducing refusals and collecting complete survey data. Some nonresponse bias could have been introduced into Census 2000 data due to levels of both unit and item nonresponse. In analyzing the data for tenure (i.e., owner/renter), we noted that

this item had a significantly higher level of missing data for forms completed by enumerators in Census 2000 than was found in the C2SS. C2SS interviewers were more likely to probe for responses when a respondent provided an inconsistent response (Leslie, Raglin, and Schwede, 2002). In particular, they were more likely to probe for another answer if an Hispanic respondent provided "Hispanic" as a response to the race question. This could have led to a lower reporting of *Some other race* in the C2SS.

1.   OVERVIEW AND PURPOSE

Data users have long argued that the currency of detailed population and housing data should be increased. In addition, the Census Bureau has concluded that decennial census operational complexity must be decreased. Consequently, the Census Bureau has implemented the 2010 Census re-engineering strategy to manage risk and reduce complexity while improving coverage and containing costs in the 2010 Census. The American Community Survey (ACS) is one of three program components required to achieve the 2010 Census re-engineering strategic goals. Collecting long form data throughout the decade by the ACS, instead of all at once in the decennial census, will profoundly benefit the design, planning, and potential quality of the 2010 Census.

Over ten years ago, in response to congressional and other stakeholder demands for timely and relevant data, the Census Bureau began examining a new approach for gathering sample data (Sawyer, 1992). Consequently, instead of the static, once-a-decade snapshot of the nation's population, Census Bureau experts began researching the feasibility of an ongoing survey to collect and distribute current demographic, housing, and socioeconomic data. This research culminated in 1995 with the initiation of the ACS testing program.

The primary purpose of the ACS testing program was to develop the methods for providing timely, accurate, and detailed demographic, social, economic, and housing data each year. This activity began in four test sites and expanded over a four-year period to 36 counties. We conducted the Census 2000 Supplementary Survey (C2SS) as part of Census 2000 in 1,203 additional counties, using ACS methods. Its primary purpose was to demonstrate the operational feasibility of collecting sample data at the same time as, but separate from, Census 2000. The C2SS, combined with the 36 counties contained in the ACS test sites, provided the first set of national-level estimates collected using ACS methods. Data collection activities for the 2001 through 2004 Supplementary Surveys have been continuing in the same counties. These surveys will allow the ACS to produce multi-year estimates and will help demonstrate the data's usability and continuing reliability.

With the availability of national data collected in 2000, the Census Bureau began examination of a range of ACS implementation issues. We are documenting key results in a series of reports. While the first three reports focused primarily on operational, technical and logistical aspects of the C2SS, this report and the next several reports, compare results from the C2SS with Census 2000.

We undertook comparisons to Census 2000 for two important reasons: (1) to demonstrate that the ACS represents a sound replacement for the long form with respect to quality and (2) to discuss how ACS data may differ from decennial census data. Assessing quality would ideally involve comparing ACS data against truth, but that was not possible. Instead, we chose to compare ACS estimates with Census 2000 and to look for important differences. When such differences were found, we sought possible explanations and supporting evidence about whether the ACS estimate was sound. In instances where it appears that Census 2000 results may be

better, we look for ways to improve the ACS. This report provides the starting point for understanding the differences that exist between the C2SS and Census 2000 results. It begins to help users make the transition from the decennial census sample estimates to the ACS estimates.

The scope of this report is a comparison between the estimates reported on the Profile of General Demographic and Housing Characteristics (Census 2000 Table DP-1) and the comparable data profile produced from the C2SS. We restrict the analysis to data for the household population - the population in group quarters is excluded. Primary comparisons include single-year (2000) estimates at the national level. We also include selected county-level comparisons. The methodology section describes in detail the approach used to conduct this analysis.

In preparing this report, Census Bureau analysts considered the respective purposes of Census 2000 and the C2SS, and their methods and procedures. When different methods were used in the C2SS and Census 2000, we reviewed the rationale for choosing specific methods and assessed the likely impact on the data. When available, analysts integrated the results of research and analysis projects to provide greater insight into possible reasons for differences. This report acknowledges that both Census 2000 and the C2SS results reflect differences due to the choice of methods and their implementation. Whenever possible, data are provided that speak to those quality issues. We discuss in detail only those methods that likely contributed to differences.

Over the next three months, the Census Bureau plans to release the following additional comparison reports:

- A detailed comparison of the Profile of Selected Social Characteristics (Census 2000 Table DP-2) to the C2SS at the national level. This profile includes such items as school enrollment and disability status.

- A detailed comparison of the Profile of Selected Economic Characteristics (Census 2000 Table DP-3) to the C2SS at the national level. This profile includes such items as employment status and income.

- A detailed comparison of the Profile of Selected Housing Characteristics (Census 2000 Table DP-4) to the C2SS at the national level. This profile includes such items as units in structure and mortgage status.

- A detailed comparison of selected demographic, housing, social, and economic characteristics of 3-year estimates from the ACS test sites to Census 2000.

2. BACKGROUND

Since the 1940 census, the Census Bureau has asked detailed questions only of selected persons and housing units. The modern census sample collects detailed social, economic, demographic, and housing data from the nation. To support apportionment and redistricting, the decennial

census must collect data on age, race, and Hispanic origin from all people. Relationship, sex, and tenure are also collected for all households. That is why we often refer to these data as "100-percent data items." Detailed data are collected from only a sample of the population - thus the reference to "sample data." Short and long form questionnaires were used in Census 2000. Long forms were used for about 1-in-6 housing units to collect both 100-percent and sample data, and short forms were used for the remaining 5-in-6 housing units to collect only 100-percent data. We have designed the ACS to collect the 100-percent and sample data previously collected on decennial census long forms.

The C2SS and Census 2000 use similar methods of data collection adapted to meet unique census and survey deadlines. Census 2000 relied heavily on the mail to enumerate the population. Follow-up interviews were conducted by personal visit. The mailout and enumerator delivery of most questionnaires occurred in March 2000. Follow-up took place in April through June of 2000. All questionnaires were sent to a set of processing centers for data capture. Apportionment and redistricting data were produced by the legal deadlines of December 31, 2000 and April 1, 2001, respectively. The ACS uses mail, telephone, and personal visit data collection methods over a 3-month time period to interview 12 monthly samples of addresses. A unique national sample of addresses is selected for each month and data are continuously collected throughout the year. The ACS captures and processes survey data on a continuous basis and will produce and release many data products every year. The ACS will provide data products based on single-year, 3-year, and 5-year sample data accumulations.

The data in this report are based on Census and ACS data collected in 2000. The Census 2000 data are the 100-percent data collected on both long and short forms. Two distinct ACS data collection activities took place over the entire 2000 calendar year. First, we implemented the national sample, the C2SS, in 1,203 counties, and second, we continued testing which began in 1999, in 36 additional test counties. These ACS test counties have higher sampling rates and use a sample design that parallels the design planned for full implementation. When combined, the sample in the ACS test counties and the C2SS counties allow production of national, state and selected sub-state estimates. When we refer to the C2SS estimates in this report, we are referring to the entirety of the data collection effort in 2000 using ACS methods. We combine data collected from the ACS test counties with data from the national supplementary sample, resulting in an initial national sample of close to 900,000 addresses.

3.   INTRODUCTION

This report documents the comparison of C2SS and Census 2000 results for the general demographic and housing items. These are the items included on both the decennial census short and long forms and we often call them the "100-percent data" items. Included are sex, age, relationship, Hispanic origin, race, and tenure. In addition, this report includes information on housing occupancy status.

3.1 **Decennial census general demographic and housing characteristics provide the foundation for constitutional and legal mandates and survey controls**

The general demographic and housing data collected in the decennial census are unique benchmarks. Data are produced for many geographic levels - including blocks, block groups, census tracts, counties, states, and the nation. The Constitution requires the use of these data for apportionment, and they are also used for redistricting and to support such important legislation as the Civil Rights Act and the Voting Rights Act. They are integral to these and other national concerns and programs that administer hundreds of billions of federal dollars. Further, the decennial census full-count data are the basis for the intercensal estimates used to control the estimates of population and housing derived by the major demographic surveys, including the C2SS and, when fully implemented, the ACS.

Despite their status as a unique benchmark, these decennial census 100-percent data, like data produced from any survey endeavor, reflect some amount of nonsampling error. Conducting a census is an enormous undertaking that requires the use of a large number of temporary employees. Legal deadlines force the Census Bureau to collect and process census data in a very short time period. For these reasons, we recognize that data from the decennial census are subject to coverage, nonresponse, processing, and measurement errors, and that such considerations are important in any comparison that uses census results.

3.2 **ACS estimates of general demographic and housing characteristics will provide critical information throughout the decade**

We designed the ACS to replace the decennial census long form sample data, not the data traditionally collected on short forms. The ACS will not produce the official population and housing counts, but will produce annual estimates of distributions of detailed social, economic, and housing characteristics. Comparing ACS estimates for these general demographic and housing items with Census 2000 is important. Even though these items are not the focus of the ACS, these items will lay the foundation for many detailed tabulations. For example, the ACS will provide estimates of the number of children in poverty, data on levels of education by race, and information on the economic characteristics of the aging population. The ACS will collect these data over the decade allowing the tracking of change in these and other important demographic and socioeconomic distributions required for informed governance. Therefore, consistency in their collection is fundamental to consistency in later tabulations.

Most Census Bureau surveys use controls to correct for coverage bias (relative to the decennial census) and to reduce estimated variances. In the C2SS, Census 2000 counts of population and housing were used as controls at the county and sampling stratum levels. Specifically, population controls increased the national C2SS survey estimate of the household population by about 3.2 percent and the estimate of total housing by about 0.4 percent. See U.S. Census Bureau (2000) for a more detailed discussion of the use of population and housing controls in the C2SS.

Controlling (adjusting survey estimates to agree with the Census 2000 counts) is a standard estimation procedure in the production of final published C2SS results as it is for any household survey conducted by the Census Bureau. However, because of these controls, the published results do not provide an independent survey estimate of the 100-percent characteristics, possibly precluding the detection and understanding of important differences between the basic characteristics produced by the C2SS and Census 2000. Therefore, this report considers the ACS distributions both before and after the application of these controls. No sampling errors exist in the Census 2000 results in this report, only in the C2SS. However, both Census 2000 and C2SS data are subject to nonsampling error.

3.3   Census 2000 and the C2SS were designed to accomplish different objectives

Both the decennial census and the ACS serve similar purposes of providing data to meet legal and programmatic needs. Census 2000 officially enumerated the nation's entire population as required by the Constitution. The results are used for apportionment, redistricting, and to support important legislation such as the Civil Rights Act and the Voting Rights Act. Securing a complete count is the primary goal of the decennial census and priority is given to designing a census that facilitates this count and ensures that key data are produced by the legal deadlines. To help ensure a consistent enumeration, the concept of "usual residence" as of April 1, 2000 was used in Census 2000.

In contrast, we designed the ACS to collect detailed data and to measure the characteristics of all areas as a yearly average. Data collection is continuous, taking place nearly every day of the year. Although coverage is important, the priority for the ACS is content. The ACS uses a unique concept of "current residence," not the census concept of "usual residence" as of April 1. Further, since the collection of detailed characteristics is the objective of the ACS, the methods require that information collected from sample households come from a household member. That is, unlike the decennial census, the ACS does not allow proxy respondents, such as neighbors, to answer for the household.

An enumeration of the entire population and housing is very different from a sample survey of detailed demographic, housing, and socioeconomic characteristics. The different purposes and relative sizes of the undertakings guide the methodologies used to collect and process data. C2SS data were collected using a combination of mail-out/mail-back questionnaires, Computer-Assisted Telephone Interviewing (CATI), and Computer-Assisted Personal Interviewing (CAPI). Census 2000 benefitted from the widespread publicity surrounding the census and the perceived importance of a decennial census. The design and operations of Census 2000 were however, limited due to the large workload size and tight scheduling constraints. The following section describes the methods used to conduct this comparison study, and how different designs and data collection and processing methods may explain observed differences between the C2SS estimates and the Census 2000 counts.

4.   METHODOLOGY

The general approach for comparing C2SS and Census 2000 results was to determine if meaningful differences exist, and if so, to suggest reasons for them. The tables included in this report compare uncontrolled C2SS estimates, with margins of error, to the Census 2000 results. We identify C2SS estimates that differ beyond sampling error. These uncontrolled differences were of primary interest because they more directly reflect the differences that exist in the collected data. We have included the final published results from the C2SS, after the use of population controls, in Appendix A. Although only national data tables were produced, we graphically display selected sub-national comparisons. We examined 18 of the 36 counties included in the ACS test sites for the past several years to provide some additional information on how the C2SS and Census 2000 results compared.

It is important to recognize that both Census 2000 and the C2SS should, by most standards, be considered excellent data collections. Census 2000 successfully reduced both the net and differential undercount noted in prior censuses, and achieved a high mail return rate (Stackhouse, 2001). The C2SS, the first national-level ACS test, achieved high rates of mail response and low levels of survey nonresponse while completing all operations on schedule and within budget. Both the census and the survey produced high quality results and any noted differences between the two should not necessarily be considered to reflect a shortcoming of either.

We examined all C2SS and Census 2000 methods to assess the potential effects that nonsampling error could have on either Census 2000 counts or C2SS estimates. We studied coverage, nonresponse, measurement, and processing errors to be certain that observed differences were not due to problems inherent in the design of the ACS. In addition, the effects of methodological differences such as residence rules were considered. However, because of the interdependencies between errors and methods, the relative effects of these differences cannot be determined. Consequently, this report does not definitively attribute identified differences to specific methods or practices.

The results section of this report documents the outcomes of this analysis and identifies areas in which improvements in ACS methods or additional research are recommended. Every census is different - methodologically and procedurally. We expect that the ACS will be relatively consistent, improving its methods and processes as flaws or weaknesses are found and corrected. This analysis also provided an opportunity to identify real differences that may exist in ACS estimates relative to those produced from a decennial census.

4.1   Methods were developed to identify differences

This report contains tables comparing C2SS and Census 2000 results for sex, age, relationship and household type, Hispanic origin, race, housing unit occupancy status, and tenure. Before conducting such a comparison, two factors had to be taken into account. First, unlike

Census 2000, the C2SS did not include the group quarters population.[1] The official Census 2000 totals include both the group quarters and the housing unit population, while the C2SS collected data exclusively from the housing unit population. The Census Bureau did not collect data from group quarters in the C2SS to avoid confusion with the decennial census long form data collection operations and to reduce the burden on group quarters. While budget constraints have prevented the inclusion of the group quarters population in subsequent supplementary surveys, the ACS will include the group quarters population when it is fully implemented.[2] To allow appropriate comparisons to be made, the Census 2000 data for the group quarters population were ignored, allowing tables to be derived that included only the household population.

Second, since the C2SS, as a sample survey, was subject to sampling error, comparisons using the C2SS estimates had to take into account the C2SS sampling variances. Tests for statistical significance were conducted and we show the results in the tables. At the national level, the C2SS variances were quite small, resulting in most differences between the Census 2000 and the C2SS profile distributions being statistically significant, although neither analytically nor practically important.

4.1.1 Data were produced to compare national distributions of characteristics in the C2SS and Census 2000

The characteristics shown in the profile tables used in both Census 2000 and the C2SS were chosen as the key tables for analysis. This section describes the contents of those tables, how they were produced, and how they should be interpreted. An example of the table for Hispanic Origin follows. All tables in the results section follow this basic format. The first row of the table is shaded and shows the universe on which we base the percentages in the other rows. The distributions of the various subgroups or categories shown in the table were then calculated and rounded. In this table the "Census 2000" percentages for each specified group are based on the Census 2000 household population. In the example, 7.4 percent of the Census 2000 household population reported *Mexican* as a specific Hispanic group. The "C2SS Estimate" column shows the same specified groups estimated from C2SS data. For *Mexican*, the C2SS estimate was 7.9 percent. The "Difference" column is the difference between the Census 2000 and C2SS values for that row. We calculated these distributions and determined the differences before all percentages were rounded. Therefore the "Difference" shown may not always be the same as "C2SS Estimate" minus "Census 2000." A difference of 0.0 does not necessarily mean there was no difference - it means that the difference was less than 0.05 percent. Similarly, a margin of error of ±0.0 shows that the actual margin of error was less than ±0.05. To avoid over

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[1]In Census 2000, all people not living in housing units were classified as living in group quarters. A housing unit is defined as a house, apartment, a mobile home or trailer, a group of rooms or a single room occupied as a separate living quarters or, if vacant, intended for occupancy as a separate living quarters.

[2]Some group quarters data were collected in the ACS test sites in 1999 and 2001.

emphasizing very small and insignificant differences in these distributions, most of the percentages were rounded to one decimal place. We show the distributions of the same characteristics after adjustments to population and housing controls in Appendix A.

Example Table. Hispanic Origin, National-Level Distributions (C2SS compared with Census 2000)

Hispanic Origin	Census 2000 (in percent)	C2SS Estimate* (in percent)	Difference (C2SS-Census) (in percentage points)	Margin of Error of Difference** (in percentage points)	Is the Difference Statistically Significant?
Universe: Household population	273.6 million	265.0 million			
Hispanic or Latino (of any race)	12.6	12.6	-0.1	± 0.2	No
Mexican	7.4	7.9	0.5	± 0.2	Yes
Puerto Rican	1.2	1.3	0.1	± 0.0	Yes
Cuban	0.4	0.5	0.0	± 0.0	No
Other Hispanic or Latino	3.6	3.0	-0.6	± 0.1	Yes

KEY: *The C2SS estimates exclude final population and housing controls.
　　　**A margin of error of ± 0.0 indicates a value of less than ±0.05.

We computed sampling errors to determine if the differences were statistically significant. Unlike the decennial census full-count enumeration, the C2SS is a sample survey. To determine if differences beyond those expected due to sampling error existed, variance estimates were calculated using methods designed for a complex sample design, and statistical tests were conducted. This report uses a confidence level of 90 percent as the dividing line for statistical significance and displays the resulting margins of error. The tables identify when we concluded that sampling error did not explain the estimated differences. Due to the large sample size for the C2SS and the resulting small estimates of sampling error, most differences in this report - no matter how numerically small - were statistically significant. We expect that many of these statistically significant differences have few practical implications. Throughout this report when we identify a difference as "significant" it is a statistically significant difference.

4.1.2　County-level data were analyzed to assess sub-national results

We recognize that national-level findings may mask important differences at lower levels of geography. A thorough analysis of county and census tract level data based on three-year averages is currently taking place by both Census Bureau analysts and by experts in four of the ACS test sites. The Census Bureau expects reports this spring and summer. This report chose to include a review of a small sample of county-level estimates to begin to assess the variability of measured differences at the county level. Of particular interest was how differences between Census 2000 and ACS estimates vary across county. The data also provided an opportunity to assess if the ACS was capturing the real variations that exist at the county level for the characteristics covered in this report.

As mentioned earlier in this report, we have tested ACS methods in a purposive sample of counties across the nation since 1995. The sample design used in these counties is consistent with the design planned for full implementation. These counties represent a diverse set of areas that vary in size geographically and demographically, reflecting both urban and rural areas. We selected 18 of the 36 ACS test counties to include in this report because they had sufficient sample sizes to produce reliable single-year estimates. Selected demographic and housing characteristics of these 18 counties can be found in Appendix E.

The same methods used to produce the national summary tables included in the results section were used to produce comparison data for these 18 counties. We calculated distributions based on Census 2000 counts and C2SS estimates and restricted the data to the household population excluding final adjustments to population and housing controls. Statistical tests were done to identify statistically significant differences at the county level. The larger sample sizes in the largest counties make it more likely that differences could be identified as statistically significant. To summarize county-level results, we produced detailed tables for all characteristics and a series of graphs to highlight a subset of the major findings. The graphs are presented in the results section and the detailed tables are included in Appendix F.

We analyze selected county-level characteristics in the results section of this report and discuss how these results compare with the national-level findings. Comparisons, based on Census 2000 counts and C2SS estimates are provided for all 18 counties. In the graphs the counties are ordered by population size starting with the least populous test county shown, Sevier, TN and ending with the most populous, Broward, FL. These graphs provide a picture of how variable the differences were across counties. Analysis of these graphs attempted to determine if national-level results masked important county-level differences.

Appendix F includes county-level information on all of the characteristics included in the profile tables in the results section. We do not provide the C2SS and Census 2000 values. The difference between the two values (C2SS minus Census 2000) was determined and we display only the statistically significant differences. A positive value indicates that the C2SS value was greater than the Census 2000 value. A negative value means that the C2SS has a lower estimate for this characteristic than Census 2000. This information provided details that could not be included in the graphs.

4.2   The design and implementation of C2SS and Census 2000 methods were examined

The report systematically reviews ACS and census methods to assess whether these methods may have led to different results. The fundamentally different purposes of the ACS and Census 2000 led to critical differences in the choice of methods. Some methods reflect a conscious decision to measure different things. For example, the Census 2000 residence rules, which determined where people should be counted, were based on the principle of "usual residence" and used a reference date of April 1, 2000. The ACS residence rules used in the C2SS used a "current residence" concept, collecting data throughout the year in a defacto manner, without a reference date other than the date of survey contact and interview. Other differences were inadvertent,

such as the use of slightly different question wording for some items. The report examines how well both the ACS and Census 2000 implemented data collection and processing activities. Given the low level of sampling error, nonsampling error (coverage, nonresponse, measurement and processing errors) must explain essentially all of the statistically significant differences except where the ACS and Census 2000 were intentionally estimating different things.

4.2.1 Coverage error may account for some differences

Coverage error - excluding or duplicating a certain group of people or households from the survey - was measured in the C2SS by coverage ratios. These ratios show the degree to which the Census 2000 population counts differed from the C2SS estimates and were used to correct for survey coverage differences. Starsinic and Albright (2002) estimated that C2SS coverage was high - 96.8 percent. Census 2000 measured a slight net overcount of 0.49 percent for the total national household population. Net undercounts were estimated for some demographic groups and differentially higher net overcounts were estimated for some other groups (U.S. Bureau of the Census, 2003a).

To address potential coverage error in surveys, the Census Bureau adjusts most surveys to controls. These controls are based on the intercensal estimates produced by the Census Bureau's Population Division, representing the nation's population and housing as of July 1 of every calendar year. We take this step to standardize estimates across all major current surveys at high geographic levels. The geographic level and demographic groups by which these intercensal estimates are used can differ from survey to survey. The C2SS estimates were controlled to the final Census 2000 counts by aggregations of specifically defined age, sex, and race population cohorts for Hispanics and nonHispanics, and to the Census 2000 total housing unit counts.

Studying the independent survey estimates produced by the C2SS without adjustments for population and housing controls allowed a better understanding of whether the ACS data collection and processing methods alone produced results similar to Census 2000. Analysis of the uncontrolled results permitted a cleaner assessment of the role that nonresponse, measurement, and processing error may have played. The C2SS results in the results section reflect weights for the sampling probabilities and nonresponse adjustments but do not include the additional adjustments to the Census 2000 counts. Appendix A includes tables similar to those presented in the results section with the additional control adjustment. This weighting adjustment generally brought the distribution of these demographic and housing characteristics closer in line with Census 2000.

4.2.2 Unit and item nonresponse were studied as possible contributors

Survey nonresponse is a well-recognized source of nonsampling error and has two types - unit and item. Unit nonresponse is the failure to obtain sufficient information from a sample unit for it to be considered an interview - a responding unit. Item nonresponse occurs when a responding unit fails to provide complete and usable information for a data item. Item nonresponse can occur in all data collection modes, often for different reasons. A respondent may fill out a mail

form incompletely and, unintentionally or intentionally, omit sections or questions. Follow-up interviewers may find an otherwise cooperative respondent unwilling to give them sensitive information, such as income.

This report, focusing on the basic demographic and housing items, found that both the C2SS and Census 2000 had low levels of unit nonresponse, leading analysts to conclude that it was not a key factor in explaining differences in distributions. Using ACS methods, the C2SS had a weighted survey response rate of 95.1 percent while the response rate for Census 2000 is estimated to be about 98.6 percent.[3] The ACS accounted for noninterviews by many-celled noninterview adjustments that spread noninterviews across the interviewed distributions. Census 2000 handled noninterviews through the use of imputation methods. Census 2000 reduced the level of noninterviews by allowing proxy responses (i.e., accepting responses from a member outside of the household).

Item nonresponse in both the C2SS and in Census 2000 was corrected through the use of imputation methods, including allocation. Allocation occurs when a missing value is supplied from other people in the household or from other responding households considered to be close, geographically. Allocation rates are often used as a measure of the level of item nonresponse and are computed as the ratio of the number of eligible housing units or people that had a value allocated for a specific item to the number of housing units or people eligible to have responded to that item. We have computed allocation rates for each of the general demographic and housing characteristics, by mode of data collection, and they can be found in Appendix B. Both the C2SS and Census 2000 data files included an allocation variable for each item that reported on the type of edit action taken on each item. The information provided by this variable showed whether the item was used "as reported," was assigned based on other information on the same record, or was allocated from another record. The two ACS methods expected to reduce item nonresponse are the follow-up of missing information on mail returns and the use of computer-assisted instruments. The follow-up operation uses the telephone to recontact mail return households whose questionnaires had unacceptable levels of missing or inconsistent data. We also expect the use of well-trained interviewers to improve data completeness.

Appendix B documents that item nonresponse was also quite low in both the C2SS and Census 2000. The allocation rates for data on mail-returned forms was consistent between the C2SS and Census 2000. This was unexpected due to the additional content follow-up for mail returns that only occurred in the C2SS. Research determined that the C2SS did not realize the full potential of the edit follow-up operation in 2000 because of conflicts with Census 2000 operations. The expected results are found in previous and subsequent ACS-related surveys (U.S. Census Bureau, July 2001). Appendix B includes item allocation rates by mode for the

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[3]Census 2000 did not compute an official response rate. For comparison purposes we considered all housing units that lacked all basic demographic and housing data to represent Census 2000 noninterviews. This resulted in the classification of about 1.4 percent of the final Census 2000 housing units as noninterviews.

2001 Supplementary Survey, the continuation of the ACS national sample in 2001. These data show the reduction in allocation rates for mail returns that we had anticipated from the edit follow-up operation in 2000 and the rates that we expect to maintain in future years. The allocation rates were consistently lower in the C2SS for data collected by interviewers. The C2SS computer-assisted instruments (used for telephone and personal visit nonresponse follow-up) included edits that assessed consistency of response during the actual interviews. These checks of related information during the interview process decreased the amount of inconsistent and missing data that the final content edit and allocation programs had to correct. For some items, the instruments were very successful in reducing the allocation rates in the C2SS CATI and CAPI modes.

Census Bureau's subject-matter experts specified the program edits for those instances in which imputation was required. While some edit and allocation methods used in the C2SS differed from those used in Census 2000, the basic edits were very similar. Differing edits were used when C2SS had detailed data available to aid in assigning missing values for some basic items. This was not possible on Census 2000 short forms nor was it always used in the processing of Census 2000 long forms. For example, we edited the relationship and marital status responses together in the C2SS. This was not possible for Census 2000 short forms, and was not done for the long forms. In several instances, it is possible that the specific rules used in editing and allocation contributed to the observed differences.

4.2.3 Measurement and processing errors may explain some observed differences

Measurement and processing errors can occur for a variety of reasons and are the consequence of errors during the data collection and data processing stages of the survey. Biemer et al (1991) describe measurement error as having four primary sources - the questionnaire, the mode of data collection, the interviewer, and the respondent. This report considered each of these sources when we detected differences. We considered if the questions were worded differently, if interviewers were trained differently, and if respondents were given all of the same assistance. Processing error occurs during the series of operations that convert reported data to consistent machine-readable information and published estimates. Error will be introduced if a data entry clerk keys the wrong information during data capture or a CATI or CAPI transmission error occurs. Clerical coding is needed for some items and coding errors are possible. Errors introduced during the editing and file creation process are another possible source of processing error, which may be the result of errors in specification (e.g., incomplete, unclear, or incorrect specifications) or in programming. We reviewed processing methods and procedures as part of this analysis.

Measurement error manifests itself in two broad ways - response and interviewer errors. Response error occurs if a respondent does not understand the meaning of a question or fails to recall the information accurately. Interviewer error can also be a source of systematic measurement error if interviewers are not properly trained, if they misinterpret their procedures, or if they implement procedures poorly. Response error, in the form of variance or bias, can result because of questionnaire design or because respondents simply find the concepts complex

and undefined, such as questions about race and relationship. Questionnaire presentation, the way a question is asked, and the response categories provided can affect, either individually or in tandem, how a respondent answers a question. Differences in presentation and wording existed between the C2SS and Census 2000, and may contribute to differences in distributions. Additionally, differential response could have occurred to the Hispanic origin question because the C2SS CATI and CAPI instruments included examples and neither the Census 2000 mailout questionnaire nor the nonresponse follow-up questionnaire included examples. Appendix C includes facsimiles of the general demographic and housing questions as they appeared in the Census 2000 and the C2SS data collection instruments.

Response error can also occur when the person who provides the information is not the best source. This is the case when someone other than a household member provides responses. We refer to responses received from non-household members such as neighbors as "proxy" responses and the Census Bureau sometimes accepts such interviews when a household member cannot be contacted. The decennial census has always allowed proxy enumerations to meet critical deadlines for a count of the population. In Census 2000, about 17 percent of the occupied nonresponse follow-up enumerations in Census 2000 were based on proxy respondents (Moul, 2002). The C2SS did not allow proxy interviews for occupied housing units, resulting in survey estimates based exclusively on information obtained from the sample households themselves, not from neighbors.

Interviewer error is another source of measurement error that could have contributed to differences. The most obvious contrast between the C2SS and Census 2000 interviewers was the level of training and amount of experience. The C2SS interviewers were highly trained and experienced permanent employees. Of necessity, the Census 2000 workforce was comprised of temporary employees with less experience in soliciting information from respondents. C2SS interviewers were trained to elicit and check responses and were more familiar with the complex concepts measured in both Census 2000 and the C2SS. For example, it would seem on the face of it that the classification of a housing unit as occupied or vacant would be simple; in fact, this determination can be complex. The more experienced C2SS interviewers would be more likely to understand and correctly apply residence rules that determine occupancy status. The C2SS interviewers also had the benefit of automated instruments that reduced the potential for interviewers to skip questions in error or to collect inconsistent data.

Processing error is recognized as a form of systematic error that can be introduced when systems or programs designed to capture, edit and tabulate data include error. Such errors can be attributed to problems in specifications, programming or implementation. The C2SS and Census 2000 included many quality assurance procedures to control against processing error. Different data capture systems were used in Census 2000 and the C2SS. Although similar, different edit and allocation programs were also used. In our review we identified only a few instances where we suspect processing error contributed to observed differences.

4.2.4 *The impact of different residence rules was considered*

The Census 2000 residence rules were designed to accurately count the population as of April 1, 2000, while we have designed the ACS residence rules to collect representative data throughout the year and average it. Differences in residence rules may have contributed to observed differences for the distributions of several characteristics. Census 2000 used a set of residence rules that were based on the principle of "usual residence" as of April 1, 2000. These rules are premised on the need to establish one and only one residence for each respondent for apportionment. Establishing one "usual residence" is critical to reducing the chance that the census will count a respondent in more than one location. In contrast, the ACS can interview on just about any day of the year and adopted residence rules that ensured that representative data were collected regardless of when the interview occurred.

The ACS "current residence" concept recognizes that people can have more than one place where they live or stay over the course of a year, and that estimates of the characteristics of the population for some areas are affected by these people. Since we designed the ACS to produce a continuous average measure of the characteristics of states, counties, places, etc. every year, with the ability to note changes in these characteristics from year to year, we needed a different set of residence rules. This allows better representation of seasonal residents and migratory groups.

The differences in the residence rules between the C2SS and Census 2000 were most likely minimal for most of the population. However, for certain segments of the population the usual and current concepts result in different residence decisions. Appreciable differences may occur in areas where large numbers of people spend several months of the year in what would not be considered their residences under the census "usual residence" concept. In particular, data collection in states like Florida, Arizona, and areas like beach, lake, or mountain vacation areas may differ appreciably between Census 2000 and the ACS because of their large seasonal populations. Similarly, areas with large colleges or universities may see differences in distributions due to the residence rules.

5.   RESULTS

This section documents the comparison of C2SS and Census 2000 distributions for sex, age, relationship and household type, Hispanic origin, race, housing unit occupancy status, and tenure. As noted earlier, the data cover only the household population (i.e., exclude the population in group quarters) and the C2SS distributions do not reflect final population and housing adjustments to census controls. The Census 2000 data are based on the 100-percent counts.

For each of the general demographic and housing items, this section provides background on the uses of the data and how both the C2SS and Census 2000 asked the questions. Two sets of data are provided - tables comparing the national-level results of the C2SS and Census 2000 data and graphs with selected county-level comparisons. We discuss differences and provide analysis on why specific C2SS distributions may have differed from Census 2000. Whenever possible, the

authors tried to discern those differences that were due to possible problems with the design or implementation of the C2SS.
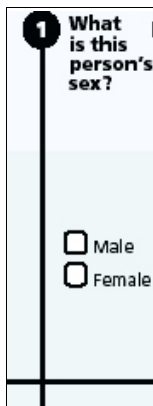
Additional detailed results are provided in the appendices. The published C2SS distributions after population and housing controls are included in Appendix A. We document item allocation rates by mode in Appendix B. A complete summary of statistically significant sub-national results for the 18 counties can be found in Appendix F.

5.1   Sex

5.1.1   Description of Item

The item on sex differentiates data between men and women. Several federal agencies use these data to fund, implement, and evaluate various social and welfare programs, and for laws that promote equal employment opportunity for women. For a more complete list of federal uses, refer to Appendix D.

The wording of the questions used to collect data on sex was identical in the C2SS and Census 2000. Appendix C includes facsimiles of the sex question from the C2SS and Census 2000 questionnaires and the C2SS CATI and CAPI follow-up instruments. The question used on the C2SS mailout form is shown below.

5.1.2   National-Level Comparisons

Table 1 includes information at the national level on the distribution of men and women in the household population in 2000. Significant differences of less than one-half of one percent were found. Appendix A (Table 1) displays the distributions for the published C2SS data that reflect the use of weighting to population controls. The use of population controls corrected for this difference and because sex is used as a key variable in the population controls, the national C2SS distributions in Appendix A more closely align with the Census 2000 distributions.

Table 1. Sex, National-Level Distributions (C2SS compared with Census 2000)

Sex	Census 2000 (in percent)	C2SS Estimate* (in percent)	Difference (C2SS-Census) (in percentage points)	Margin of Error of Difference (in percentage points)	Is the Difference Statistically Significant?
Universe: Household population	273.6 million	265.0 million			
Male	48.8	48.4	-0.4	± 0.1	Yes
Female	51.2	51.6	0.4	± 0.1	Yes

KEY: *The C2SS estimates exclude final population and housing controls.

5.1.3   County-Level Comparisons

Sub-national data for the set of 18 counties were analyzed to determine if the national findings held at lower levels of geography. Figure 1 summarizes the characteristic, percent male, for these 18 counties. Note that the scale begins at 25 percent, not at zero. This graph shows the same trend observed nationally - the estimated proportions of men and women were very similar in the C2SS and Census 2000. As was noted nationally, the value percent male for these 18 counties was slightly lower in the C2SS (shown as a triangle) than in Census 2000 (shown as a circle).   Figure 1 shows that most of the differences at the county-level were about one percentage point. The actual differences are included in Appendix F. Additional research is warranted to see if the county-level differences are attributable to other characteristics such as age or race.

Figure 1. Percent Male
Census 2000 and C2SS County-Level Estimates
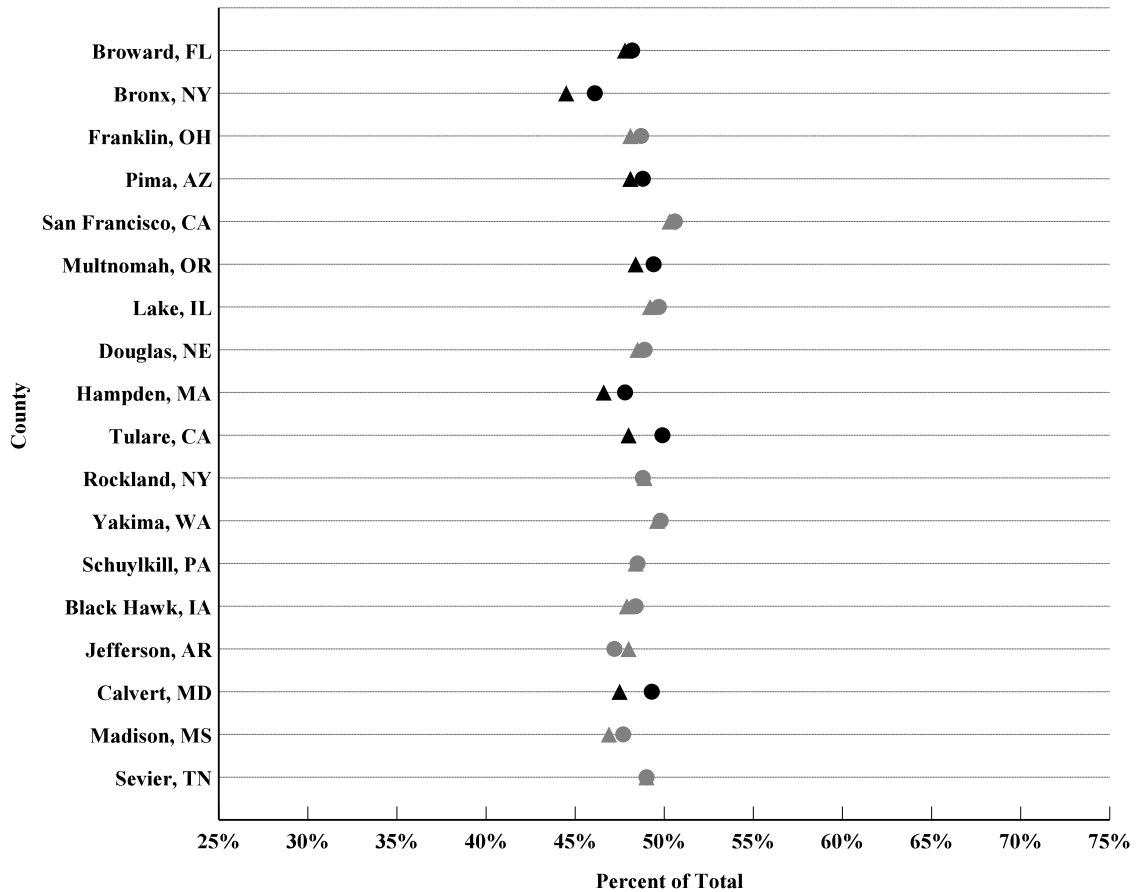
KEY: 1.   The universe is restricted to the 2000 Household Population.
       2.   Census 2000 county-level estimates are shown as circles.
       3.   C2SS county-level estimates are shown as triangles and exclude final population and housing controls.
       4.   Whenever the difference between the two estimates was determined to be statistically significant, the symbols for both the Census 2000 and the C2SS estimates are bolded.

5.1.4   Analysis
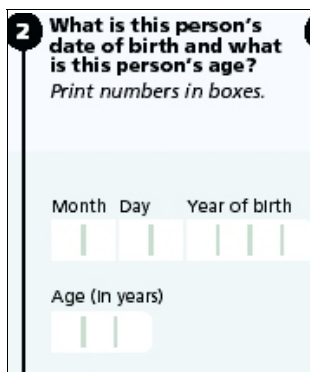
The data at national and sub-national levels show a slightly lower proportion of men in the C2SS estimates before population control weighting. The use of population controls exactly corrected for this difference that is likely the consequence of differential coverage of men in the C2SS and in Census 2000. Household surveys such as the Current Population Survey report similar levels of potential coverage differences for men (Hainer et al, 1988; U.S. Bureau of Labor Statistics, 2003).

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5.2   Age

5.2.1   Description of Item

Age is a very important item because many federal programs use age to target funds or services to children, working-age adults, or the population 65 years and over. For a more complete list of federal uses, refer to Appendix D. Age is asked in a two-part question: age of the person and date of birth. Asking the question in both of these ways allows us to collect complete age data for more people. Responses from both questions are used to determine the final value of age.

Census 2000 and the C2SS used identical question wording to collect data on age. Census 2000 requested that the respondent report age as of April 1, 2000. One difference in the collection of age data was that the C2SS asked date of birth before age while Census 2000 asked age first. The specific wording used on the C2SS mailout form is shown below. All versions of the age question are included in Appendix C. In the C2SS CATI and CAPI instruments, additional information on age, including age ranges, was requested when date of birth was unknown or refused.

5.2.2   National-Level Comparisons

Tables 2a and 2b compare national-level age distributions of the C2SS household population with the Census 2000 distributions. The major findings from Census 2000 are confirmed in the C2SS. The largest age group was 35 - 44 years old, representing more than 16 percent of the total population (U.S. Census Bureau, 2001). Many of the differences among age categories are statistically significant, but the differences are small. The greatest percentage point difference is in the population 62 years and over. The C2SS estimate was about one-half of one percentage point higher than Census 2000. The C2SS also had a lower proportion of persons under the age of 10. Median age is shown in Table 2b and was slightly higher in the C2SS. Appendix A (Table 2) documents the C2SS age distributions after the application of population controls. These distributions are quite similar to the distributions of age based on Census 2000 counts. Age, like sex, is used in the population controls so we expected that the distributions would become more similar. Some differences exist, but they are quite small.

Table 2a. Age, National-Level Distributions (C2SS compared with Census 2000)

Age	Census 2000 (in percent)	C2SS Estimate* (in percent)	Difference (C2SS-Census) (in percentage points)	Margin of Error of Difference** (in percentage points)	Is the Difference Statistically Significant?
Universe: Household population	273.6 million	265.0 million			
Under 5 years	7.0	6.8	-0.2	± 0.1	Yes
5 to 9 years	7.5	7.4	-0.1	± 0.1	Yes
10 to 14 years	7.5	7.5	0.1	± 0.1	Yes
15 to 19 years	6.9	6.8	-0.0	± 0.1	No
20 to 24 years	6.4	6.1	-0.2	± 0.1	Yes
25 to 34 years	14.2	13.9	-0.3	± 0.1	Yes
35 to 44 years	16.2	16.1	-0.0	± 0.1	No
45 to 54 years	13.6	13.9	0.3	± 0.1	Yes
55 to 59 years	4.9	4.9	0.1	± 0.0	Yes
60 to 64 years	3.9	4.0	0.1	± 0.1	Yes
65 to 74 years	6.6	6.8	0.2	± 0.1	Yes
75 to 84 years	4.2	4.4	0.2	± 0.1	Yes
85 years and over	1.2	1.2	0.0	± 0.0	Yes

KEY: *The C2SS estimates exclude final population and housing controls.
      **A margin of error of ± 0.0 indicates a value of less than ±0.05.

Table 2b. Selected Age Groups, National-Level Distributions (C2SS compared with Census 2000)

Age	Census 2000 (in percent)	C2SS Estimate* (in percent)	Difference (C2SS-Census) (in percentage points)	Margin of Error of Difference (in percentage points)	Is the Difference Statistically Significant?
Universe: Household population	273.6 million	265.0 million			
Median Age-actual	35.4	35.9	0.5	± 0.1	Yes
18 years and over	73.7	73.9	0.2	± 0.1	Yes
21 years and over	69.9	70.2	0.3	± 0.1	Yes
62 years and over	14.3	14.8	0.5	± 0.1	Yes
65 years and over	12.1	12.5	0.4	± 0.1	Yes
Male	5.1	5.3	0.2	± 0.1	Yes
Female	7.0	7.2	0.2	± 0.1	Yes

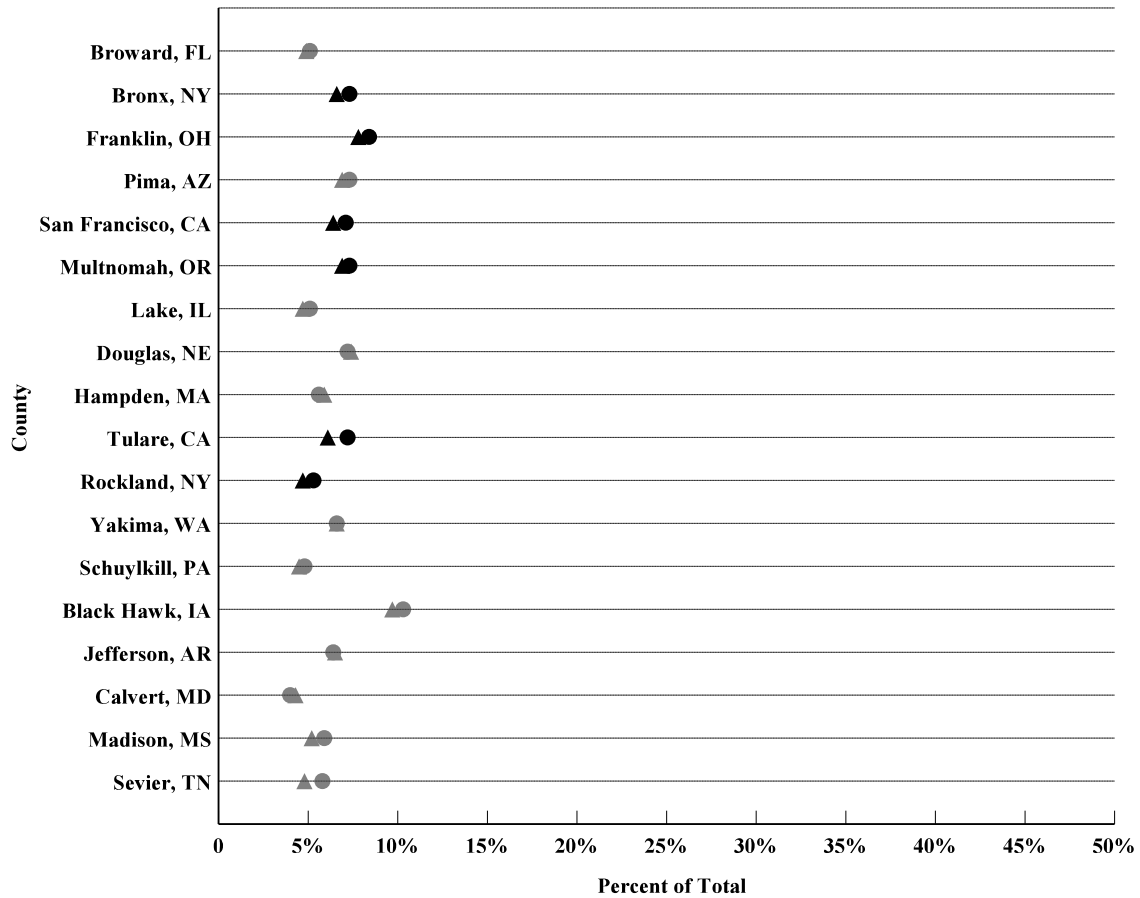KEY: *The C2SS estimates exclude final population and housing controls.

5.2.3 County-Level Comparisons

Figure 2 summarizes sub-national results for the characteristic, percent age 20 - 24 years. This was the age category with a large number of county-level differences. The county-level data show that, although differences exist, the C2SS results largely parallel the Census 2000 results.

The Census 2000 value (shown as a circle) is slightly higher than the C2SS estimate (shown as a triangle) for each of these counties. In Tulare, CA the percent of persons, age 20 - 24, in the C2SS was about one percentage point lower than Census 2000.

Appendix F, Table 2, displays the county-level data for all age categories. The C2SS estimates of the youngest age categories were lower than Census 2000 and the C2SS estimates of the older age categories were higher than Census 2000.

Figure 2. Percent Age 20 - 24 Years
Census 2000 and C2SS County-Level Estimates

KEY: 1. The universe is restricted to the 2000 Household Population.
2. Census 2000 county-level estimates are shown as circles.
3. C2SS county-level estimates are shown as triangles and exclude final population and housing controls.
4. Whenever the difference between the two estimates was determined to be statistically significant, the symbols for both the Census 2000 and the C2SS estimates are bolded.

5.2.4 Analysis

The three major findings included in the Census 2000 brief on age were: 26 percent of the population were under the age of 18, 62 percent of the population were between the ages of 18

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and 64, and 12 percent of the population were age 65 and over (U.S. Census Bureau, 2001e). Data from the C2SS support all of these findings. The differences that were found in the age characteristics were small. Coverage error in the C2SS for children and persons under the age of 35 may explain some differences. One important method of coverage improvement is the use of telephone follow-up to collect data from mail returns for large households with more than five people. This follow-up is needed because the mailout form only has enough space for providing data for five people. A review of ACS methods identified a problem with the follow-up operation to collect data for mail return large households (U.S. Census Bureau, 2001b). Similar problems occurred in the Census 2000 follow-up of large households (Sheppard, 2003). Incomplete data collection for this universe could have affected coverage of children since respondents usually list children last on survey and census questionnaires. We have made changes in the ACS to more completely collect data for all persons in large households. We expect that this will result in some improvements in coverage. The use of population controls corrected for most of these differences.

5.3   Relationship and Household Type

5.3.1   Description of Item

Data on relationship are collected so that the population can be classified into families and household types. Relationship defines how all people listed on the form are related to the householder. We define the householder as the person, or one of the persons, who owns or rents this home, and identify that person as, "Person 1." Two major groupings of relationships are recognized - relatives and nonrelatives. The first group of relationship categories include people related to the householder by birth, marriage, or adoption. All people related to the householder constitute a family. All other categories capture relationships for individuals unrelated to the householder. If everyone in a household is unrelated to the householder, it is considered a "nonfamily household." These data provide information about the composition of the family that is essential for the definition of poverty, among other things. For a more complete list of federal uses, refer to Appendix D.

The relationship question used in the C2SS differed from the question used in Census 2000. The Census 2000 version included additional detailed response categories and a write-in for other relatives. The C2SS collected data on marital status immediately after the relationship question. The Census 2000 short form did not include a question on marital status. The question wording used on the mailout form in the C2SS is shown below. See Appendix C for all versions of the questions used to collect relationship data in the C2SS and in Census 2000.

3 How is this person related to Person 1?

☒ Person 1

(Person 1 is the person living or staying here in whose name this house or apartment is owned, being bought, or rented. If there is no such person, start with the name of any adult living or staying here.)

Relationship of Person 2 to Person 1.

☐ Husband or wife   ☐ Roomer, boarder
☐ Son or daughter   ☐ Housemate, roommate
☐ Brother or sister
☐ Father or mother   ☐ Unmarried partner
☐ Grandchild   ☐ Foster child
☐ In-law   ☐ Other nonrelative
☐ Other relative

5.3.2 National-Level Comparisons

Two tables in this report compare the relationship characteristics of the Census 2000 and C2SS household population. Table 3a compares relationship distributions and Table 3b compares distributions of household type. Several statistically significant differences are found, although most are small. The C2SS has a lower estimate of children (close to one percentage point) and lower estimates of both family households with children and married-couple families with children. Another notable difference is found in the percent of married-couple families. Here the C2SS estimate is over one percentage point lower than Census 2000.

Appendix A (Table 3) documents the distribution of the published C2SS characteristics that reflect the use of population controls. These results show that population controls that use age help correct for some, but not all, of these relationship differences.

Table 3a. Relationship, National-Level Distributions (C2SS compared with Census 2000)

Relationship	Census 2000 (in percent)	C2SS Estimate* (in percent)	Difference (C2SS-Census) (in percentage points)	Margin of Error of Difference** (in percentage points)	Is the Difference Statistically Significant?
Universe: Household population	273.6 million	265.0 million			
Householder	38.5	39.3	0.8	± 0.1	Yes
Spouse	19.9	19.9	0.0	± 0.1	No
Child	30.5	29.6	-0.9	± 0.1	Yes
Other relatives	5.7	6.1	0.4	± 0.1	Yes
Nonrelatives	5.3	5.0	-0.3	± 0.1	Yes
Unmarried partner	2.0	1.9	-0.1	± 0.0	Yes

KEY: *The C2SS estimates exclude final population and housing controls.
  **A margin of error of ± 0.0 indicates a value of less than ±0.05.

Table 3b. Household Type, National-Level Distributions (C2SS compared with Census 2000)

Household Type	Census 2000 (in percent)	C2SS Estimate* (in percent)	Difference (C2SS-Census) (in percentage points)	Margin of Error of Difference** (in percentage points)	Is the Difference Statistically Significant?
Universe: Total households	105.5 million	104.2 million			
Family households (families)	68.1	67.6	-0.4	± 0.2	Yes
With own children under 18 years	32.8	32.0	-0.8	± 0.2	Yes
Married-couple family	51.7	50.6	-1.0	± 0.2	Yes
With own children under 18 years	23.5	22.4	-1.1	± 0.1	Yes
Female householder, no husband present	12.2	12.6	0.4	± 0.1	Yes
With own children under 18 years	7.2	7.6	0.4	± 0.1	Yes
Nonfamily households	31.9	32.4	0.4	± 0.2	Yes
Householder living alone	25.8	26.5	0.7	± 0.2	Yes
65 years and over	9.2	9.5	0.3	± 0.1	Yes
Households with individuals under 18	36.0	35.6	-0.5	± 0.2	Yes
Households with individuals 65 years and over	23.4	23.7	0.3	± 0.2	Yes
Average household size	2.59	2.54	-0.1	± 0.0	Yes
Average family size	3.14	3.09	-0.1	± 0.0	Yes

KEY: *The C2SS estimates exclude final population and housing controls.
 **A margin of error of ± 0.0 indicates a value of less than ±0.05.

5.3.3 County-Level Comparisons

Figures 3a and 3b display sub-national estimates of two relationship characteristics - percent child and percent married-couple families. Appendix F summarizes county-level results for all of the relationship and household type categories in Tables 3a and 3b. The Census 2000 value of percent child varies across these 18 counties and the C2SS estimates track well with the Census 2000 findings. Trends, similar to those found at the national level, are seen in Figure 3a of slightly lower rates of children in the C2SS (shown as a triangle) relative to Census 2000 (shown as a circle). Most differences are between one and two percentage points.

Table 3b provides county-level data on percent married-couple families. Note that in Table 3b the scale begins at 25 percent, rather than at zero. The value of percent married-couple families varies widely across these 18 counties - from about 30 percent to about 65 percent. For most counties the C2SS captures this variation. The county differences are similar to the national differences with slightly lower C2SS estimates of married-couple families. No county-level differences were in the other direction.

Figure 3a. Percent Child
Census 2000 and C2SS County-Level Estimates
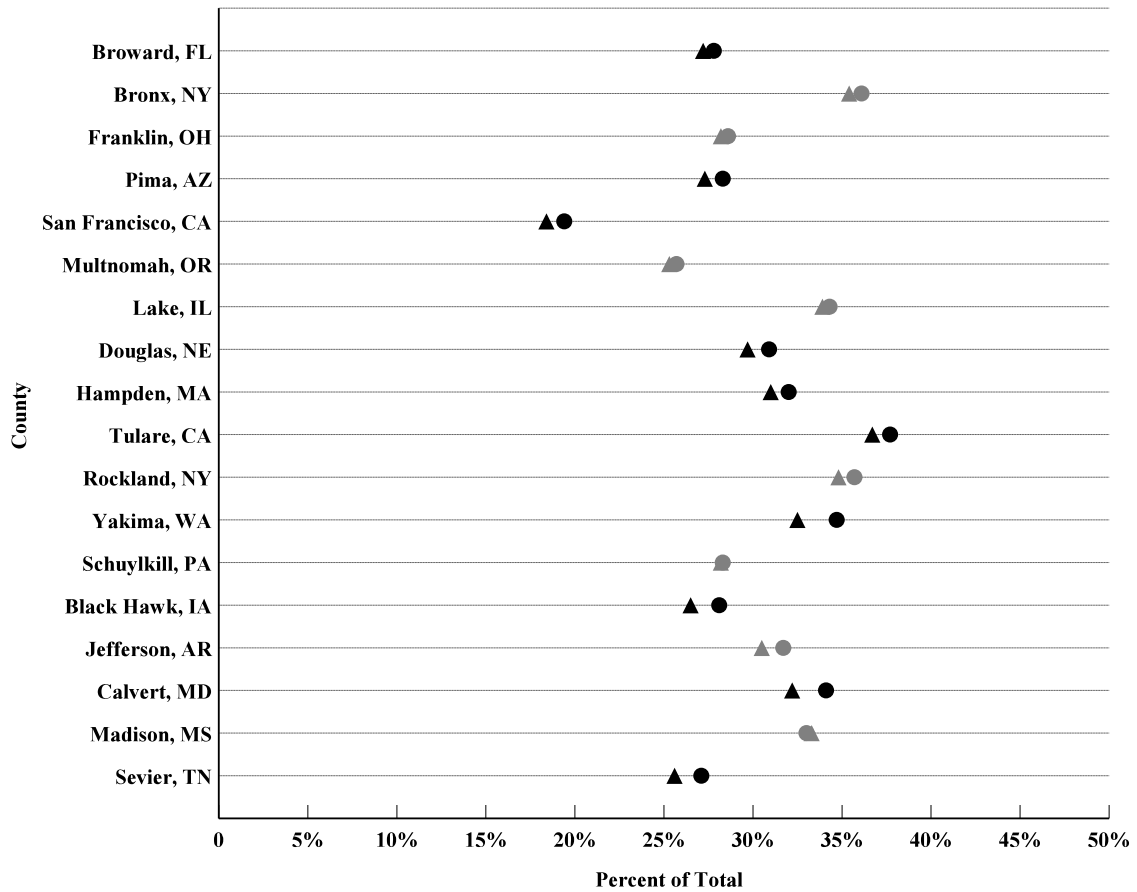
KEY: 1.   The universe is restricted to the 2000 Household Population.
2.   Census 2000 county-level estimates are shown as circles.
3.   C2SS county-level estimates are shown as triangles and exclude final population and housing controls.
4.   Whenever the difference between the two estimates was determined to be statistically significant, the symbols for both the Census 2000 and the C2SS estimates are bolded.

Figure 3b. Percent Married-Couple Families
Census 2000 and C2SS County-Level Estimates
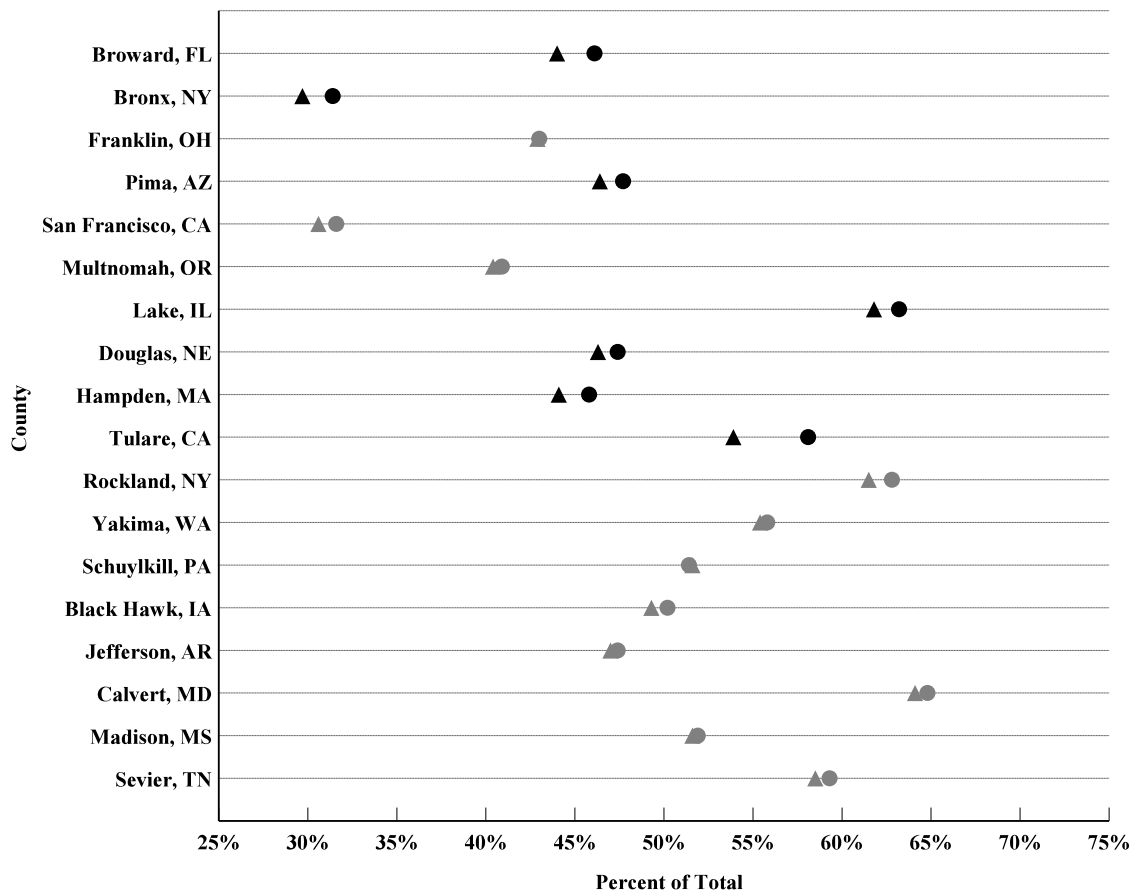
KEY: 1. The universe is restricted to the 2000 Household Population.
2. Census 2000 county-level estimates are shown as circles.
3. C2SS county-level estimates are shown as triangles and exclude final population and housing controls.
4. Whenever the difference between the two estimates was determined to be statistically significant, the symbols for both the Census 2000 and the C2SS estimates are bolded.

5.3.4   Analysis

The major findings in Census 2000 regarding households and families were that the majority of households were maintained by married-couple families and the second most common type of household consisted of people living alone (U.S. Census Bureau, 2001d). C2SS data would have led to the same conclusions. The differences found in the data for relationship, although not dramatic, warrant additional attention to understand the likely causes. Cross tabulations that include race and Hispanic origin may provide valuable insights. County-level differences were very similar to the national findings but some counties had especially large differences. Weighting methods, and the use of different methods of data collection, editing, and processing are potential explanations. It is also possible that the different set of residence rules may have

had an impact on relationship and household type distributions in counties with seasonal populations.

The ACS, like other household surveys, uses a set of weighting procedures to arrive at an estimate of households and householders that results in estimates of households and householders that differ. This is not the case in the full count census where there is absolute agreement between occupied housing units, households, and householders. Similarly, a dimension exists in the weighting matrices that controls for this in the Census 2000 sample. Research is taking place to assess the feasibility of revising the ACS weighting procedures to reduce the discrepancy between estimates of these three entities. We expect that the relationship results would become more similar to the census results as a consequence.

Some degree of coverage error likely resulted from implementation problems in the C2SS follow-up operation charged with collecting data for large households. Increased staffing and closer reviews of progress have improved the efficiency of that operation and are expected to improve the completeness of ACS data for children.

Two major methodological differences in the collection and processing of relationship data could explain disparities in these relationship and family type distributions - question wording and editing. The C2SS relationship question had only one response category for son or daughter while Census 2000 included three - breaking out natural born, adopted, and step children. (See Appendix C for details of this and other inconsistencies in question wording.) Reporting differences may have resulted. The Census Bureau is researching the optimal wording to be used for this question in both the ACS and in the 2010 Census. Similarly, it is possible that the placement of the marital status question had an influence on the reporting of relationship. The editing of relationship data in the C2SS had the advantage of available data on marital status to help in assigning relationship values. Census 2000 did not use this information because it was available only for long form households. We expect that this editing allowed the C2SS to correct relationship values using marital status that led to a lower estimate of married-couple families in the C2SS.

5.4 Hispanic Origin

5.4.1 Description of Item

This item provides information needed for redistricting. It adheres to the October 1997 revised standards for the classification of federal data on race and ethnicity, issued by the Office of Management and Budget (OMB), which provides standard classifications for collection and presentation of such data. Public Law 94-311 requires the collection of statistics on Hispanics. These data are essential to ensure enforcement of bilingual election rules under the 1965 Voting Rights Act and to monitor and enforce equal employment opportunities under the 1964 Civil Rights Act. Appendix D includes a more complete list of federal uses.

The full set of questions used to collect these data in the C2SS and in Census 2000 are included in Appendix C. The specific questions used on the mailout questionnaires were identical. The C2SS question is shown below. The modifications to these questions for use by interviewers during personal visit follow-up in Census 2000 were quite different from the automated instrument questions used for CATI and CAPI interviewing in the C2SS.

5.4.2 National-Level Comparisons

We compare the Hispanic origin characteristics of the Census 2000 household population to the C2SS Hispanic origin characteristics in Table 4. No significant differences were found in the percent of the household population reported to be Hispanic. Differences were found in the Hispanic subgroups. The C2SS reflects a higher proportion of *Mexicans*, while Census 2000 has a higher proportion of persons classified as *Other Hispanic or Latino*. Appendix A (Table 4) documents the published C2SS distributions. The use of population controls did not alter the distributions at the national level.

Table 4. Hispanic Origin, National-Level Distributions (C2SS compared with Census 2000)

Hispanic origin	Census 2000 (in percent)	C2SS Estimate* (in percent)	Difference (C2SS-Census) (in percentage points)	Margin of Error of Difference** (in percentage points)	Is the Difference Statistically Significant?
Universe: Household population	273.6 million	265.0 million			
Hispanic or Latino (of any race)	12.6	12.6	-0.1	± 0.2	No
Mexican	7.4	7.9	0.5	± 0.2	Yes
Puerto Rican	1.2	1.3	0.1	± 0.0	Yes
Cuban	0.4	0.5	0.0	± 0.0	No
Other Hispanic or Latino	3.6	3.0	-0.6	± 0.1	Yes

KEY: *The C2SS estimates exclude final population and housing controls.
   **A margin of error of ± 0.0 indicates a value of less than ±0.05.

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5.4.3 County-Level Comparisons

Figure 4 graphs county-level differences for *Other Hispanic or Latino*. Counties with the highest Census 2000 reporting of *Other Hispanic or Latino*, such as Bronx, NY and Broward, FL, also have high rates of *Other Hispanic or Latino* in the C2SS. The C2SS estimate (shown as a triangle) is usually lower than the value in Census 2000 (shown as a circle). This is consistent with the national result in Table 4, above. As expected, the counties with the highest proportions of Hispanics (Tulare, CA, Pima, AZ, and Bronx, NY) had large differences. For a characteristic with a low value, even a small difference of about two percentage points represents a large relative difference. Appendix F, Table 4, summarizes additional differences for the Hispanic origin categories. These results mirror the national findings of consistent rates of Hispanics but differing rates of the Hispanic subgroups.

**Figure 4. Percent Other Hispanic or Latino
Census 2000 and C2SS County-Level Estimates**
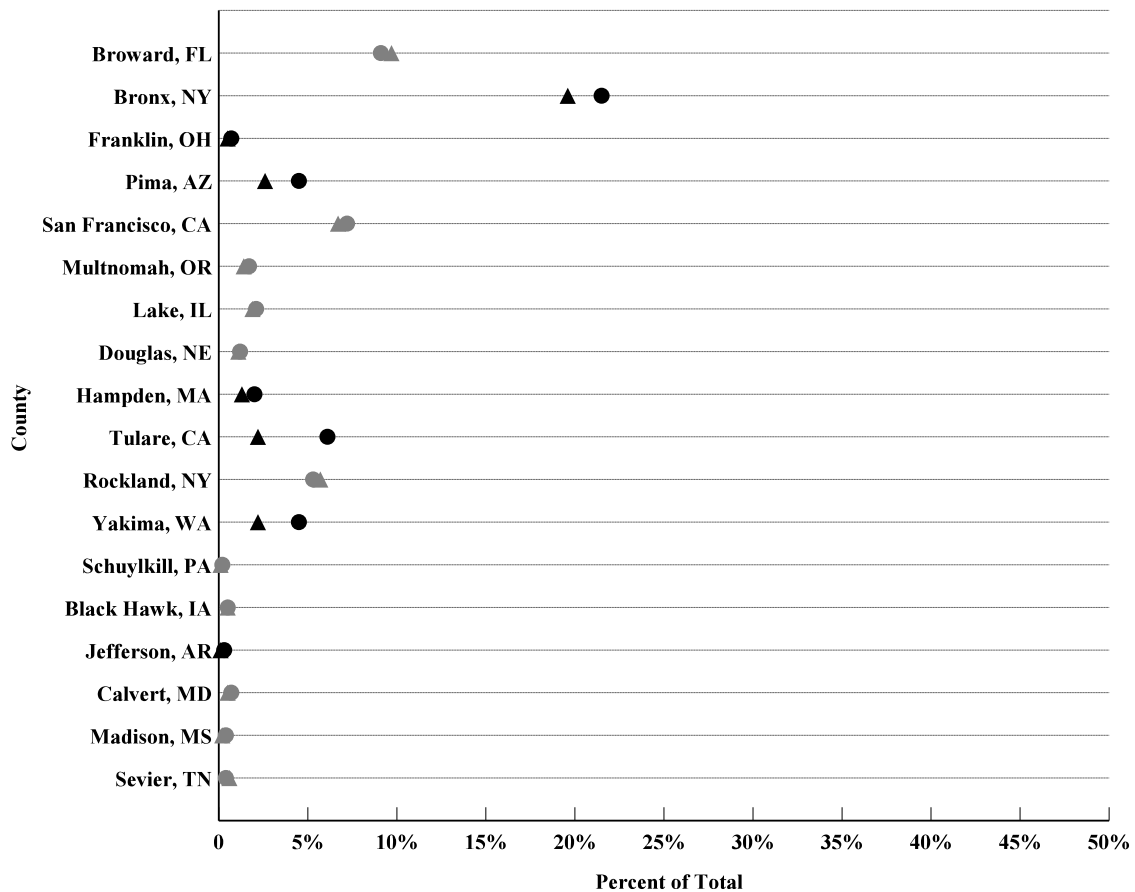
KEY: 1. The universe is restricted to the 2000 Household Population.
2. Census 2000 county-level estimates are shown as circles.
3. C2SS county-level estimates are shown as triangles and exclude final population and housing controls.
4. Whenever the difference between the two estimates was determined to be statistically significant, the symbols for both the Census 2000 and the C2SS estimates are bolded.

5.4.4 Analysis

Census 2000 noted the dramatic growth in the Hispanic population since 1990 and found that Mexicans, Puerto Ricans, and Cubans constituted the three largest Hispanic subgroups (U.S. Census Bureau, 2001c). These findings are also clear from the C2SS results. The Hispanic origin characteristics differed only within the breakout of Hispanic subgroups. The overall proportion of persons reporting as *Hispanic or Latino* in the C2SS was not significantly different from Census 2000. A review of methods and procedures suggests that variations in question presentation and processing error may explain the differences in reporting of detailed Hispanic subgroups.

Although we noted some differences in distributions for the mail response universe, the greatest differences were found for persons interviewed in person. When we reviewed the questionnaires, we found that the Hispanic origin questions used on the C2SS and Census 2000 mailout forms were identical. However, the Hispanic origin question in the C2SS automated CATI and CAPI instruments included instructions with examples. Respondents were asked, "Are you Spanish, Hispanic, or Latino?" Responses of "Yes" were then asked, "Are you of Mexican origin, Puerto Rican, Cuban, or Some other Spanish, Hispanic, or Latino group?" The instrument offered examples such as Argentinian, Columbian, and Dominican to persons selecting the Other category. No such instructions or examples were included in Census 2000. The question asked, "Are any of the persons that I have listed Mexican, Puerto Rican, Cuban, or of another Hispanic or Latino group?" Persons selecting the other category were asked, "What is this group?" without examples. For Hispanics interviewed by CATI or CAPI in the C2SS, it was more likely that they understood that what was requested under "Other Spanish/Hispanic" was a specific Hispanic group. Martin (2002) suggested that the presence of examples in the Hispanic origin question results in a greater number of people reporting in a specific group or national origin rather than writing in a generic response of "Other Spanish/Hispanic/Latino."

Cresce and Ramirez (2003) explored the concern that wording or format may have influenced reporting in Census 2000. They concluded that in addition to question wording and the lack of examples of "Other Hispanic" groups, other factors including social change, environmental factors, and the "Census effect" contributed to the increase since 1990 in the reporting of general responses such as Spanish, Hispanic, and Latino. A research program is underway to improve the race and Hispanic origin questions. That research includes an assessment of whether or not the questions should include examples. The Census Bureau will define the ACS and the 2010 Census Hispanic origin question as a result of this research.

One additional explanation for the loss of detail about specific Hispanic origin groups in Census 2000 is the detection of two processing errors that resulted in an overstatement of multiple Hispanic, rather than specific Hispanic responses. The first resulted from the data capture system interpreting stray marks on questionnaires as multiple Hispanic origin entries. The second was the omission of a pre-edit rule during final processing that did not convert multiple responses such as, *Mexican* and *Other Hispanic or Latino,* to a specific Hispanic subgroup of *Mexican*. See Cresce (2004) for additional details.

5.5   Race

5.5.1   Description of Item

The Census Bureau uses racial classifications that adhere to the October 1997 revised standards for the classification of federal data on race and ethnicity, issued by the OMB. These standards govern the categories used to collect and publish federal data on race and ethnicity. This question includes both racial and national origin or socio-cultural groups and attempts to reflect the increasing racial and ethnic diversity of the U.S. population. Information on race is required for state redistricting, providing data for drawing of political lines for local jurisdictions and federal programs. Further, these data are used under the Voting Rights Act Amendments of 1982 to identify minority language groups that require voting materials in their own languages. They are also used under the 1964 Civil Rights Act to assess fairness of employment practices. For a more complete list of federal uses, refer to Appendix D.

The instruction on both the C2SS and the Census 2000 questionnaires allows respondents to identify in more than one race category. For tabulation purposes, the Census Bureau has developed two major sets of racial categories - *race alone* and *race alone or in combination*. The population that report only one race category is called the *race alone* population. Six major race categories are reflected - *White alone, Black or African American alone, American Indian and Alaska Native alone, Asian alone, Native Hawaiian and Other Pacific Islander alone,* and *Some other race alone*. People choosing more than one of these six race categories are called the *Two or more races* population. The combination of the six *alone* categories and the one *Two or more races* category represents seven mutually exclusive and exhaustive race category distributions. The *race alone or in combination* categories are based on the combination of people who reported one race and people who reported that same race in addition to one or more other races. These six categories are not mutually exclusive with respect to the total population. Consequently, the sum of these six *race alone or in combination* categories equals the number of reported races, not the total population.

The questions used to collect race data in the C2SS were similar, but not identical to the questions used in Census 2000. See Appendix C for all question versions. The question used on the C2SS mailout form is shown below.

5.5.2 National-Level Comparisons

Tables 5a, 5b, and 5c describe the racial characteristics of the household population based on Census 2000 and on the C2SS. There are noteworthy differences in the distributions for both the *race alone* and *race alone or in combination* categories. Tables 5a and 5b summarize these comparisons. The area of greatest difference is in the percent of people with a race of *White alone* (75.3 percent in Census 2000 and 77.5 percent in the C2SS) and of people with a race of *Some other race alone* (5.5 percent in Census 2000 and 3.9 percent in the C2SS). In addition, a significantly lower proportion of people in the C2SS reported *Two or more races*. This was especially evident when *Two or more races* included *Some other race* as one of the race responses. Note that Table 5b is a summary of total responses. The distributions therefore sum to more than 100 percent. Table 5b shows that significantly higher proportions of *White alone or in combination* were found in the C2SS (79.4 percent), compared with Census 2000 (77.3 percent). Most of these differences can be explained by the lower reporting of *Some other race alone or in combination* in the C2SS (4.5 percent compared with 6.6 percent). Table 5c shows that the differences in *White alone or in combination* were restricted to the Hispanic or Latino population. No significant differences are found in the percent of *NonHispanic Whites*. Additionally, the C2SS shows fewer *Black or African American alone or in combination* (12.2 percent) than Census 2000 (12.7 percent).

Table 5c breaks out the race distributions for the Hispanic or Latino population. It is here that the impact of *Some other race* is most notable. Bates, Martin, DeMaio, and de la Puente (1995) and Martin, DeMaio, and Campanelli (1990) found that many Hispanics consider "Hispanic" to be their race. The OMB considers Hispanic origin and race to be separate concepts. Therefore, responses of "Hispanic" or a specific Hispanic group such as "Mexican" to the race question are often written in by respondents or coded by interviewers as "Some other race." For the Hispanic/Latino population, the percent distribution of race in the C2SS shows that *White alone* was much higher in the C2SS (7.9 percent) than in Census 2000 (6.1 percent). This was counterbalanced by a significantly lower proportion of *Some other race alone* in the C2SS (3.7 percent) when compared with Census 2000 (5.3 percent).

We document the published C2SS distribution of race after population and housing controls in Appendix A (Table 5). Race is used in the population controls and although many differences remain, these C2SS distributions are more consistent with Census 2000 distributions, especially for Blacks.

Table 5a. Detailed Race, National-Level Distributions (C2SS compared with Census 2000)

Detailed Race	Census 2000 (in percent)	C2SS Estimate* (in percent)	Difference (C2SS-Census) (in percentage points)	Margin of Error of Difference** (in percentage points)	Is the Difference Statistically Significant?
Universe: Household population	273.6 million	265.0 million			
One race	97.6	97.8	0.2	± 0.1	Yes
White	75.3	77.5	2.2	± 0.3	Yes
Black or African American	12.0	11.5	-0.5	± 0.2	Yes
American Indian and Alaska Native	0.9	0.9	0.0	± 0.1	No
Asian	3.7	3.8	0.1	± 0.1	Yes
Asian Indian	0.6	0.7	0.0	±0.0	Yes
Chinese	0.9	0.9	0.0	±0.0	Yes
Filipino	0.7	0.7	0.0	±0.0	No
Japanese	0.3	0.3	0.0	±0.0	Yes
Korean	0.4	0.4	0.0	±0.0	No
Vietnamese	0.4	0.4	0.0	±0.0	No
Other Asian	0.5	0.4	-0.0	±0.0	No
Native Hawaiian and Other Pacific Islander	0.1	0.2	0.0	± 0.0	No
Native Hawaiian	0.0	0.1	0.0	±0.0	Yes
Guamanian or Chamorro	0.0	0.0	0.0	±0.0	Yes
Samoan	0.0	0.0	-0.0	±0.0	No
Other Pacific Islander	0.0	0.0	-0.0	±0.0	No
Some other race	5.5	3.9	-1.6	± 0.1	Yes
Two or more races	2.4	2.2	-0.2	±0.1	Yes
Two races, including some other race	1.1	0.6	-0.5	± 0.0	Yes
Two races, excluding some other race, and 3 or more races	1.4	1.7	0.3	± 0.1	Yes

KEY: *The C2SS estimates exclude final population and housing controls.
       **A margin of error of ± 0.0 indicates a value of less than ±0.05.

Table 5b. Race Alone or in Combination, National-Level Distributions (C2SS compared with Census 2000)

Race Alone or in Combination	Census 2000 (in percent)	C2SS Estimate* (in percent)	Difference (C2SS-Census) (in percentage points)	Margin of Error of Difference** (in percentage points)	Is the Difference Statistically Significant?
Universe: Household population	273.6 million	265.0 million			
Race alone or in combination*					
White	77.3	79.4	2.1	± 0.3	Yes
Black or African American	12.7	12.2	-0.5	± 0.2	Yes
American Indian and Alaska Native	1.5	1.7	0.3	± 0.1	Yes
Asian	4.3	4.2	-0.0	± 0.1	No
Native Hawaiian and Other Pacific Islander	0.3	0.3	-0.0	± 0.0	No
Some other race	6.6	4.5	-2.1	± 0.1	Yes

KEY: *The C2SS estimates exclude final population controls.
　　　**A margin of error of ± 0.0 indicates a value of less than ±0.05.
　　　***These distributions will sum to more than 100 percent because they reflect tallies of total responses to a question that allowed multiple responses.

Table 5c. Hispanic Origin and Race, National-Level Distributions (C2SS compared with Census 2000)

Hispanic or Latino/Detailed Race	Census 2000 (in percent)	C2SS Estimate* (in percent)	Difference (C2SS-Census) (in percentage points)	Margin of Error of Difference** (in percentage points)	Is the Difference Statistically Significant
Universe: Household population	273.6 million	265.0 million			
Not Hispanic or Latino	87.4	87.4	0.1	± 0.2	No
White alone	69.3	69.6	0.3	± 0.3	No
Black or African American alone	11.8	11.4	-0.4	± 0.2	Yes
American Indian and Alaska Native alone	0.7	0.8	0.1	± 0.1	No
Asian alone	3.6	3.7	0.1	± 0.1	Yes
Native Hawaiian and Other Pacific Islander alone	0.1	0.1	0.0	± 0.0	No
Some other race alone	0.2	0.2	0.1	± 0.0	Yes
Two or more races	1.7	1.6	-0.0	± 0.1	No
Two races, including some other race	0.4	0.1	-0.3	± 0.0	Yes
Two races, excluding some other race, and 3 or more races	1.2	1.5	0.3	± 0.1	Yes
Hispanic or Latino	12.6	12.6	-0.1	± 0.2	No
White alone	6.1	7.9	1.9	± 0.2	Yes
Black or African American alone	0.2	0.2	-0.1	± 0.0	Yes
American Indian and Alaska Native alone	0.1	0.1	-0.0	± 0.0	Yes
Asian alone	0.0	0.0	-0.0	± 0.0	Yes
Native Hawaiian and Other Pacific Islander alone	0.0	0.0	0.0	± 0.0	No
Some other race alone	5.3	3.7	-1.7	± 0.1	Yes
Two or more races	0.8	0.6	-0.2	± 0.0	Yes
Two races, including some other race	0.6	0.4	-0.2	± 0.0	Yes
Two races, excluding some other race, and 3 or more races	0.2	0.2	0.0	± 0.0	Yes

KEY: *The C2SS estimates exclude final population and housing controls.
 **A margin of error of ± 0.0 indicates a value of less than ±0.05.

5.5.3 County-Level Comparisons

Figures 5a and 5b provide selected sub-national results on race. Figure 5a graphs, percent *Two or more races*. The variation seen at the county level in Census 2000 is also seen in the C2SS - counties with high proportions in Census 2000 also had high proportions in the C2SS. As was found at the national level, differences at the county-level show a lower percent of persons reporting *Two or more races* in the C2SS (shown as a triangle) than in Census 2000 (shown as a circle). The exception is Calvert, MD with a higher value. Most of the differences are small.
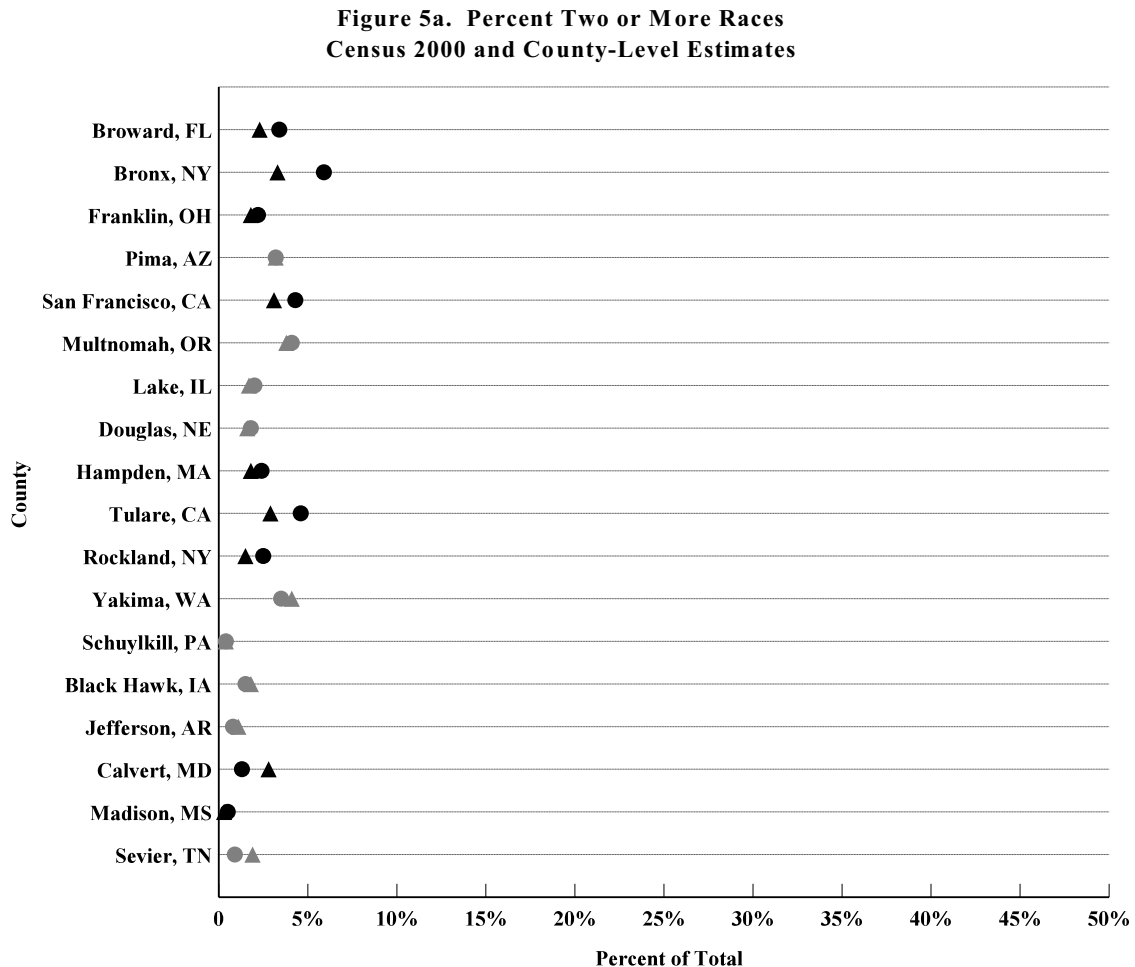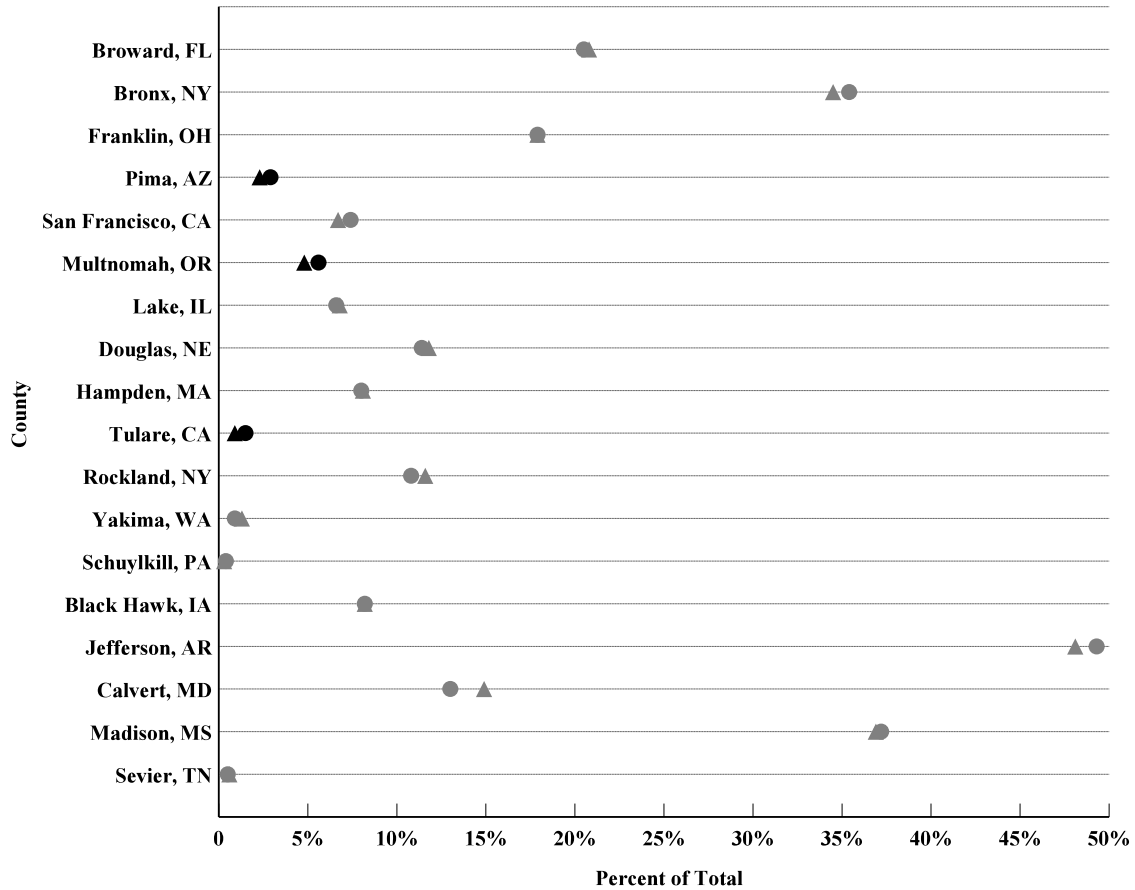
**Figure 5a. Percent Two or More Races
Census 2000 and County-Level Estimates**

KEY:
1. The universe is restricted to the 2000 Household Population.
2. Census 2000 county-level estimates are shown as circles.
3. C2SS county-level estimates are shown as triangles and exclude final population and housing controls.
4. Whenever the difference between the two estimates was determined to be statistically significant, the symbols for both the Census 2000 and the C2SS estimates are bolded.

Figure 5b graphs the percent, *Black or African American Alone*. The C2SS and Census 2000 data are very consistent across counties. Appendix F includes additional race distributions.

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**Figure 5b. Percent Black or African American Alone
Census 2000 and C2SS County-Level Estimates**

KEY: 1. The universe is restricted to the 2000 Household Population.
2. Census 2000 county-level estimates are shown as circles.
3. C2SS county-level estimates are shown as triangles and exclude final population and housing controls.
4. Whenever the difference between the two estimates was determined to be statistically significant, the symbols for both the Census 2000 and the C2SS estimates are bolded.

5.5.4 Analysis

The major findings from Census 2000 also hold for the C2SS - nearly 98 percent of all people reported only one race and the largest group was *White*. About 12 percent of the population were *Black or African American alone*, about 4 percent were *Asian alone*, and less than one percent were *American Indian and Alaska Native alone* or *Native Hawaiian and Other Pacific Islander alone* (U.S. Census Bureau, 2001a). The major conclusions drawn from Census 2000 on race of Hispanics are also true in the C2SS. Nine-in-ten Hispanics in Census 2000 reported *White alone* or *Some other race* alone (U.S. Census Bureau, 2001). The race distributions for the *not Hispanic or Latino* population are very similar.

Research has consistently shown that the race question, which uses a category system, is problematic for some population groups, most notably for Hispanics who want to report an

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Hispanic nationality as their race (Martin and Gerber, 2003). This is confirmed by the high rate of reporting of *Some other race* by Hispanics in Census 2000. Response variance measures for the race questions in the Census 2000 reinterview study (Singer and Ennis, 2002) showed particularly high rates of inconsistencies for *Some other race* and *Two or more races* (67.6 percent and 74.1 percent, respectively). For some groups, the concept of race is more stable, leading to more consistent reporting.

The collection of race data is sensitive to the choice of words used in the question (Martin and Gerber, 2003). Several minor differences existed between and among Census 2000 and C2SS wording and format. For example, as seen in Appendix C, the wording for the question on race used on the C2SS mail questionnaire was similar to that used on the mail questionnaire in Census 2000 but formatted slightly differently. This is illustrated by the *Other Asian, Other Pacific Islander,* and *Some other race* categories that all share a write-in area in the C2SS, while in Census 2000 only the *Other Asian* and *Other Pacific Islander* categories shared a write-in area. Also, the wording of the C2SS race questions used in telephone and personal visit interviewing differed from the wording used in the mail. Additionally, the Census 2000 nonresponse follow-up questionnaire included a minor variation in the wording of the race question from how the Census 2000 mail form posed the question. Response categories were identical to those on the Census 2000 mail form and to those used in the C2SS, but they were formatted differently.

An explanation for some differences may lie simply in how interviewers deal with responses to this question. Research undertaken by the Census Bureau shows that the largest differences in the reporting of race were seen in data collected by interviewers. This was especially true for Hispanics. Leslie, Raglin, and Schwede (2002) showed that in Census 2000 data collected by enumerators, about the same percentage of Hispanics reported a race of *White* as *Some other race*, while in the C2SS data collected by an interviewer, more than twice as many Hispanics reported a race of *White* compared with *Some other race*.

Based on that finding, the Census Bureau conducted two studies. One study compared C2SS responses to Census 2000 responses for a sample of matched persons. Looking only at Hispanics whose data were collected by an interviewer in both the C2SS and Census 2000, Raglin and Leslie (2002) found that Census 2000 had a higher proportion of *Some other race* responses. A second study was a debriefing study of ACS interviewers. ACS interviewers are permanent Census Bureau employees who often work on other surveys where *Some other race* is not a response option. Census 2000 interviewers were largely new to interviewing. Leslie, Raglin, and Schwede (2002) found that ACS interviewers who did not work on Census 2000 were more likely to say that they would probe for another answer if an Hispanic respondent provided "Hispanic" as a response to the race question. A conclusion reached from these two studies was that probable differences in interviewing techniques between Census 2000 and C2SS interviewers 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 for nonHispanics. Detailed review of the edits used in Census 2000 led to the discovery of a difference in the processing of write-in responses on

enumerator returns. This resulted in an overstatement of respondents falling into the *Some other race* and *One or more races* categories in Census 2000 and consequently an understatement of single race categories, particularly *White alone.* (See Cresce, 2003 for details.) This probably accounts for the observed differences for nonHispanics.

The Census Bureau needs to improve the race question for the 2010 Census and the ACS. To this end, we have established a working group to design, test and evaluate alternative presentation of the questions on race and Hispanic origin.

5.6 Housing Unit Occupancy Status

5.6.1 Description of Item

The Census Bureau defines a housing unit as a house, apartment, a mobile home or trailer, a group or rooms or a single room occupied, or intended for occupancy, as a separate living quarters. Housing unit occupancy status - the identification of every housing unit in a census or a survey as occupied or vacant - is the most basic characteristic of the housing inventory. It is the basis for the vacancy rate, and it determines the two major universes for the collection and estimation of the physical and the economic characteristics of housing units.

The occupancy status of the housing units counted in Census 2000 was not determined simply by an answer to a single question on the questionnaire. The final occupancy status is a derived measure based on population data and consistent count and housing unit status information determined during data processing. This is true to a lesser extent for the C2SS since much of its data were collected using computer-assisted instruments that substantially limit the chance for collecting inconsistent information about the status of a unit.

5.6.2 National-Level Comparisons

Table 6 compares the percentage of occupied and vacant housing units based on Census 2000 and on the C2SS. We expected differences in the occupancy rates produced by Census 2000 and the C2SS. What we did not expect was the direction of the differences shown in Table 6. The national results show that the C2SS had a higher vacancy rate than Census 2000. Appendix A, Table 6 illustrates the distributions after weighting to population controls. These differences remain in the published C2SS data.

Table 6. Housing Occupancy, National-Level Distributions (C2SS compared with Census 2000)

Housing Occupancy	Census 2000 (in percent)	C2SS Estimate* (in percent)	Difference (C2SS-Census) (in percentage points)	Margin of Error of Difference (in percentage points)	Is the Difference Statistically Significant?
Universe: Total housing units	115.9 million	115.4 million			
Occupied housing units	91.0	90.3	-0.7	± 0.2	Yes
Vacant housing units	9.0	9.7	0.7	± 0.2	Yes

KEY: *The C2SS estimates exclude final population and housing controls.

5.6.3 County-Level Comparisons

Figure 6 summarizes county-level data on percent vacant. These counties include a variety of areas where we would expect to see a fair range of vacancy rates. Rates range from less than 5 percent to over 15 percent. With the exception of Sevier, TN, all significant differences parallel the national findings of a higher vacancy rate in the C2SS. Appendix F includes additional information on housing occupancy comparisons, by county. It is worthwhile to explore further the example of Sevier, TN - a county with a very high vacancy rate in Census 2000 - to determine if other areas with high vacancy rates had greater levels of differences between Census 2000 and the C2SS.

Figure 6. Percent Vacant
Census 2000 and C2SS County-Level Estimates
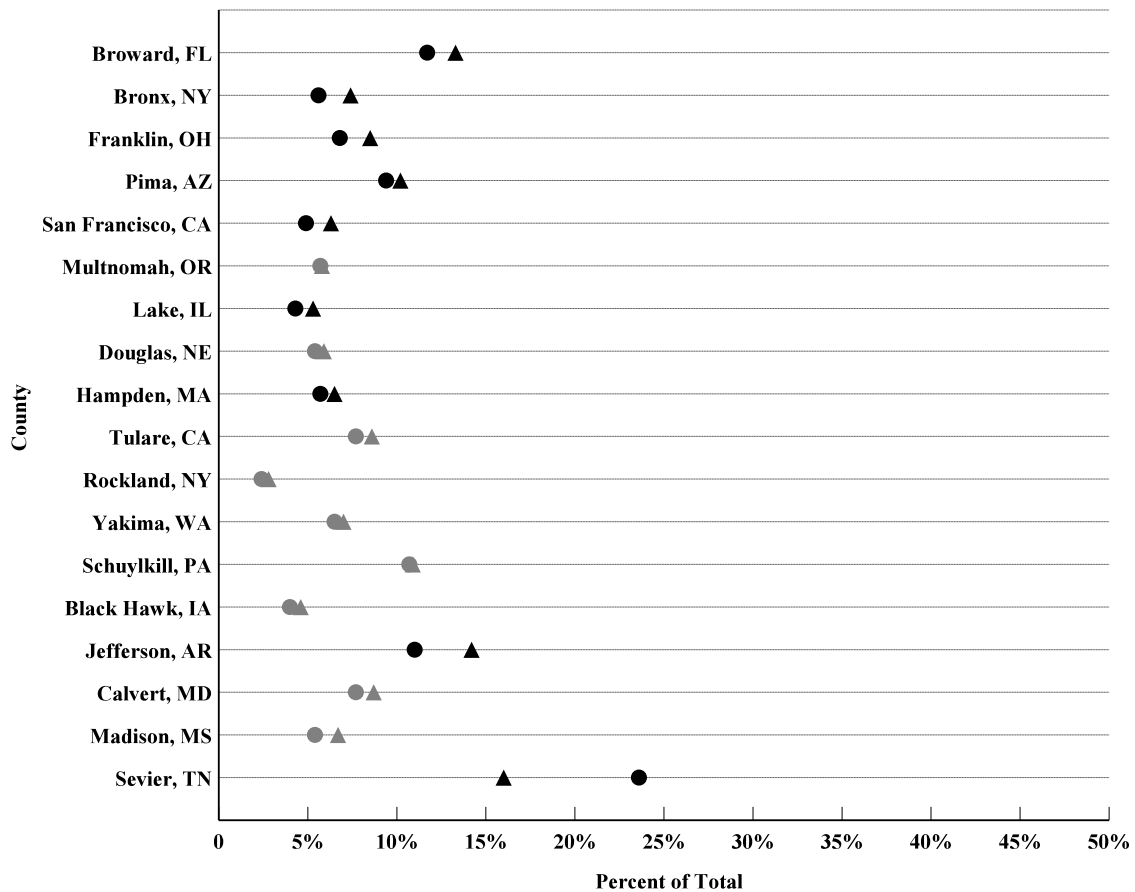
KEY: 1. The universe is restricted to the 2000 Household Population.
2. Census 2000 county-level estimates are shown as circles.
3. C2SS county-level estimates are shown as triangles and exclude final population and housing controls.
4. Whenever the difference between the two estimates was determined to be statistically significant, the symbols for both the Census 2000 and the C2SS estimates are bolded.

5.6.4   Analysis

From the beginning of the ACS development program, we recognized that ACS methods would probably result in the identification of *fewer* vacant units than under conventional survey and decennial census methods. Responses to the questionnaire for vacant units are usually not received by mail or telephone, although some landlords may respond. Therefore, the first two months of data collection for an ACS sample panel are focused on occupied housing units, while only the third month - the CAPI interviewing - can typically result in the identification of vacant sample units. Units in the C2SS had two months to change status from vacant to occupied, and only one month in which to be interviewed as a vacant unit. All previous analyses of vacancy rates had confirmed that the rules and methods used in this new survey would result in a national vacancy rate that would most likely range from about one to more than two percentage points lower than rates measured by the census methodology and current surveys specifically designed

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to produce unbiased vacancy rates (Fronczek and Savage, 1998). The C2SS results met expectations when compared with other surveys.

However, unexpectedly, the C2SS vacancy rate was significantly *higher* than the Census 2000 rate. Census 2000 coverage measurement evaluations and subsequent research have suggested that Census 2000 may have overstated the nation's occupancy rate by misclassifying vacant units as occupied (Barrett, 2001; Love, 2001a; and Love, 2001b). Such an overstatement is consistent with the most recent coverage estimates showing a slight overcount of the Census 2000 population due largely to duplication (U. S. Census Bureau, 2003a). This overstatement would result in a lower vacancy rate in Census 2000.

Census 2000 undertakes a review of every housing unit classified as either vacant or delete during nonresponse follow-up. The census designed this coverage check to pick up misclassification errors that could lead to undercoverage. The ACS includes no similar effort. While this operation may improve coverage, it may also result in the incorrect conversion of an April 1st vacant to a status of occupied at the time of interview.

Additionally, because of the difference in residence rules, we expected the vacancy rates for the C2SS and Census 2000 to differ at lower geographies, especially in highly seasonal areas. As described earlier in this report, the decennial census and the ACS use different residence rules which are expected to affect the status of some housing units. A unit enumerated in the census as vacant under the "usual" residence rules may be interviewed as an occupied unit under the "current" residence rule used in the C2SS. Both would be correct, given the assumptions under which the occupancy status was determined. Areas that could be affected might include Florida, Arizona, and beach, lake, or mountain vacation areas with large seasonal populations. For these areas we would expect that the vacancy rates in the ACS would be lower than in Census 2000.

5.7   Tenure

5.7.1 Description of Item

Tenure is one of the most important characteristics of the housing inventory. The tenure question and its categories classify all occupied housing units as either owner-occupied or renter-occupied. Homeownership rates have served as an indicator of the health of the nation's economy and of its well-being for decades. For a more complete list of federal uses, refer to Appendix D.

We ask respondents to select one of four response categories for this question identifying whether a housing unit is owned with a mortgage by someone living there, owned free and clear by someone living there, rented for cash rent, or occupied without payment of cash rent. The first two response options identify units occupied by owners and the last two response options identify units occupied by renters. Census 2000 and the C2SS used identical questions to collect data on housing tenure. We show the C2SS mailout question wording and format below. All versions of this question can be found in Appendix C.

1B Is this house, apartment, or mobile home –
☐ Owned by you or someone in this household with a mortgage or loan?
☐ Owned by you or someone in this household free and clear (without a mortgage or loan)?
☐ Rented for cash rent?
☐ Occupied without payment of cash rent? → *Skip to question 21*

5.7.2   National-Level Comparisons

The data in Tables 7a and 7b are based on the tenure of occupied housing units in Census 2000 and the C2SS. The previous section noted that the C2SS had a significantly lower estimate of occupied housing units. The distribution of owner-occupied as compared to renter-occupied units at the national level is statistically significant. The C2SS has a lower estimate (under one percentage point) of owner-occupied units. We note only minor differences in the average household size estimates in the C2SS when compared to Census 2000. The published C2SS estimates of total housing units were controlled to the total housing unit counts from Census 2000. However, the C2SS estimates of occupied and vacant units were derived from the survey results themselves. As seen in Appendix A, Table 7, housing controls had only minor effects on these tenure distributions.

Table 7a. Tenure, National-Level Distributions (C2SS compared with Census 2000)

Tenure	Census 2000 (in percent)	C2SS Estimate* (in percent)	Difference (C2SS-Census) (in percentage points)	Margin of Error of Difference (in percentage points)	Is the Difference Statistically Significant?
Universe: Occupied housing units	105.5 million	104.2 million			
Owner-occupied housing units	66.2	65.4	-0.8	± 0.2	Yes
Renter-occupied housing units	33.8	34.6	0.8	± 0.2	Yes

KEY: *The C2SS estimates exclude final population and housing controls.

Table 7b.   Average Household Size by Tenure, National-Level Distributions (C2SS compared with Census 2000)

Average Household Size	Census 2000 (in percent)	C2SS Estimate* (in percent)	Difference (C2SS-Census) (in percentage points)	Margin of Error of Difference (in percentage points)	Is the Difference Statistically Significant?
Universe: Occupied housing units	105.5 million	104.2 million			
Average household size, owner-occupied	2.69	2.65	-0.05	± 0.01	Yes
Average household size, renter-occupied	2.40	2.34	-0.06	± 0.01	Yes

KEY: *The C2SS estimates exclude final population and housing controls.

5.7.3 County-Level Comparisons

Figure 7 summarizes county-level distributions of owner-occupied housing units. Note that the scale in Figure 7 differs from the scale used in all other tables. We needed to make this change to include the wide range of values for this characteristic. Two counties had very low owner-occupancy rates (Bronx, NY and San Francisco, CA) and the C2SS and Census 2000 estimates were very consistent. Areas with high rates of owner-occupancy in Census 2000 (e.g., Calvert, MD) were also high in the C2SS. The national findings of the C2SS estimate (shown as a triangle) being slightly lower than Census 2000 (shown as a circle) are evident at the county level. Appendix F provides details on these differences in Table 6. Most of the differences, even at the county-level, are small.

Figure 7. Percent Owner-Occupied Housing Units
Census 2000 and C2SS County-Level Estimates
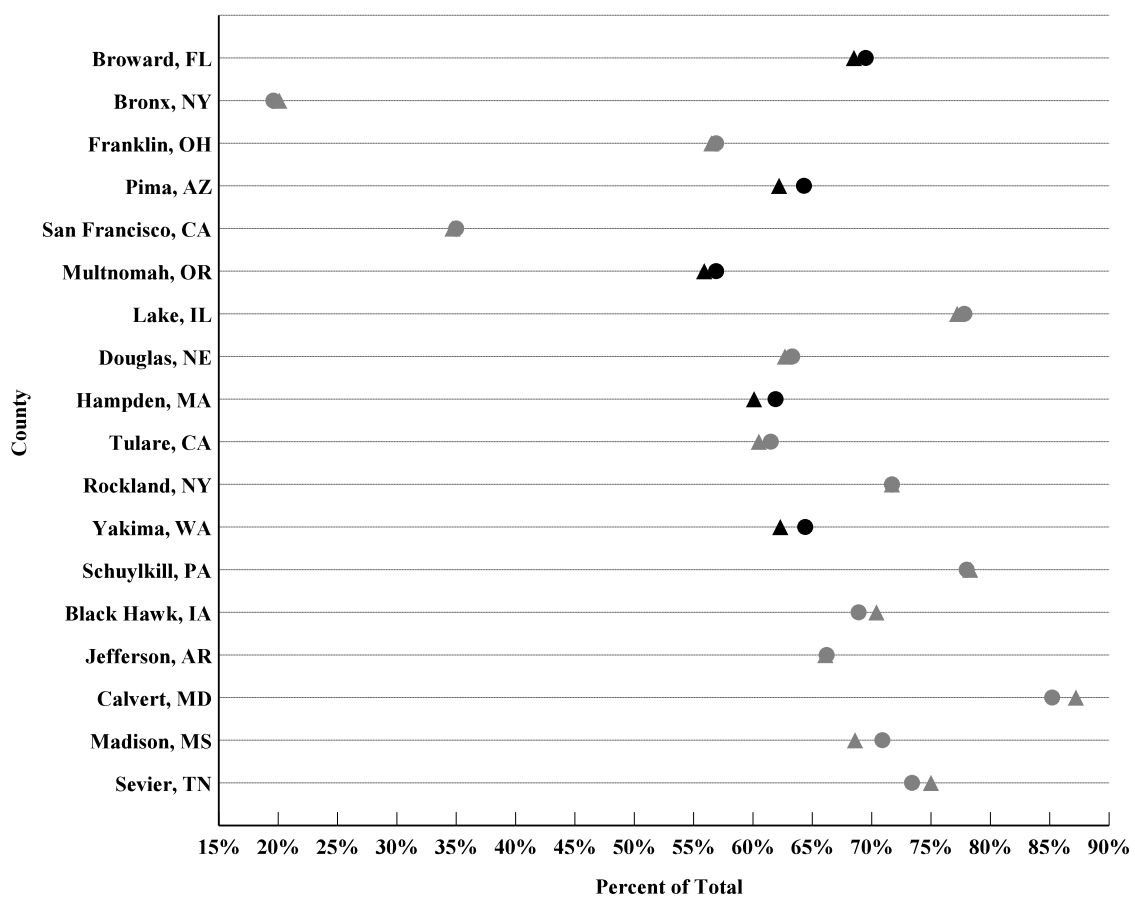
KEY: 1. The universe is restricted to the 2000 Household Population.
2. Census 2000 county-level estimates are shown as circles.
3. C2SS county-level estimates are shown as triangles and exclude final population and housing controls.
4. Whenever the difference between the two estimates was determined to be statistically significant, the symbols for both the Census 2000 and the C2SS estimates are bolded.

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5.7.4 Analysis

Census 2000 found that about two out of three householders attained the goal of owning their own home in 2000 (U.S. Census Bureau, 2001f). The C2SS data also support this conclusion. Although differences were statistically significant, the C2SS and Census 2000 estimates of the homeownership rate were very consistent. Levels of item nonresponse and the edit and allocation methods used in Census 2000 may explain the differences observed in the tenure data. Residence rule differences may have also had an impact on these estimates.

The tenure information collected in the C2SS was more complete than in Census 2000, mostly due to the edits built into the CATI and CAPI collection phases. The comparison of allocation rates by mode (see Table 6, Appendix B) illustrates the positive impact in the C2SS of the use of computer-assisted instruments and the presence of related information that can be used to compensate for specific missing information. The Census 2000 allocation rate for tenure for enumerator-collected data was more than 12 percent. The C2SS CATI/CAPI data required imputation of only about 1 percent of the values of tenure. The C2SS computer-assisted instruments include edits which compare the answers to the mortgage battery of questions and the rent questions to responses to the tenure answer. These internal real-time checks of related information during an interview decrease the amount of inconsistent and missing data that the full content edit must correct. This in turn, reduces the allocation rates for the CATI and CAPI data collection modes in the C2SS. In addition, the tenure item in the C2SS is edited using the same process used for Census 2000 long forms. When there is information present on the form on mortgage and rent, a value for tenure can often be assigned from that information instead of requiring imputation based on another unit's information. The vast majority of Census 2000 data come from short forms where such information is not available to determine the correct value for tenure.

6. CONCLUSIONS

Although no systemic problems related to ACS methods emerged as a result of this analysis, we have identified several areas of improvement. The Census Bureau must reduce methodological differences between the ACS and the 2010 Census in the collection of these basic demographic and housing items. Working groups need to examine issues associated with the collection of Hispanic origin and race data, including addressing the use of examples. The ACS needs to improve the weighting and estimation procedures. In addition, we must ensure implementation of sound methods to collect missing data for large households for the 2010 Census and the ACS.

We have already taken a number of steps to address these areas of improvement. The Census Bureau has determined that it should, whenever consistent with good survey practice, seek to ensure conformity between the 2010 Census and the ACS in the collection and processing of these data items. To that end, the Census Bureau has established a 2010 Census/ACS Consistency group that is in the process of comparing ACS and Census methods. In 2000, some inconsistencies were unintentional; the goal for the future is to ensure that only intentional differences continue.

The Census Bureau recognizes the need to develop a race question that can provide consistent results across different measurement modes and survey settings. The Census Bureau has established a working group to design and implement a testing program to develop the optimal wording for the race and Hispanic origin questions for use in the 2010 Census and the ACS. This group will also provide guidance on how we should train interviewers and enumerators to collect race data that represents self-identification and meets the OMB requirements for reporting of race and Hispanic origin.

Additional efforts are warranted in the ACS to both research alternative methods and to track existing methods. Specifically, staff are looking at ways to improve ACS weighting and estimation procedures. Finally, although we have made substantial improvements in the ACS follow-up operation for large households and for content, we must continue to monitor this operation.

Besides these specific areas of improvement, the Census Bureau will routinely examine ACS data collection and processing methods to identify areas for improvement. We need to pursue additional efforts to maintain high levels of mail response. As a continuous measurement survey, the ACS has a unique opportunity for ongoing review and improvement so it can produce the highest quality demographic, social, economic, and housing data.

This report can only serve as the starting point for understanding how well the ACS might compare with a decennial census. Additional sub-national analysis and review of cross-tabulations will provide important additional information for data users.

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Appendix A. Additional Comparison Tables Reflecting C2SS Final Population and Housing Controls

Table 1. Sex, National-Level Distributions (C2SS compared with Census 2000)
C2SS estimates include all population and housing controls.

Sex Categories	Census 2000 (in percent)	C2SS Estimate (in percent)
Universe: Household Population	273.6 million	273.6 million
Male	48.8	48.8
Female	51.2	51.2

Table 2. Age, National-Level Distributions (C2SS compared with Census 2000)
C2SS estimates include all population and housing controls.

Age Group	Census 2000 (in percent)	C2SS Estimate (in percent)
Universe: Household Population	273.6 million	273.6 million
Under 5 years	7.0	7.0
5 to 9 years	7.5	7.4
10 to 14 years	7.5	7.6
15 to 19 years	6.9	6.8
20 to 24 years	6.4	6.4
25 to 34 years	14.2	14.1
35 to 44 years	16.2	16.3
45 to 54 years	13.6	13.6
55 to 59 years	4.9	4.9
60 to 64 years	3.9	3.9
65 to 74 years	6.6	6.6
75 to 84 years	4.2	4.3
85 years and over	1.2	1.2
Median age (years)	35.4	35.4
18 years and over	73.7	73.8
21 years and over	69.9	70.0
62 years and over	14.3	14.3
65 years and over	12.1	12.1
Male	5.1	5.1
Female	7.0	7.0

Appendix A. Additional Comparison Tables Reflecting C2SS Final Population and Housing Controls

Table 3a. Relationship, National-Level Distributions (C2SS compared with Census 2000)
C2SS estimates include all population and housing controls.

Relationship Group	Census 2000 (in percent)	C2SS Estimate (in percent)
Universe: Household population	273.6 million	273.6 million
Householder	38.5	39.1
Spouse	19.9	19.9
Child	30.5	30.0
Other relative	5.7	6.1
Nonrelative	5.3	5.0
Unmarried partner	2.0	2.0

Table 3b. Household Type, National-Level Distributions (C2SS compared with Census 2000)
C2SS estimates include all population and housing controls.

Household Type Group	Census 2000 (in percent)	C2SS Estimate (in percent)
Universe: Total Households	105.5 million	104.8 million
Family households	68.1	67.7
With own children under 18 years	32.8	32.4
Married-couple family	51.7	50.7
With own children under 18 years	23.5	22.6
Female householder, no husband present	12.2	12.6
With own children under 18 years	7.2	7.7
Nonfamily households	31.9	32.3
Householder living alone	25.8	26.4
65 years and over	9.2	9.3
Households with individuals under 18	36.0	35.9
Households with individuals 65 years and over	23.4	23.3
Average household size	2.59	2.61
Average family size	3.14	3.18

Appendix A. Additional Comparison Tables Reflecting C2SS Final Population and Housing Controls

Table 4.   Hispanic origin, National-Level Distributions (C2SS compared with Census 2000)
  C2SS estimates include all population and housing controls.

Hispanic Origin Categories	Census 2000 (in percent)	C2SS Estimate (in percent)
Universe: Household population	273.6 million	273.6 million
Hispanic or Latino (of any race)	12.6	12.6
Mexican	7.4	7.9
Puerto Rican	1.2	1.3
Cuban	0.4	0.5
Other Hispanic or Latino	3.6	3.0

Table 5a. Detailed Race, National-Level Distributions (C2SS compared with Census 2000)
  C2SS estimates include all population and housing controls.

Race Category	Census 2000 (in percent)	C2SS Estimate (in percent)
Universe: Household population	273.6 million	273.6 million
One race	97.6	97.9
White	75.3	77.3
Black or African American	12.0	11.9
American Indian and Alaska Native	0.9	0.8
Asian	3.7	3.8
Asian Indian	0.6	0.6
Chinese	0.9	0.9
Filipino	0.7	0.7
Japanese	0.3	0.3
Korean	0.4	0.4
Vietnamese	0.4	0.4
Other Asian	0.5	0.4
Native Hawaiian and Other Pacific Islander	0.1	0.2
Native Hawaiian	0.0	0.1
Guamanian or Chamorro	0.0	0.0
Samoan	0.0	0.0
Other Pacific Islander	0.0	0.0
Some other race	5.5	3.9
Two or more races	2.4	2.1

Appendix A. Additional Comparison Tables Reflecting C2SS Final Population and Housing Controls

Table 5b. Race Alone or in Combination, National-Level Distributions (C2SS compared with Census 2000)
C2SS estimates include all population and housing controls.

Race Category Race alone or in combination*	Census 2000 (in percent)	C2SS Estimate (in percent)
Universe: Household population	273.6 million	273.6 million
White	77.3	79.1
Black or African American	12.7	12.6
American Indian and Alaska Native	1.5	1.5
Asian	4.3	4.2
Native Hawaiian and Other Pacific Islander	0.3	0.3
Some other race	6.6	4.6

KEY: *These distributions will sum to more than 100 percent because they reflect tallies of total responses to a question that allowed multiple responses.

Appendix A. Additional Comparison Tables Reflecting C2SS Final Population and Housing Controls

Table 5c. Hispanic Origin and Race, National-Level Distributions (C2SS compared with Census 2000)
C2SS estimates include all population and housing controls.

Race by Hispanic Origin	Census 2000 (in percent)	C2SS Estimate (in percent)
Universe: Household population	273.6 million	273.6 million
Not Hispanic or Latino	87.4	87.4
White alone	69.3	69.4
Black or African American alone	11.8	11.8
American Indian and Alaska Native alone	0.7	0.6
Asian alone	3.6	3.7
Native Hawaiian and Other Pacific Islander alone	0.1	0.1
Some other race alone	0.2	0.2
Two or more races	1.7	1.5
Two races, including some other race	0.4	0.1
Two races, excluding some other race, and 3 or more races	1.2	1.4
Hispanic or Latino	12.6	12.6
White alone	6.1	7.9
Black or African American alone	0.2	0.2
American Indian and Alaska Native alone	0.1	0.1
Asian alone	0.0	0.0
Native Hawaiian and Other Pacific Islander alone	0.0	0.0
Some other race alone	5.3	3.7
Two or more races	0.8	0.6
Two or more races, including some other race	0.6	0.4
Two or more races, excluding some other race, and 3 or more races	0.2	0.2

Table 6.   Housing Occupancy, National-Level Distributions (C2SS compared with Census 2000)
C2SS estimates include all population and housing controls.

Housing Occupancy	Census 2000 (in percent)	C2SS Estimate (in percent)
Universe: Total Housing Units	115.9 million	115.9 million
Occupied housing units	91.0	90.4
Vacant housing units	9.0	9.6

Appendix A. Additional Comparison Tables Reflecting C2SS Final Population and Housing Controls

Table 7a. Tenure, National-Level Distributions (C2SS compared with Census 2000)
C2SS estimates include all population and housing controls.

Tenure	Census 2000 (in percent)	C2SS Estimate (in percent)
Universe: Occupied housing units	105.5 million	104.8 million
Owner-occupied housing units	66.2	65.3
Renter-occupied housing units	33.8	34.7

Table 7b. Average Household Size by Tenure, National-Level Distributions (C2SS compared with Census 2000)
C2SS estimates include all population and housing controls.

Average Household Size	Census 2000 (average household size)	C2SS Estimate (average household size)
Average household size, owner-occupied	2.69	2.72
Average household size, renter-occupied	2.40	2.41

Appendix B. Item Allocation Rates by Data Collection Mode

Table 1. Sex, Allocation Rates by Data Collection Mode

Mode	Census 2000 (in percent)	C2SS (in percent)	2001 Supplementary Survey (in percent)
All	1.0	0.5	0.2
Mail*	0.9	0.7	0.3
Interviewer	1.4	0.2	0.1
CATI	NA	0.1	0.1
CAPI	NA	0.2	0.2

KEY: *C2SS mail includes improvements due to content follow-up.
      CATI - Computer Assisted Telephone Interviewing
      CAPI - Computer Assisted Personal Visit Interviewing
      NA - Not applicable
      Values less than 0.05 are shown as 0.0.

Table 2. Age, Allocation Rates by Data Collection Mode

Mode	Census 2000 (in percent)	C2SS (in percent)	2001 Supplementary Survey (in percent)
All	3.6	2.4	1.4
Mail*	1.9	3.6	1.9
Interviewer	9.1	0.8	0.9
CATI	NA	0.5	0.6
CAPI	NA	0.8	1.0

KEY: *C2SS mail includes improvements due to content follow-up.
      CATI - Computer Assisted Telephone Interviewing
      CAPI - Computer Assisted Personal Visit Interviewing
      NA - Not applicable
      Values less than 0.05 are shown as 0.0.

Appendix B. Item Allocation Rates by Data Collection Mode

Table 3. Relationship, Allocation Rates by Data Collection Mode

Mode	Census 2000 (in percent)	C2SS (in percent)	2001 Supplementary Survey (in percent)
All	2.2	1.6	0.9
Mail*	1.8	1.9	0.8
Interviewer	3.4	1.2	1.0
CATI	NA	1.0	0.8
CAPI	NA	1.2	1.1

KEY: *C2SS mail includes improvements due to content follow-up.
CATI - Computer Assisted Telephone Interviewing
CAPI - Computer Assisted Personal Visit Interviewing
NA - Not applicable
Values less than 0.05 are shown as 0.0.

Table 4. Hispanic Origin, Allocation Rates by Data Collection Mode

Mode	Census 2000 (in percent)	C2SS (in percent)	2001 Supplementary Survey (in percent)
All	4.2	3.6	2.0
Mail*	4.4	5.7	3.0
Interviewer	3.6	0.7	0.7
CATI	NA	0.8	0.7
CAPI	NA	0.7	0.7

KEY: *C2SS mail includes improvements due to content follow-up.
CATI - Computer Assisted Telephone Interviewing
CAPI - Computer Assisted Personal Visit Interviewing
NA - Not applicable
Values less than 0.05 are shown as 0.0.

Appendix B. Item Allocation Rates by Data Collection Mode

Table 5. Race, Allocation Rates by Data Collection Mode

Mode	Census 2000 (in percent)	C2SS (in percent)	2001 Supplementary Survey (in percent)
All	3.9	2.4	1.6
Mail*	4.1	3.3	2.1
Interviewer	3.6	1.1	1.1
CATI	NA	1.4	1.5
CAPI	NA	1.0	1.0

KEY: *C2SS mail includes improvements due to content follow-up.
     CATI - Computer Assisted Telephone Interviewing
     CAPI - Computer Assisted Personal Visit Interviewing
     NA - Not applicable
     Values less than 0.05 are shown as 0.0.

Table 6. Tenure, Allocation Rates by Data Collection

Mode	Census 2000 (in percent)	C2SS (in percent)	2001 Supplementary Survey (in percent)
All	4.8	1.4	1.1
Mail*	2.4	1.6	1.2
Interviewer	12.2	1.1	0.9
CATI	NA	0.7	0.6
CAPI	NA	1.1	1.1

KEY: *C2SS mail includes improvements due to content follow-up.
     CATI - Computer Assisted Telephone Interviewing
     CAPI - Computer Assisted Personal Visit Interviewing
     NA - Not applicable
     Values less than 0.05 are shown as 0.0.

Appendix C. Facsimiles of C2SS and Census 2000 Questions
Sex Questions

Figure 1a.
C2SS Mail Form

1 What is this person's sex?

☐ Male
☐ Female

Figure 1b. C2SS CATI/CAPI Instrument

```
IF NOT OBVIOUS ASK....

(Is <Name>/ Are you) male or female?

<1>  Male
<2>  Female
```

Figure 1c. Census Mail Long Form

3 What is this person's sex? *Mark* ☒ *ONE box.*
☐ Male
☐ Female

Figure 1d. Census Mail Short Form

5. What is Person 1's sex? *Mark* ☒ *ONE box.*
☐ Male   ☐ Female

Figure 1e.
Census
Enumerator
Long Form

3. What is each person's sex?
Mark ☒ *ONE box.*

☐ Male

☐ Female

Figure 1f.
Census
Enumerator
Short Form

3. What is each person's sex?
Mark ☒ *ONE box.*

☐ Male

☐ Female

Appendix C. Facsimiles of C2SS and Census 2000 Questions
Age Questions

Figure 2a. C2SS Mail Form

2 What is this person's date of birth and what is this person's age?
Print numbers in boxes.

Month   Day   Year of birth

Age (in years)

Figure 2b. C2SS CATI/CAPI Instrument

```
What is (<Name>'s/your) date of birth?

 What Month?   B4a1/ B4a1_2
 What Day?     B4a2/ B4a2_2
 What Year?    B4a3/ B4a3_2
```

Figure 2c. Census Mail Long Form

4 What is this person's age and what is this person's date of birth?

Age on April 1, 2000

Print numbers in boxes.
Month   Day   Year of birth

Figure 2d. Census Mail Short Form

6. What is Person 1's age and what is Person 1's date of birth?

Age on April 1, 2000

Print numbers in boxes.
Month   Day   Year of birth

Figure 2e.
Census Enumerator Long Form

4. What was each person's age on April 1?
Print numbers in boxes.

Age

What is this person's date of birth?

Month

Day

Year of birth

Figure 2f.
Census Enumerator Short Form

4. What was each person's age on April 1?
Print numbers in boxes.

Age

What is this person's date of birth?

Month

Day

Year of birth

Appendix C. Facsimiles of C2SS and Census 2000 Questions
Relationship Questions

Figure 3a. C2SS Mail Form

3 How is this person related to Person 1?

☒ Person 1

(Person 1 is the person living or staying here in whose name this house or apartment is owned, being bought, or rented. If there is no such person, start with the name of any adult living or staying here.)

Relationship of Person 2 to Person 1.

☐ Husband or wife
☐ Son or daughter
☐ Brother or sister
☐ Father or mother
☐ Grandchild
☐ In-law
☐ Other relative

☐ Roomer, boarder
☐ Housemate, roommate
☐ Unmarried partner
☐ Foster child
☐ Other nonrelative

Figure 3b. C2SS CATI/CAPI Instrument

```
{Fill1: SHOW RESPONDENT FLASHCARD A}

How (is <Name>/ are you) related to <HHOLDER>?

<1>    Husband or wife
<2>    Son or daughter
<3>    Brother or sister
<4>    Father or mother
<5>    Grandchild
<6>    In-law
<7>    Other relative
<8>    Roomer or boarder
<9>    Housemate or roommate
<10>   Unmarried partner
<11>   Foster child
<12>   Other non-relative

B2_2
```

Figure 3c. Census Mail Long Form

2 How is this person related to Person 1?
Mark ☒ ONE box.

☐ Husband/wife
☐ Natural-born son/daughter
☐ Adopted son/daughter
☐ Stepson/stepdaughter
☐ Brother/sister
☐ Father/mother
☐ Grandchild
☐ Parent-in-law
☐ Son-in-law/daughter-in-law
☐ Other relative — *Print exact relationship.*

If NOT RELATED to Person 1:
☐ Roomer, boarder
☐ Housemate, roommate
☐ Unmarried partner
☐ Foster child
☐ Other nonrelative

Figure 3d. Census Mail Short Form

2. How is this person related to Person 1? *Mark ☒ ONE box.*

☐ Husband/wife
☐ Natural-born son/daughter
☐ Adopted son/daughter
☐ Stepson/stepdaughter
☐ Brother/sister
☐ Father/mother
☐ Grandchild
☐ Parent-in-law
☐ Son-in-law/daughter-in-law
☐ Other relative — *Print exact relationship.*

If NOT RELATED to Person 1:
☐ Roomer, boarder
☐ Housemate, roommate
☐ Unmarried partner
☐ Foster child
☐ Other nonrelative

Appendix C. Facsimiles of C2SS and Census 2000 Questions
Relationship Questions

Figure 3e. Census Enumerator Long Form

2. (Show Card A.) **Which of these categories best describes how each person is related to** (Read name of Person 1)?

☒ Person 1

☐ Husband/wife
☐ Natural-born son/daughter
☐ Adopted son/daughter
☐ Stepson/stepdaughter
☐ Brother/sister

☐ Father/mother
☐ Grandchild
☐ Parent-in-law
☐ Son-in-law/daughter-in-law
☐ Other relative – *Specify relationship.*

NONRELATIVE:
☐ Roomer/boarder
☐ Housemate/roommate

☐ Unmarried partner
☐ Foster child
☐ Other nonrelative

Figure 3f. Census Enumerator Short Form

2. (Show Card A.) **Which of these categories best describes how each person is related to** (Read name of Person 1)?

☒ Person 1

☐ Husband/wife
☐ Natural-born son/daughter
☐ Adopted son/daughter
☐ Stepson/stepdaughter
☐ Brother/sister

☐ Father/mother
☐ Grandchild
☐ Parent-in-law
☐ Son-in-law/daughter-in-law
☐ Other relative – *Specify relationship.*

NONRELATIVE:
☐ Roomer/boarder
☐ Housemate/roommate

☐ Unmarried partner
☐ Foster child
☐ Other nonrelative

Appendix C. Facsimiles of C2SS and Census 2000 Questions
Hispanic Origin Questions

Figure 4a. C2SS Mail Form

5 **Is this person Spanish/Hispanic/Latino?**

Mark (X) the "No" box if not Spanish/Hispanic/Latino.

☐ **No**, not Spanish/Hispanic/Latino
☐ Yes, Mexican, Mexican Am., Chicano
☐ Yes, Puerto Rican
☐ Yes, Cuban
☐ Yes, other Spanish/Hispanic/Latino — *Print group.*

Figure 4b. C2SS CATI/CAPI Instrument

```
(Is <Name>/ Are you) Spanish, Hispanic or Latino?

 <1>  Yes
 <2>  No
 B6a/ B6a_2
(Is <he/she>/ Are you) of Mexican origin, Puerto Rican, Cuban or
some other Spanish/Hispanic/Latino group?

 <1>  Mexican, Mexican American, Chicano
 <2>  Puerto Rican
 <3>  Cuban
 <4>  Other Spanish/Hispanic/Latino

 B6b/ B6b_2

Other write-in:    B6c/ B6c_2
 FOR EXAMPLE: ARGENTINEAN, COLUMBIAN, DOMINICAN, NICARAGUAN,
 SALVADORAN, SPANIARD, OR SOME OTHER SPANISH, HISPANIC OR LATINO
 GROUP.
```

Figure 4c. Census Mail Long Form

5 Is this person Spanish/Hispanic/Latino? *Mark ☒ the "No" box if not Spanish/Hispanic/Latino.*

☐ **No**, not Spanish/Hispanic/Latino
☐ Yes, Mexican, Mexican Am., Chicano
☐ Yes, Puerto Rican
☐ Yes, Cuban
☐ Yes, other Spanish/Hispanic/Latino — *Print group.*

Figure 4d. Census Mail Short Form

7. **Is Person 1 Spanish/Hispanic/Latino?** *Mark ☒ the "No" box if not Spanish/Hispanic/Latino.*

☐ **No,** not Spanish/Hispanic/Latino   ☐ Yes, Puerto Rican
☐ Yes, Mexican, Mexican Am., Chicano   ☐ Yes, Cuban
☐ Yes, other Spanish/Hispanic/Latino — *Print group.*

Figure 4e. Census Enumerator Long Form

5. **Are any of the persons that I have listed Mexican, Puerto Rican, Cuban, or of another Hispanic or Latino group?**

☐ No, not Spanish/Hispanic/Latino
☐ Yes, Mexican, Mexican Am., Chicano
☐ Yes, Puerto Rican
☐ Yes, Cuban
☐ Yes, other Spanish/Hispanic/Latino – **What is this group?**

Figure 4f. Census Enumerator Short Form

5. **Are any of the persons that I have listed Mexican, Puerto Rican, Cuban, or of another Hispanic or Latino group?**

☐ No, not Spanish/Hispanic/Latino
☐ Yes, Mexican, Mexican Am., Chicano
☐ Yes, Puerto Rican
☐ Yes, Cuban
☐ Yes, other Spanish/Hispanic/Latino – **What is this group?**

Appendix C. Facsimiles of C2SS and Census 2000 Questions
Race Questions

Figure 5a. C2SS Mail Form

Figure 5b. C2SS CATI/CAPI Instrument

Figure 5c. Census Mail Long Form

Figure 5d. Census Mail Short Form

Appendix C. Facsimiles of C2SS and Census 2000 Questions
Race Questions

Figure 5e. Census Enumerator Long Form

6. Now choose one or more races for each person. Which race or races does each person consider himself/herself to be?

☐ White
☐ Black, African Am., or Negro
☐ Asian Indian
☐ Chinese
☐ American Indian or Alaska Native – **What is the name of (your/. . .'s) enrolled or principal tribe?**

☐ Filipino
☐ Japanese
☐ Korean
☐ Vietnamese
☐ Other Asian

What is this race?

☐ Native Hawaiian
☐ Guamanian/ Chamorro
☐ Samoan
☐ Other Pacific Islander
☐ Some other race

Figure 5f. Census Enumerator Short Form

6. Now choose one or more races for each person. Which race or races does each person consider himself/herself to be?

☐ White
☐ Black, African Am., or Negro
☐ Asian Indian
☐ Chinese
☐ American Indian or Alaska Native – **What is the name of (your/. . .'s) enrolled or principal tribe?**

☐ Filipino
☐ Japanese
☐ Korean
☐ Vietnamese
☐ Other Asian

What is this race?

☐ Native Hawaiian
☐ Guamanian/ Chamorro
☐ Samoan
☐ Other Pacific Islander
☐ Some other race

Appendix C. Facsimiles of C2SS and Census 2000 Questions
Housing Tenure Questions

Figure 6a. C2SS Mail Form

Figure 6b. C2SS CATI/CAPI Instrument

Figure 6c. Census Mail Long Form

Figure 6d. Census Mail Short Form

Figure 6e. Census Enumerator Long Form

Figure 6f. Census Enumerator Short Form

Appendix D. Selected Federal Uses of
General Demographic and Housing Characteristics

Item	Federal Uses
Sex	• Required by the Department of Education and Health and Human Services to fund, implement, and evaluate various social and welfare programs, such as the Special Supplemental Food Program for Women, Infants, and Children; • Needed for laws that promote equal employment opportunity for women; • Used to develop the Department of Veterans Affairs' state projections of veterans' facilities and benefits; • Used to assess the social and economic status of boys and girls in each school district in the Department of Education's report for Congress; and • Needed by the Equal Employment Opportunity Commission to establish and evaluate guidelines dealing with equal employment opportunity.
Age	• Provides data on voting age population required for legislative redistricting; • Used to identify school districts with school-age children in poverty; • Needed by the Department of Veterans Affairs to develop state projections on the need for hospitals, nursing homes, cemeteries, and other benefits for veterans; and, • Used in programs to target funds or services to children, working-age adults, or the population 65 years and over.

Appendix D. Selected Federal Uses of
General Demographic and Housing Characteristics

Relationship	• Provides information about changes in the composition of the American family which is essential for planning and carrying out a number of federal programs; • Used to define poverty – which is based on income thresholds that vary by size of family and number of children; • Used to determine, in part, how the money is spent in federally-funded nutrition and education programs such as the Special Supplemental Food Program for Women, Infants, and Children; and, • Used by the Social Security Administration to handle a number of planning issues under the Old Age, Survivors, and Disability Insurance and the Supplemental Security Income Programs.
Hispanic origin	• Essential to ensure enforcement of bilingual election rules under the Voting Rights Act; • Used to meet guidelines mandated in the October 1997 revised standards for the classification of federal data on race and ethnicity (issued by the Office of Management and Budget); and, • Used to monitor and enforce equal employment opportunities under the Civil Rights Act.
Race	• Needed to assess racial disparities in health and environmental risks; • Used under the Voting Rights Act to identify minority language groups that require voting materials in their own language; and, • Used under the Civil Rights Act to assess fairness of employment practices.

Appendix D. Selected Federal Uses of General Demographic and Housing Characteristics

Tenure	• Used by the Department of Housing and Urban Development as an integral component of the formula to establish Fair Marked Rents and is essential for the Federal Housing Authority's mortgage insurance program; • Needed by the Department for Health and Human Services to profile the tenure of Low-Income Home Energy Assistance Program households; • Used by the Bureau of Economic Analysis, along with other census data, to prepare the value of housing services for the National Income and Product Accounts; • Used to assess the costs of utilities based on the type of homeownership; and, • Used to calculate homeownership vacancy rates and rental vacancy rates that Federal and local agencies need in order to evaluate the overall viability of local housing markets.

Appendix E. Characteristics of Counties Used in Sub-National Comparisons

These counties represent areas with populations that meet the 65,000 minimum required for yearly data release. They are a diverse set of areas that were chosen to be test sites because they vary geographically and demographically. The table below summarizes geographic, demographic, social, economic, and housing characteristics for the 18 counties used in this report. Geographic data are based on Census 2000. The remaining data are based on the C2SS. The sites are ordered alphabetically, by state.

ACS Test Site	Square Kilometers	Census 2000 Household Population	Density[1]	Percent White, Non Hispanic	Percent Foreign Born	Percent Language other than English	Percent of Persons under age 18	Percent Vacant Housing Units	Percent of Children in Poverty
Jefferson, AR	2,292	78,989	34	48	1	2	28	14	31
Pima, AZ	23,794	821,712	35	62	11	27	25	10	21
San Francisco, CA	121	756,976	6,258	44	37	45	15	6	12
Tulare, CA	12,495	361,980	29	42	22	45	34	8	36
Broward, FL	3,131	1,603,094	512	58	26	29	24	13	14
Black Hawk, IA	1,470	121,535	83	87	5	7	24	5	17
Lake, IL	1,160	623,378	538	74	15	21	30	5	8
Hampden, MA	1,602	441,799	276	75	8	22	27	6	25
Calvert, MD	557	73,982	133	83	2	4	30	9	4
Madison, MS	1,863	72,615	39	60	2	3	29	7	15
Douglas, NE	857	451,878	527	78	6	9	27	6	14
Bronx, NY	109	1,285,415	11,793	14	29	54	31	7	41
Rockland, NY	451	279,104	619	72	18	28	29	3	10
Franklin ,OH	1,399	1,046,872	749	75	7	9	26	8	16
Multnomah, OR	1,127	643,798	571	77	13	17	23	6	17
Schuylkill ,PA	2,017	143,110	71	98	1	4	22	11	12
Sevier, TN	1,534	70,533	46	97	1	2	23	17	11
Yakima, WA	11,127	218,844	20	56	15	31	32	7	29

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[1]Persons per square kilometer

Appendix F. Summary of County-Level Differences

The difference between the C2SS and Census 2000 values was determined (C2SS minus Census 2000) and only the statistically significant differences are displayed in these tables. A positive value indicates that the C2SS value was greater than the Census 2000 value. A negative value means that the C2SS has a lower estimate for this characteristic than Census 2000.

Table 1.   Sex, Statistically Significant Differences in County-Level Estimates (C2SS minus Census 2000)

The C2SS estimates exclude final population and housing controls.

Total Population	Sevier, TN	Madison, MS	Calvert, MD	Jefferson, AR	Black Hawk, IA	Schuylkill, PA	Yakima, WA	Rockland, NY	Tulare, CA	Hampden, MA	Douglas, NE	Lake, IL	Multnomah, OR	San Francisco, CA	Pima, AZ	Franklin, OH	Bronx, NY	Broward, FL
Male			-1.9%						-1.9%	-1.2%			-1.0%		-0.7%		-1.6%	-0.4%
Female			1.9%						1.9%	1.2%			1.0%		0.7%		1.6%	0.4%

Appendix F. Summary of County-Level Differences

Table 2.   Age, Statistically Significant Differences in County-Level Estimates (C2SS minus Census 2000)

The C2SS estimates exclude final population and housing controls.

Total Population	Sevier, TN	Madison, MS	Calvert, MD	Jefferson, AR	Black Hawk, IA	Schuylkill, PA	Yakima, WA	Rockland, NY	Tulare, CA	Hampden, MA	Douglas, NE	Lake, IL	Multnomah, OR	San Francisco, CA	Pima, AZ	Franklin, OH	Bronx, NY	Broward, FL
Under 5 years	-1.3%	-1.3%																
5 to 9 years			-1.1%		-1.4%						-0.9%							
10 to 14 years							-0.9%											
15 to 19 years		1.7%										-0.4%		-0.5%				-0.2%
20 to 24 years								-0.5%	-1.1%				-0.4%	-0.6%		-0.6%	-0.7%	
25 to 34 years							1.1%									-0.6%	-1.0%	-0.5%
35 to 44 years																		0.5%
45 to 54 years																0.6%		
55 to 59 years																		
60 to 64 years			1.1%						0.7%								0.3%	
65 to 74 years																0.4%	0.7%	
75 to 84 years									0.4%						0.3%		0.3%	
85 years and over							-0.2%											
18 years and over	2.0%		2.1%	1.5%			2.0%											
21 years and over			2.3%				2.3%											
62 years and over			1.5%						0.8%						0.7%	0.6%	1.3%	
65 years and over															0.6%	0.4%	1.1%	
Male	1.1%																0.4%	
Female									0.5%			0.4%			0.4%		0.7%	

Appendix F. Summary of County-Level Differences

Table 3a. Relationship, Statistically Significant Differences in County-Level Estimates (C2SS minus Census 2000)

The C2SS estimates exclude final population and housing controls.

Total Population

	Sevier, TN	Madison, MS	Calvert, MD	Jefferson, AR	Black Hawk, IA	Schuylkill, PA	Yakima, WA	Rockland, NY	Tulare, CA	Hampden, MA	Douglas, NE	Lake, IL	Multnomah, OR	San Francisco, CA	Pima, AZ	Franklin, OH	Bronx, NY	Broward, FL
Householder					1.1%		1.6%		1.6%	0.9%	0.7%	0.9%		1.5%	1.2%	0.7%	1.5%	1.0%
Spouse							0.7%											-0.4%
Child	-1.5%		-1.9%		-1.6%		-2.2%		-1.0%	-1.0%	-1.2%			-1.1%	-1.1%			-0.6%
Other relative					0.8%									1.1%				
Nonrelative									-0.8%			-0.5%		-1.5%		-0.7%	-0.9%	
Unmarried partner	0.8%			0.5%		-0.5%		-0.2%	-0.4%			-0.3%					-0.2%	

Table 3b. Household Type, Statistically Significant Differences in County-Level Estimates (C2SS minus Census 2000)

The C2SS estimates exclude final population and housing controls.

Total Population

	Sevier, TN	Madison, MS	Calvert, MD	Jefferson, AR	Black Hawk, IA	Schuylkill, PA	Yakima, WA	Rockland, NY	Tulare, CA	Hampden, MA	Douglas, NE	Lake, IL	Multnomah, OR	San Francisco, CA	Pima, AZ	Franklin, OH	Bronx, NY	Broward, FL
Family households (families)											-1.4%				-1.5%		-1.1%	-1.3%
With own children under 18 years							-2.5%								-1.2%	-0.9%	-1.5%	
Married-couple families									-4.2%	-1.8%	-1.1%	-1.4%			-1.3%		-1.8%	-2.1%
With own children under 18 years									-3.5%	-1.8%		-1.8%			-1.4%	-1.3%	-1.8%	-1.3%
Female householder, no husband present									1.8%	1.1%		1.0%					1.1%	0.9%
With own children under 18 years									1.6%	1.4%		0.9%	0.6%		0.6%			0.6%
Nonfamily households											1.4%				1.5%		1.1%	1.3%
Householder living alone									1.3%	1.1%					1.5%		1.7%	1.3%
65 years and over										0.8%		0.9%			0.6%		1.4%	0.8%

Appendix F. Summary of County-Level Differences

Table 4.   Hispanic Origin, Statistically Significant Differences in County-Level Estimates (C2SS minus Census 2000)
The C2SS estimates exclude final population and housing controls.

Total Population	Sevier, TN	Madison, MS	Calvert, MD	Jefferson, AR	Black Hawk, IA	Schuylkill, PA	Yakima, WA	Rockland, NY	Tulare, CA	Hampden, MA	Douglas, NE	Lake, IL	Multnomah, OR	San Francisco, CA	Pima, AZ	Franklin, OH	Bronx, NY	Broward, FL
Hispanic or Latino (of any race)		-0.7%							-2.0%									1.2%
Mexican		-0.4%						-0.5%	2.0%	-0.1%			1.0%		2.8%		-0.6%	
Puerto Rican	-0.1%				-0.1%						-0.1%						1.6%	0.4%
Cuban												-0.1%						
Other Hispanic or Latino				-0.3%			-2.3%		-3.9%	-0.7%					-1.9%	-0.2%	-1.9%	
Not Hispanic or Latino		0.7%							2.0%									-1.2%

Appendix F. Summary of County-Level Differences

Table 5.   Race, Statistically Significant Differences in County-Level Estimates (C2SS minus Census 2000)

The C2SS estimates exclude final population and housing controls.

Total Population	Sevier, TN	Madison, MS	Calvert, MD	Jefferson, AR	Black Hawk, IA	Schuylkill, PA	Yakima, WA	Rockland, NY	Tulare, CA	Hampden, MA	Douglas, NE	Lake, IL	Multnomah, OR	San Francisco, CA	Pima, AZ	Franklin, OH	Bronx, NY	Broward, FL
One race		0.2%	-1.5%					1.1%	1.7%	0.6%				1.2%		0.4%	2.6%	1.1%
White			-3.1%						8.7%	4.4%		3.5%	2.5%	2.9%	4.5%	1.1%	-2.8%	1.1%
Black or African American									-0.5%				-0.8%		-0.6%			
American Indian and Alaska Native				-0.1%		-0.1%			-0.5%								-0.4%	
Asian	-0.3%		-0.6%								-0.3%							
Native Hawaiian and Other Pacific Islander									-0.1%	-0.0%							-0.1%	
Some other race									-6.7%	-3.9%		-3.4%	-1.5%		-3.6%	-0.5%	6.7%	-0.4%
Two or more races		-0.2%	1.5%					-1.1%	-1.7%	-0.6%				-1.2%		-0.4%	-2.6%	-1.1%
Race alone or in combination																		
White									7.3%	4.1%		3.2%	2.6%	2.0%	4.5%		-4.1%	1.1%
Black or African American			3.0%			-0.2%			-0.5%				-0.8%		-0.7%		-1.8%	
American Indian and Alaska Native			1.2%						-0.9%			0.2%	0.7%	-0.2%			-0.7%	
Asian	-0.4%	-0.7%									-0.4%					-0.4%		
Native Hawaiian and Other Pacific Islander					-0.1%					-0.2%						-0.1%	-0.3%	
Some other race		-0.4%						-1.4%	-8.2%	-4.5%		-3.9%	-2.4%		-3.8%	-0.9%	4.3%	-1.6%

Appendix F. Summary of County-Level Differences

Table 6. Housing Occupancy, Statistically Significant Differences in County-Level Estimates (C2SS minus Census 2000)

The C2SS estimates exclude final population and housing controls.

Total Housing Units	Sevier, TN	Madison, MS	Calvert, MD	Jefferson, AR	Black Hawk, IA	Schuylkill, PA	Yakima, WA	Rockland, NY	Tulare, CA	Hampden, MA	Douglas, NE	Lake, IL	Multnomah, OR	San Francisco, CA	Pima, AZ	Franklin, OH	Bronx, NY	Broward, FL
Occupied housing units	7.6%			-3.1%						-0.8%		-1.0%		-1.4%	-0.8%	-1.7%	-1.8%	-1.6%
Vacant housing units	-7.6%			3.1%						0.8%		1.0%		1.4%	0.8%	1.7%	1.8%	1.6%

Table 7. Tenure, Statistically Significant Differences in County-Level Estimates (C2SS minus Census 2000)

The C2SS estimates exclude final population and housing controls.

Occupied Housing Units	Sevier, TN	Madison, MS	Calvert, MD	Jefferson, AR	Black Hawk, IA	Schuylkill, PA	Yakima, WA	Rockland, NY	Tulare, CA	Hampden, MA	Douglas, NE	Lake, IL	Multnomah, OR	San Francisco, CA	Pima, AZ	Franklin, OH	Bronx, NY	Broward, FL
Owner-occupied							-2.2%			-1.8%			-1.0%	-2.1%				-0.9%
Renter-occupied							2.2%			1.8%			1.0%	2.1%				0.9%