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**2010 CENSUS PLANNING MEMORANDA SERIES**

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MEMORANDUM FOR The Distribution List

From: Arnold Jackson *[signed]*
Acting Chief, Decennial Management Division

Subject: 2010 Census Alternative Questionnaire Experiment (AQE): Census 2000 Form Replication Panel

Attached is the 2010 Census Alternative Questionnaire Experiment (AQE): Census 2000 Form Replication Panel Report. The Quality Process for the 2010 Census Test Evaluations, Experiments, and Assessments was applied to the methodology development and review process. The report is sound and appropriate for completeness and accuracy.

If you have questions about this report, please contact Samantha Stokes at (301) 763-7775.

Attachment

January 10, 2011

# 2010 Census Alternative Questionnaire Experiment (AQE): Census 2000 Form Replication Panel

U.S. Census Bureau standards and quality process procedures were applied throughout the creation of this report.

**FINAL DRAFT REPORT**

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# EXECUTIVE SUMMARY

## Purpose and Background

The purpose of the *2010 Census Alternative Questionnaire Experiment: Census 2000 Form Replication Panel* was to determine the combined data effects of all questionnaire changes made to the 2010 Census mail questionnaire.

Since 1970, the U.S. Census Bureau has implemented an experimental program to evaluate a variety of alternative methodologies and questionnaire design strategies. Traditionally, an experiment has been conducted during the decennial census in order to evaluate the cumulative effects of all content changes to the form from the previous census. As was done in Census 2000, the 2010 Census Alternative Questionnaire Experiment compared questionnaire content from two censuses. Specifically, we compared the results from a control panel using the 2010 Census questionnaire to those obtained from a questionnaire that replicated the Census 2000 questionnaire wording, categories, order, and other essential design features such as the use of icons in the column headers. Numerous changes were made to the 2010 Census questionnaire, compared to the short form used in Census 2000. In addition to changes in the overall questionnaire format and appearance, almost every census data item underwent at least some change in terms of response categories, instructions, and/or question wording. Although most changes were critically tested during the mid-decade to evaluate their impact, some minor changes were implemented based on subject matter expertise. By comparing the Census 2000-style questionnaire with the 2010 Census questionnaire in the same time frame, we can eliminate the impact of real changes to the population and can more clearly assess the combined effects of the questionnaire design changes.

The specific research questions for this experiment are:

*1. How do the changes made to the 2010 Census questionnaire affect overall return rates, form completeness, item nonresponse, and specific item distributions?*

*2. Will the addition of the undercount and overcount questions on the 2010 Census questionnaire and the changes to the residency rules description result in a significant difference in household population count when comparing the 2000 Content panel to the 2010 Census form?*

*3. What effect will removing the "Foster child" response option from the relationship question have on the distribution of the other response categories, specifically "Other relative" and "Other nonrelative"?*

## Panel Design

The Control panel (2010 Census Content panel) used the production 2010 Census questionnaire. The Census 2000 Content panel incorporated the Census 2000 short form questionnaire content on a 2010 Census-style form. That is, the form was blue and had the same look and feel as the 2010 Census form, but contained Census 2000 questionnaire wording, categories, order, type

size, and other essential design features. The experimental questionnaire was used for both the initial questionnaire and replacement questionnaire mailings (which were sent to nonrespondents).

**Results**

Compared to the Census 2000 Content panel, the 2010 Census Content panel had a significantly lower overall mail return rate. When disaggregated by initial and replacement questionnaires, there were no differences in the initial questionnaire mail return rates, but a significantly lower replacement mail return rate for the 2010 Census Content panel. Similar results were seen for the response rate calculations.

The analysis assessed item nonresponse and response distributions for all census data items. When assessing item-level differences between the 2010 Census content and the Census 2000 content, there is an important overarching limitation that must be considered. This study is the first time that all of the questionnaire changes that appear on the 2010 Census form were evaluated together as a composite set of treatments on the same form. The numerous item-level changes made over the decade (including question changes, narrowing of margins, etc.) resulted in the 2010 Census form containing considerably less white space between and around questions, which led to a more crowded appearance. We cannot determine how the overall appearance of the final form may have affected respondent behavior with regard to individual items. As such, the combined effects of all changes to the form must be considered when assessing the causal nature of item-level differences.

Results indicate that the 2010 Census Content panel had a significantly higher rate of item nonresponse for the population count question, when compared to the Census 2000 Content panel. Upon review of the 2010 Census form, we believe that the changes made to the residence rules instructions and the location of the population count response box may have made it difficult for respondents to see this question on the form. The average reported population count increased significantly on the 2010 Census Content panel, however, the difference was small. More research is needed to determine how meaningful the difference is and any potential impacts.

The tenure item nonresponse analysis revealed that the question on the 2010 Census Content panel had significantly lower item nonresponse, compared to the Census 2000 Content panel. This finding lends support to the previous research on the changes made to this question, even in the presence of all other questionnaire changes. There were no significant differences in response distributions across the two panels.

The item nonresponse analysis for the relationship question yielded no significant differences overall. In terms of response distributions, we saw a significant increase in reporting "Father or Mother," "Parent-in-law," and "Other nonrelative" in the 2010 Census Content panel when comparing to the Census 2000 Content panel. The increase in "Other nonrelative" may be due in part to the removal of the "Foster Child" category in the 2010 Census Content panel. The increase in "Parent-in-law" appears to be due to a primacy effect. Another potential primacy effect was found when we saw a decrease in respondents reporting "Roomer or Boarder" on the

2010 Census Content panel, compared to the Census 2000 Content panel. Lastly, the Census 2000 Content panel had more multiple responses than the 2010 Census Content panel, which is consistent with previous research.

Item nonresponse was significantly higher for the sex question on the 2010 Census Content panel, compared to the Census 2000 Content panel. Since no changes were made to the sex question between Census 2000 and the 2010 Census, this finding may be attributable to the overall crowded appearance of the 2010 Census form. As expected, there were no significant differences in the response distributions for sex.

Results showed a significantly higher item nonresponse rate for age and date of birth on the 2010 Census Content panel, for Person 1, compared to the Census 2000-style questionnaire. This may be due to the formatting changes made to the question and the resulting reduction in white space surrounding the two items. The response distribution for respondent-provided age yielded a significantly higher proportion of respondents reporting age zero for Persons 2 though 6 in the 2010 Census Content panel, which is attributable to the added instruction on how to report babies less than a year old. There were no other significant differences in the response distributions for age.

The 2010 Census Content panel item nonresponse rates were higher for Hispanic origin when compared to the Census 2000 Content panel. The response distribution analysis for the Hispanic origin question resulted in a significant increase in reporting of the "Mexican, Mexican Am., Chicano" checkbox group and a significant decrease in the "Another Hispanic, Latino, or Spanish Origin" checkbox for the 2010 Census Content panel, compared to the Census 2000 Content panel. The 2010 Census Content panel also resulted in significantly more reporting of two or more origins, when compared to the Census 2000 Content panel. In general, the changes to the Hispanic origin item resulted in more responses to the checkbox groups, more write-ins of the example groups, less write-ins that were general descriptors, and fewer "Yes, another Hispanic, Latino, or Spanish origin" responses that were not accompanied by a write-in.

Item nonresponse to race was lower in the 2010 Census Content panel, when compared to the 2000 Census Content panel. In terms of response distributions, there was a significant decrease in responses to "Some other race" for the 2010 Census Content panel, compared to the Census 2000 Content panel, and a significant increase in reporting in the "White" category. The Hispanic origin and race distribution results were largely consistent with what was expected out of the question changes, even in the presence of all other questionnaire changes.

**Conclusions and Recommendations**

In summary, the 2010 Census Content panel had lower return rates than the 2000 Census Content panel and we saw an increase in item nonresponse for several of the census data items on the 2010 Census Content panel when compared to the Census 2000 Content panel. For many census data items, this was the opposite of mid-decade testing results, which were the drivers for making many of the question changes. In addition, we saw some shifts in response distributions, some of which were expected due to item-level question changes.

When considering item-level results, it is important to keep in mind that this study was the first time that all of the question changes made to the 2010 Census form were evaluated together as a composite set of treatments within a controlled experiment. Questionnaire changes made between Census 2000 and the 2010 Census resulted in lengthier content and a significant reduction of white space on the questionnaire, which, as other research suggests, may have contributed to an increase in item nonresponse, as well as the decrease in overall returns.

In light of these findings, we recommend considering an alternative form design to achieve an increase in white space on the form. However, the method used to gain the increase in white space must be considered in terms of a cost to benefit ratio. For example, if it is decided that a larger paper form is needed, that larger form will likely cost more to produce and mail. The increased cost in production will need to be compared to any potential savings in nonresponse followup costs (due to the potential gains in mail return rates) to determine the overall impact. Additional research and testing should be dedicated to determining a solution.

## 1. Introduction

During the 2010 Census, the Census Bureau implemented the Alternative Questionnaire Experiment (AQE) in which various questionnaire treatments were tested. As part of the AQE, the Census 2000 Form Replication Panel was designed to determine the combined data effects of all questionnaire changes made in the 2010 Census mail questionnaire since Census 2000.

## 2. Background

Since 1970, the U.S. Census Bureau has implemented an experimental program to evaluate a variety of alternative methodologies and questionnaire design strategies. Traditionally, an experiment has been conducted during the decennial census in order to evaluate the cumulative effects of all content changes to the form from the previous census. The most recent example of this research was the Census 2000 AQE, of which one experimental panel was dedicated to determining how questionnaire changes affected reporting of race and Hispanic origin. No overall differences in return rates were found between the person-based Census 2000-style and matrix-format 1990 Census-style forms. However, results did indicate that the Census 2000-style questionnaire showed substantial improvement in the completeness of race and Hispanic origin reporting. The study also found that adding the "mark one or more" instruction to the race question on the Census 2000 questionnaire led to fewer reports of "Some other race," while changes to the Hispanic origin question elicited fewer reports of specific Hispanic groups, and more reports of general Hispanic identity than the 1990 Census-style questionnaire. Lastly, the findings indicated that item nonresponse rates were generally lower in a person-based format than a matrix-format (Martin, 2002).

As was done in the 2000 AQE, we compared questionnaire content from two censuses in this experiment. Specifically, we compared the results from a control panel using the 2010 Census questionnaire to those obtained from a questionnaire that replicated the Census 2000 questionnaire wording, categories, order, and other essential design features such as the use of icons in the column headers. By comparing results from the Census 2000-style and 2010 Census questionnaires in the same time frame, we were able to eliminate the impact of real changes to the population to more clearly assess the combined effects of the questionnaire design changes. Numerous changes were made to the 2010 Census questionnaire, compared to the short form used in Census 2000. In addition to changes to overall questionnaire format and appearance, almost every census data item underwent at least some changes in terms of response categories, instructions, and/or question wording. Although most changes were critically tested during the mid-decade to evaluate their impact, some minor changes were implemented based on subject matter expertise. Major changes to the questionnaire are highlighted below.

*Questionnaire Format and Appearance*

The size of the black questionnaire header was reduced for the 2010 Census, and the text within was also changed. The United States Department of Commerce seal was removed. Both the Census 2000 and 2010 Census questionnaires included the words "Start Here" at the top of the left column of the questionnaire; however, the size of the text was reduced for the 2010 questionnaire. The 2010 questionnaire also had narrower margins and did not include the icons

that were used throughout the Census 2000 questionnaire. The telephone number question was moved before Person 1's name. Lastly, the black column headers on each person panel were removed. Overall, the 2010 Census questionnaire contained much less white space than the Census 2000 questionnaire. The term "white space" refers to the open space that does not contain survey content. White space includes the space surrounding questions and response options as well as the margins.

*Residence Rules Instructions and Population Count*

The residence rules instructions underwent a significant amount of testing, starting with the Census 2000 AQE, and continuing throughout the decade. Ultimately, the residence rules instructions were modified from the include/exclude lists used in Census 2000 to a principle-based approach used in the 2010 Census. The principle-based approach attempted to explain the central principles and concepts behind the enumeration. This modified instruction was designed to let respondents decide who should be included on the roster based on the principles. The 2005 NCT results indicated that households receiving this approach were less likely to have roster changes identified through Coverage Followup (CFU), thereby indicating that this approach helped respondents to provide a more complete household roster during the initial enumeration (Sheppard et al., 2007). As part of this new approach, the population count response box was moved from the top of the residence rules instructions to the bottom.

*Tenure*

The household tenure question underwent a couple of changes between Census 2000 and the 2010 Census in an effort to improve completeness and accuracy of reporting. Mid-decade research suggested that respondents had a difficult time with the term "cash rent" given that most rent is paid by check rather than cash (Hunter and DeMaio, 2004). Furthermore, Census 2000 research showed relatively low reliability for the category "occupied without payment of cash rent" (Singer and Ennis, 2003). The 2005 NCT tested the removal of the term "cash rent" and determined it was best to remove the term from the renter categories to avoid confusion (Rothhaas et al., 2006). The 2005 NCT also tested the inclusion of the phrase "include home equity loans" in the "Owned by you or someone in this household with a mortgage or loan" response category, due to low reliability for this item in Census 2000 (Singer and Ennis, 2003). The 2005 NCT results showed a shift in respondents who reported owning a home outright to owning a home with a mortgage (Rothhaas et al., 2006). As a result, both of these changes were implemented on the 2010 Census questionnaire.

*Relationship*

Several relationship categories were modified for the 2010 Census questionnaire. The "Natural-born son/daughter" category was changed to "Biological son or daughter." Cognitive research showed that some respondents thought "natural-born" meant that no medication was involved in the birth, natural as opposed to caesarian birth, or natural conception as opposed to in-vitro fertilization (Hunter and DeMaio, 2004). In addition, it translates to "born out of wedlock" in colloquial Spanish. Other Census Bureau surveys, such as the Survey of Income and Program Participation, already use the word "biological" as opposed to "natural." The 2005 NCT verified

that this change had no effect on the response distribution (Rothhaas, 2006), thus the change was adopted for the 2010 Census questionnaire.

In Census 2000, the "Other relative" category included a write-in. Population Division analysts noted that a large number of write-ins contained responses that were: not relatives, duplicates of other response categories listed on the form, foreign language equivalents (e.g. "hermano" instead of "brother"), or uncodable responses (Rothhaas et al., 2006). The exclusion of the write-in field was tested in the 2005 NCT and was found to have no harmful effect on the distribution (Rothhaas et al., 2006). As a result, this change was adopted for the 2010 Census questionnaire.

Although the 2005 NCT tested changing the "Foster child" category to "Foster child or foster adult" with no ill effects (Rothhaas et al., 2006), this category was ultimately removed from the questionnaire for the 2008 Census Dress Rehearsal, as well as the 2010 Census questionnaire because of space issues on the questionnaire.

Lastly, a few formatting modifications were made to the relationship question. In an effort to clarify the response categories, slashes (/) or commas (,) were replaced with the conjunction "or" where appropriate. In addition, to try to reduce the number of multiple responses, the "If NOT RELATED to Person 1" spanner was removed and the categories were redistributed to no longer appear in separate related/unrelated lists. This also helped to save space on the form.

*Age and Date of Birth*

For the age and date of birth questions, an additional instruction was included to clarify how respondents should report babies' ages. Research has shown a serious problem with respondents reporting age zero. Spencer and Perkins (1998) noted that the population reporting age zero in the 1996 National Content Survey was only 25 percent of the size it should be, apparently due to parents reporting their babies' ages in months rather than answering zero years. The 2005 NCT tested a new instruction that asked respondents to "Please report babies as age 0 when the child is less than 1 year old." As a result, the 2005 NCT saw an increase in reporting age zero. This new instruction was included on the 2010 Census questionnaire.

*Race and Hispanic origin*

Changes to the Hispanic origin and race questions were extensively tested between Census 2000 and the 2010 Census. Among other things, the 2003 NCT tested the use of examples for the "other" Hispanic origin category, the "Other Asian" race category, and "Other Pacific Islander" race category. In addition, the 2003 NCT tested the word "origin," as well as replacing slashes (/) with commas (,) in the Hispanic origin question response categories that referred to "Hispanic, Latino, or Spanish." Based in part on the study results (Sheppard et al., 2004), these changes were ultimately included on the 2010 Census questionnaire.

Further research was conducted as part of the 2005 NCT (Alberti, 2006), including testing an addition to the note above the Hispanic origin question that reminded respondents that Hispanic origins are not races, as well as reordering the Hispanic origin identifiers (Hispanic, Latino,

Spanish). The removal of the race instruction "to indicate what this person considers himself/herself to be," was also tested. All of these changes were ultimately included on the 2010 Census questionnaire.

*New questions on the 2010 Census questionnaire (Undercount and Overcount)*

As part of the 2005 NCT, the Census Bureau put forth the largest and most ambitious effort ever designed to evaluate procedural and methodological improvements to address the coverage of people in the census (Sheppard et al., 2007). New variations in questionnaire content were tested, including the introduction of two new questions: undercount and overcount. The addition of these two questions were tested with the intent of identifying households with potential roster errors prior to CFU, thereby reducing the percentage of households with incorrect rosters remaining after CFU is conducted and significantly improving person coverage in the census (Sheppard et al., 2007).

The undercount question is a household-level item, which is placed just after the population count box and just before tenure. The goal of this question is to determine whether anyone was omitted from the household count by giving respondents examples of the types of people who are typically omitted. The 2005 NCT tested multiple versions of the undercount question and one version of the question was ultimately selected for inclusion on the 2010 Census questionnaire.

The overcount question is a person-level item, which is placed after race in each person column. It is intended to identify households with erroneous enumerations by determining whether each person listed in the household has another place where they sometimes live or stay. As a result of the 2005 NCT, one version of the question was determined to be superior in its ability to identify households with erroneous enumerations. This question was ultimately included on the 2010 Census questionnaire with minor changes from the version tested in the 2005 NCT.

A summary of all the questionnaire changes since Census 2000 can be found in Appendix A. Though we have discussed some of the most thoroughly tested changes implemented on the 2010 Census questionnaire, they are by no means all the changes that have occurred. Images of the Census 2000 and 2010 Census questionnaires can be found in Appendix B.

## 3. Methodology

### 3.1 Questions to Be Answered

*1. How do the changes made to the 2010 Census questionnaire affect overall return rates, form completeness[1], item nonresponse, and specific item distributions?*

The goal of the changes made to the 2010 Census questionnaire was to increase both response and data quality, compared to Census 2000. Although most of the changes were tested in mid-decade tests prior to their implementation in the 2010 Census, this experiment allowed for testing

[1] Form completeness data do not appear in this report since they did not provide any important results beyond that of the item nonresponse analysis.

the combined effects of the changes in a controlled, census environment. It is also possible that the question changes could have affected the distribution of responses to particular items. Item distributions were examined to discover what impact, if any, the questionnaire changes had. An experimental panel in the decennial census environment was the most practical way to test the combined effects of all content changes to the census short form since 2000 because it negated the impact of population changes between census periods.

*2. Will the addition of the undercount and overcount questions on the 2010 Census questionnaire and the changes to the residency rules description result in a significant difference in household population count when comparing the Census 2000 Content panel to the 2010 Census Content panel?*

The 2010 Census questionnaire contained two new questions: a household-level undercount question, which asked if there were individuals who were not counted, but were staying at that location; and a person-level overcount question, which asked respondents whether or not each person lived elsewhere part of the time. These questions were important for identifying the correct number of residents that belonged to each household.

A comparison of within-household coverage measures was also conducted to determine if the changes to the 2010 Census questionnaire resulted in coverage improvement over Census 2000.

*3. What effect will removing the "Foster child" response option from the relationship question have on the distribution of the other response categories, specifically "Other relative" and "Other nonrelative"?*

As previously mentioned, the response category for "Foster child" in the relationship question was not included on the 2010 Census questionnaire. This change may have resulted in a shift in response distribution, as those people with foster children had to use a different response category. These responses are likely to fall into either the "Other relative" category or the "Other nonrelative" category. By comparing the Census 2000-style questionnaire to the 2010 Census-style questionnaire, we can assess the response shift due to the exclusion of the "Foster child" category.

### 3.2 Panel Design

The Control panel, referred to as the "2010 Census Content" panel, used the production 2010 Census questionnaire. The "Census 2000 Content panel" incorporated the Census 2000 short form questionnaire content on a 2010 Census-style questionnaire. That is, the questionnaire was blue and had the same look and feel as the 2010 Census questionnaire, but contained Census 2000 questionnaire wording, categories, order, type size, and other essential design features. Since images of the 2010 Census form were frequently used in 2010 advertisements and promotional materials, we wanted households who received the Census 2000 Content panel to know that the form they received was indeed their 2010 Census form. Therefore, it was important to use the 2010 color and style to maintain the same look and feel as the standard census form in an effort to eliminate any extraneous confounding factors. These experimental questionnaires were sent to a sample of households in lieu of the production 2010 Census

questionnaire and were used for both the initial and replacement mailings. (More information on the sample design can be seen in Section 3.4.)

### 3.3 Mailing Strategy

The mailing strategy for both panels was similar to the production 2010 Census mailing strategy. Each sampled household was mailed an advance letter, an initial questionnaire, and a reminder postcard.

All of the sampled households were included in the targeted replacement mailing operation, in which households that had not responded by the cutoff date (April 3, 2010) received a replacement questionnaire. This differed from the production 2010 Census system, in which the replacement strategy was divided into three groups based on an area's anticipated mail response: no replacement, targeted replacement delivered to households that had not responded by the cutoff date, or blanket replacement to all households. All experimental panels were exposed to the same replacement mailing strategy in order to maintain comparability of stratum results. (Note that the replacement questionnaires were identical to the initial questionnaires for each panel.) In addition, this targeted replacement strategy is a more realistic expectation for the 2020 Census since the three-tiered design was only implemented for the 2010 Census to alleviate operational concerns. Refer to Section 3.4 for more information on the sample design.

It should be noted that this study did not replicate the Census 2000 mailing strategy, in which no replacement questionnaires were mailed. For this study, households in both the Census 2000 Content panel and the 2010 Census Content panel were placed into the targeted replacement mailing operation.

### 3.4 Sample Design

The experimental sample was selected only from the mailout/mailback enumeration areas, excluding bilingual tracts, in the 50 U.S. states and the District of Columbia. Thus, results can be generalized to only the mailout/mailback universe.

The sample design for this experiment focused on stratifying based on an area's response propensity. We used the areas as delineated by the 2010 Census replacement mailing strategy in which high response areas did not receive a replacement mail form; medium response areas receive a targeted replacement mailing to nonrespondents by a certain date; and low response areas received a blanket replacement mailing to all housing units, regardless of their response status (See Zajac and Letourneau, 2008 for further details on the identification of the replacement mailing housing units). Although we selected our sample based on the delineation of the Census 2010 replacement mailing strategy, as stated earlier, all nonrespondents in this experiment received a targeted replacement mailing.

The sample allocation for these panels utilized a substantial oversampling of the Low Response Stratum, relative to the universe size, because there was greater benefit in improved response for harder-to-count areas and we wanted to be certain that we could effectively measure any such

improvement for this stratum (Bentley, 2009). The final sample size was just over 18,000 per panel (Compton, 2009)[2]. See Table 1 for the actual mailout size for each panel and stratum.

**Table 1. Mailout Sample Sizes by Panel and Stratum**

| PANEL | Total | RESPONSE STRATUM | | |
|---|---|---|---|---|
| | | **High** | **Medium** | **Low** |
| **Census 2000 Content** | 18,127 | 6,344 | 3,952 | 7,831 |
| **2010 Census Content** | 18,129 | 6,344 | 3,952 | 7,833 |
| **Total** | 36,256 | 12,688 | 7,904 | 15,664 |

Source: CPEX Sample File

### 3.5 Evaluation Measures

We conducted a variety of analyses in order to evaluate the combined data effects of all questionnaire changes made in the 2010 Census mail questionnaire. Both panels were evaluated based on return and response rates, item nonresponse, and response distributions.

An additional analysis was conducted for both panels to determine whether or not the combined impact of all questionnaire changes affected overall coverage. We examined the average household size, both before and after editing/imputation, to determine what effect, if any, these changes had on the population count. We also analyzed the proportion of households sent to CFU[3] for count discrepancies to determine the impact of the modified residence rules instructions and the addition of the undercount and overcount questions.

#### 3.5.1 Return and Response Rates

Return rates, which are one measure of census cooperation, indicate if respondents in one panel were more (or less) likely to respond than those in another panel. Return rates were calculated for the initial questionnaires and the replacement questionnaires, as well as overall. The initial questionnaire was sent out to all experimental cases in the initial mailing. For each experimental case, a replacement questionnaire was sent if no response was received from the initial mailing by a predetermined cutoff date.

Mail response rates were also evaluated as an alternative measure of compliance. Essentially, the mail response rates include all housing units in the mailout/mailback universe, whereas the mail return rates include only occupied housing units. Both return and response rates exclude questionnaires acquired through Telephone Questionnaire Assistance (TQA).

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[2] The final sample size differed slightly from the original target size of 20,000 per panel (Bentley, 2009) with a total of approximately 5,000 housing units in the "High Response Stratum," 5,000 housing units in the "Medium Response Stratum," and 10,000 housing units in the "Low Response Stratum." The difference was due to the incremental sampling scheme necessitated by the iterative address frame development as well as a shift in the universe for the final replacement area delineations compared to the original estimates, which were based on operational restrictions and data available at that time.

[3] CFU is a census operation that attempts to obtain additional coverage information (e.g., household residence data for cases indicating an undercount or overcount issue) by re-contacting census respondents via telephone.

The following formula was used to calculate return rates:

$$\textit{Mail Return Rate} = \frac{\textit{Unduplicated Nonblank Experimental Mail Returns (Initial or Replacement)}}{\textit{Occupied Housing Units in Universe}^{4}} * 100$$

The following formula was used to calculate response rates:

$$\textit{Mail Response Rate} = \frac{\textit{Unduplicated Nonblank Experimental Mail Returns (Initial or Replacement)}}{\textit{Housing Units in Universe}} * 100$$

*3.5.2 Item Nonresponse*

Item nonresponse is the percentage of records with missing data for a particular item, and is one indicator of data quality. Item nonresponse was only calculated for the census data items. Additionally, item nonresponse rates are only presented for Persons 1 through 6. Responses for Persons 7 through 12 are not included because those respondents are only asked a subset of the items asked for Person 1 through 6.

$$\textit{Item Nonresponse Rate} = \frac{\textit{Number of "Missing" Responses}}{\textit{Total Records}} * 100$$

"Missing" refers to responses that were not reported by the respondent. For person-level items, the item nonresponse rates were restricted to data-defined persons[5].

*3.5.3 Response Distributions*

We tested for differences in response distributions that may have been present due to the form design differences. Specifically, we looked at tenure, relationship, sex, age, Hispanic origin, and race. Additionally, we examined race by Hispanic origin as well as distributions for specific Hispanic, Asian, and Pacific Islander origins.

*3.5.4 Within-Household Coverage*

We compared within-household coverage measures for both panels, overall and by stratum. These include average household size before editing/imputation, average household size after editing/imputation, as well as the proportion of households sent to CFU for count discrepancies.

### 3.6 Variance Estimation

Due to the stratification in the sampling design, standard errors should typically be lower than those produced from a simple random sample. However, the homogeneity of results within a

[4] Occupied Housing Unit status, used in the denominator of the return rate formula, was based on the final occupancy status on the Census Unedited File (variable *final_status*). Note that the mail return rate formula used in the forthcoming report, 2010 Census Mail Response/Return Rates Assessment (Letourneau, 2011), differed from the formula used for this experiment since the former had additional comparability requirements with previous decennial census rates.

[5] A person is considered data-defined, or valid, if they have at least two of the person-level data items filled. The person-level data items include name, relationship, sex, age/date of birth, Hispanic origin, and race (Alberti, 2008).

household for person-level statistics typically increases the standard errors since the majority of person information within a household is typically provided by one respondent. To account for these factors, we used a stratified jackknife replication procedure. Due to software and processing limitations, we used a random groups method to create the replicates. The random groups method involved sorting housing units in the order they were selected and reassigning them to 250 different groups, or replicates. This was more efficient than creating one replicate for each housing unit (i.e., primary selection unit), which would have resulted in tens of thousands of replicates.

## 4. Limitations

When assessing item-level differences between the 2010 Census content and the Census 2000 content, there is an important overarching limitation that must be considered. Prior to implementing item-level changes on the 2010 Census questionnaire, the impact of those individual changes were tested during mid-decade tests. However, the 2010 Census form was the first time that we evaluated all of the changes together on the same form. The changes made to the 2010 Census form (including question changes, narrowing of margins, etc.) resulted in the 2010 Census form having less white space and a more crowded appearance than the Census 2000 form. Therefore, we are not able to determine the individual causal factors for differences in any specific item. As such, the combined effects of all changes to the form must be considered when assessing the causal nature of item-level differences.

## 5. Results

### 5.1 Universe

The universe for this experiment's mail response analysis consists of housing units that were selected in sample and mailed back a questionnaire. The universe excludes housing units considered unmailable, as well as housing units that were flagged as having called TQA for assistance (as the assistance provided by an agent could have potentially compromised the experiment)[6]. For all other analyses, the universe consists of the occupied housing unit subset of the larger universe described above. Table 2 below shows the number of occupied housing units in the universe for mail return rate estimates, item nonresponse estimates, response distributions, and within-household coverage estimates.

**Table 2. Number of Occupied Housing Units by Panel and Stratum**

| PANEL | Total | RESPONSE STRATUM | | |
|---|---|---|---|---|
| | | **High** | **Medium** | **Low** |
| **Census 2000 Content** | 15,395 | 5,797 | 3,428 | 6,170 |
| **2010 Census Content** | 15,299 | 5,784 | 3,409 | 6,106 |
| **Total** | 30,694 | 11,581 | 6,837 | 12,276 |

Source: CPEX Sample File

[6] Presumably, some of our sample cases called TQA for help but did not provide their Census ID. Those cases would not be removed, since we have no way of knowing that they called. We assume this is a small number of cases.

## 5.2 Mail Return and Response Rates

Mail return rates were the primary analytical measure used to evaluate the overall impact of all questionnaire changes made between Census 2000 and the 2010 Census. Return rates, which are one measure of census cooperation, indicate if respondents in one panel were more, or less, likely to respond than those in another panel. Table 3 contains mail return rate estimates by panel for the initial and replacement mailings, as well as overall at the national level.

**Table 3. Mail Return Rates and Panel Differences by Mailing**

| PANEL | Initial | Replacement | Overall |
|---|---|---|---|
| **Census 2000 Content** | 72.2 (0.39) | 7.3 (0.23) | 79.6 (0.34) |
| **2010 Census Content** | 71.4 (0.40) | 6.8 (0.23) | 78.2 (0.35) |
| | **Difference (Census 2000 – 2010 Census)** | | |
| **Census 2000 – 2010 Census** | 0.8 (0.57) | **0.6 (0.32)*** | **1.4 (0.51)*** |

Source: CPEX Sample and Response Files; Standard errors in parentheses.
*Denotes statistically significant difference between panels with an error rate of $\alpha$=0.10.

Although there were no differences in the initial questionnaire mail return rates, compared to the Census 2000 Content panel, the 2010 Census Content panel had a significantly lower replacement mail return rate and a significantly lower overall mail return rate. In research and planning meetings going into the 2010 Census, there were concerns that the questionnaire appeared too crowded. Presumably, the crowded look of the questionnaire may have caused some respondents to be less willing to complete it, although we do not have definitive causal evidence to support this conclusion.

Table 4 contains mail return rate estimates, by panel, for the initial and replacement mailings as well as the overall results, within each stratum.

**Table 4. Mail Return Rates and Panel Differences by Response Stratum by Mailing**

| PANEL | HIGH STRATUM | | | MEDIUM STRATUM | | | LOW STRATUM | | |
|---|---|---|---|---|---|---|---|---|---|
| | **Initial** | **Replace -ment** | **Overall** | **Initial** | **Replace -ment** | **Overall** | **Initial** | **Replace -ment** | **Overall** |
| **Census 2000 Content** | 77.5 (0.55) | 7.0 (0.33) | 84.4 (0.47) | 68.7 (0.81) | 7.8 (0.47) | 76.6 (0.70) | 60.9 (0.62) | 7.9 (0.35) | 68.8 (0.59) |
| **2010 Census Content** | 76.3 (0.57) | 6.7 (0.33) | 83.1 (0.46) | 67.9 (0.87) | 6.5 (0.44) | 74.5 (0.82) | 61.0 (0.58) | 7.2 (0.32) | 68.2 (0.59) |
| | **Difference (Census 2000 – 2010 Census)** | | | | | | | | |
| **Census 2000 – 2010 Census** | 1.2 (0.80) | 0.2 (0.46) | **1.4 (0.71)*** | 0.8 (1.20) | **1.3 (0.65)*** | **2.1 (1.09)*** | -0.1 (0.84) | 0.7 (0.45) | 0.6 (0.84) |

Source: CPEX Sample and Response Files; Standard errors in parentheses.
*Denotes statistically significant difference between panels with an error rate of $\alpha$=0.10.

Upon further analysis, we found that the higher overall mail return rate for the Census 2000 Content panel is isolated to the High and Medium Response Strata, while the higher replacement mail return rate is isolated to only the Medium Response Stratum. There were no significant differences in the Low Response Stratum.

Response rates were also calculated by panel for the initial and replacement questionnaires, as well as the combined results, across and within each stratum. The mail response rates include all housing units in the mailout universe, whereas the mail return rates, presented previously, include only occupied housing units. The mail response rate is typically used as a survey implementation benchmark since its converse is roughly the workload for non-responding cases that require follow-up during the Census. Response rate results were similar to the return rates, with the 2010 Census Content panel having a lower response rate for the replacement mailing (0.5 percentage points; standard error (SE)=0.28) and overall (difference of 1.5 percentage points; SE=0.53). Unlike the return rate analysis, the 2010 Census Content panel also had a significantly lower initial mail response rate, compared to the Census 2000 Content panel, (difference of 1.0 percentage points; SE=0.56). As with the return rate analysis, the overall response rate results were isolated to the High and Medium Response Strata.

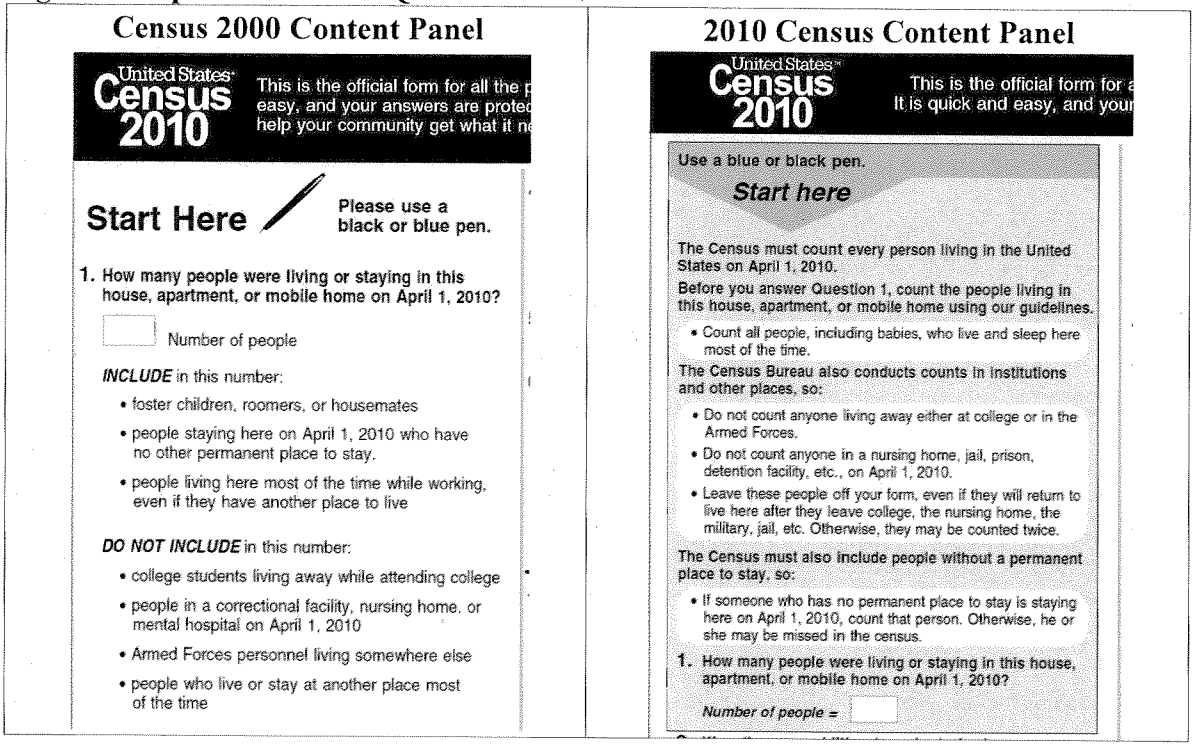
## 5.3 Household-Level Item Results

There are two household-level items that appear on both census questionnaires. These items are population count and tenure. Both items will be evaluated based on item nonresponse and response distributions.

### *5.3.1 Population Count*

The population count item is a household-level item that asks: "How many people were living or staying in this house, apartment, or mobile home on April 1, 2010?" This item is worded in the exact same way on both questionnaires. The changes to the 2010 Census questionnaire are confined to the placement of the population count question, the placement of the response box, and the format of the residence rules instructions. The population count item was moved from the top of the residence rules instructions to the bottom and the response box was placed to the right of (after) the question stem, as opposed to being placed to the left of (before) the question stem. Additionally, the residence rules instructions were modified from the include/exclude lists used in Census 2000, to the principle-based approach used in the 2010 Census. For images of what the population count question looked like on each questionnaire, refer to Figure 1.

**Figure 1. Population Count Question**




Item nonresponse rates were computed for all occupied housing units. Table 5 shows the item nonresponse rates for the population count overall and by stratum.

**Table 5. Population Count Item Nonresponse Rates and Differences by Panel**

| PANEL | | RESPONSE STRATUM | | |
|---|---|---|---|---|
| | **Overall** | **High** | **Medium** | **Low** |
| **Census 2000 Content** | 1.0 (0.09) | 0.8 (0.12) | 1.2 (0.22) | 1.3 (0.17) |
| **2010 Census Content** | 1.4 (0.11) | 1.2 (0.15) | 1.5 (0.24) | 1.9 (0.23) |
| | **Difference (Census 2000 – 2010 Census)** | | | |
| **Census 2000 – 2010 Census** | **-0.4 (0.15)*** | **-0.4 (0.19)*** | -0.2 (0.33) | **-0.6 (0.29)*** |

Source: CPEX Sample and Response Files; Standard errors in parentheses.
*Denotes statistically significant difference between panels with an error rate of $\alpha$=0.10.

The item nonresponse rates for the 2010 Census Content panel worsened, compared to the Census 2000 Content panel. Results indicate that the 2010 Census Content panel had a significantly higher rate of item nonresponse for the population count question. (This higher item nonresponse rate is isolated to the High and Low Response Strata.) Research on visual design and layout suggests the importance of identifying a clear starting point on questionnaires (Dillman, 2000). Since Question 1 was placed after the residence rules instructions on the 2010 Census form (compared to immediately after the "Start Here" instruction on the Census 2000 Content panel), respondents may have had difficulty finding the starting point. It is also possible that the shading and box around the residence rules instructions and Question 1 drew respondents' attention away from it or caused them to think Question 1 was just part of the instructions. However, it is important to note that this test did not produce data on the quality of

these responses, and the design of the Census 2000 Content panel questionnaire could also have been problematic from a quality perspective, since the response box appeared before the instructions. Lastly, more research is necessary to determine whether a decrease of 0.4 percentage points is meaningful, as well as its potential impacts.

Table 6 shows average household size across panels before and after editing. The pre-edited data consist of responses to the population count data item on the first page of the questionnaire. The post-edited data represent the number of data-defined people on the Census Edited File (CEF). The CEF incorporated the results of various processing activities intended to improve quality and completeness such as count imputation, as well as editing, allocation, and substitution. As mentioned previously, a person is considered data-defined, or valid, if they have at least two of the person-level data items (i.e., name, relationship, sex, age/date of birth, Hispanic origin, or race) filled (Alberti, 2008).

**Table 6. Average Household Sizes and Differences by Panel**

| PANEL | PRE-EDIT **Average Household Size** | POST-EDIT **Average Household Size** |
|---|---|---|
| **Census 2000 Content** | 2.57 (0.01) | 2.56 (0.01) |
| **2010 Census Content** | 2.61 (0.02) | 2.59 (0.01) |
| | **Differences (Census 2000 – 2010 Census)** | |
| **Census 2000 – 2010 Census** | **-0.03 (0.02)*** | **-0.03 (0.01)*** |

Source: Pre-edit numbers derived from CPEX Sample and Response Files; Post-edit numbers derived from the CEF.
Note: Standard errors, in parentheses, were derived using the observed sample standard deviations.

Although the differences between the average pre-edited household sizes and average post-edited household sizes were only 0.03 percentage points, both were significant. For both pre-edited and post-edited data, respondents reported a significantly higher average household size in the 2010 Census Content panel. We conducted a supplemental analysis by examining the number of pre-edited data-defined persons. As with the pre-edited population count data, the 2010 Census Content panel had a significantly higher average household size (difference of 0.06 percentage points) than the Census 2000 Content panel.

*5.3.2 Tenure*

Tenure is a household-level question that determines if the residence is owned with a mortgage, owned without a mortgage, rented, or occupied without payment. The response options for tenure had some wording changes as a result of mid-decade testing. For instance, with the decreased use of actual cash to pay for housing costs, the 2005 NCT determined it was best to remove the word "cash" from the renter categories to avoid confusion (Rothhaas et al., 2006). The 2005 NCT also tested the inclusion of the phrase "include home equity loans" in the "Owned by you or someone in this household with a mortgage or loan" response category, which led to a shift in respondents reporting owning a home outright to owning a home with a mortgage in that test. Both of these changes were implemented on the 2010 Census questionnaire. For images of what the tenure question looked like on each questionnaire, refer to Figure 2.

**Figure 2. Tenure Question**

**Census 2000 Content Panel**

**2. Is this house, apartment, or mobile home —**
*Mark ☒ ONE box.*

- ☐ 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?

**2010 Census Content Panel**

**3. Is this house, apartment, or mobile home —**
*Mark ☒ ONE box.*

- ☐ Owned by you or someone in this household with a mortgage or loan? *Include home equity loans.*
- ☐ Owned by you or someone in this household free and clear (without a mortgage or loan)?
- ☐ Rented?
- ☐ Occupied without payment of rent?

Item nonresponse rates were computed for all occupied housing units. Table 7 shows the item nonresponse rates for the tenure question overall and by stratum.

**Table 7. Tenure Item Nonresponse Rates and Differences by Panel**

| PANEL | | RESPONSE STRATUM | | |
|---|---|---|---|---|
| | **Overall** | **High** | **Medium** | **Low** |
| **Census 2000 Content** | 3.1 (0.17) | 2.8 (0.23) | 3.5 (0.37) | 3.7 (0.31) |
| **2010 Census Content** | 2.2 (0.15) | 2.1 (0.20) | 2.3 (0.30) | 2.5 (0.23) |
| | **Difference (Census 2000 – 2010 Census)** | | | |
| **Census 2000 – 2010 Census** | **0.9 (0.23)*** | **0.7 (0.31)*** | **1.2 (0.47)*** | **1.2 (0.40)*** |

Source: CPEX Sample and Response Files; Standard errors in parentheses.
*Denotes statistically significant difference between panels with an error rate of $\alpha$=0.10.

The tenure item nonresponse analysis revealed that the question on the 2010 Census Content panel had significantly lower item nonresponse overall and within each of the Response Strata, compared to the Census 2000 Content panel. This is consistent with the results of mid-decade testing. It is possible that the clarification to the tenure response options decreased confusion and allowed more respondents to be able to answer the item. However, it could also be that the design of the Census 2000 Content panel form was problematic for this question. The response boxes in the left column of the Census 2000-style form are not very prominent and the tenure question might be getting lost between the lengthy residence rules instructions and the prominent

bold question wording for determining Person 1. As a result, respondents may have skipped over tenure more easily in the Census 2000 Content panel form.

Table 8 shows the response distributions and differences, by panel, for the tenure question.

**Table 8. Tenure Response Distributions and Differences by Panel**

| Tenure Categories | Census 2000 Content | 2010 Census Content | Difference (Census 2000 – 2010 Census) |
|---|---|---|---|
| **Owned with mortgage** | 51.5 (0.52) | 51.1 (0.52) | 0.4 (0.75) |
| **Owned free and clear** | 20.2 (0.44) | 20.4 (0.40) | -0.2 (0.60) |
| **Rented** | 26.5 (0.42) | 26.7 (0.42) | -0.2 (0.58) |
| **Occupied without rent** | 1.6 (0.12) | 1.5 (0.13) | 0.1 (0.17) |
| **Multiple Responses (Marked 2+)** | 0.2 (0.04) | 0.2 (0.05) | <0.1 (0.06) |

Source: CPEX Sample and Response Files; Standard errors in parentheses.
*Denotes statistically significant difference between panels with an error rate of $\alpha$=0.10.

The results indicate no significant differences in response distribution between the Census 2000 Content panel and the Control (2010 Census Content) for any of the tenure response categories. Despite previous research that showed a shift in respondents reporting owning a home outright to owning a home with a mortgage, due to the "include home equity loans" statement (Rothhaas et al., 2006), the current research yielded no differences between panels for any of the tenure response options. Again, we must consider the combined effect of all changes to the form when assessing the causal nature of item-level differences.

### 5.4 Person-Level Item Results

There are five person-level questions that appear on both census questionnaires. These items are relationship (to householder), sex, age/date of birth, Hispanic origin, and race. Each item was evaluated based on item nonresponse and response distributions.

#### *5.4.1 Relationship*

The relationship item underwent several changes between Census 2000 and the 2010 Census. These changes included changing the "Natural-born son or daughter" response category to "Biological son or daughter," removing the "Foster child" category, removing the write-in box for "Other relative," and removing the "If NOT RELATED" spanner above the nonrelative categories. In addition, the 2010 Census form lists the response options in two columns of the same length, instead of organizing the columns by related/not related as was done on the Census 2000 form. Figure 3 presents the differences in this question between the Census 2000-style questionnaire and the 2010 Census questionnaire.

**Figure 3. Relationship Question**

**Census 2000 Content Panel**

**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

**2010 Census Content Panel**

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

- ☐ Husband or wife
- ☐ Biological son or daughter
- ☐ Adopted son or daughter
- ☐ Stepson or stepdaughter
- ☐ Brother or sister
- ☐ Father or mother
- ☐ Grandchild
- ☐ Parent-in-law
- ☐ Son-in-law or daughter-in-law
- ☐ Other relative
- ☐ Roomer or boarder
- ☐ Housemate or roommate
- ☐ Unmarried partner
- ☐ Other nonrelative

Item nonresponse rates were computed for all occupied housing units. Table 9 shows the item nonresponse rates for the relationship question overall and by stratum. Relationship for Person 1 is treated as having been reported, since Person 1 is defined as the reference person (i.e. household member relationship data are based on Person 1).

**Table 9. Relationship Item Nonresponse Rates and Differences by Panel**

| PANEL | | RESPONSE STRATUM | | |
|---|---|---|---|---|
| | **Overall** | **High** | **Medium** | **Low** |
| **Census 2000 Content** | 0.6 (0.07) | 0.5 (0.08) | 0.8 (0.17) | 0.9 (0.12) |
| **2010 Census Content** | 0.6 (0.07) | 0.6 (0.09) | 0.3 (0.10) | 0.9 (0.13) |
| | **Difference (Census 2000 – 2010 Census)** | | | |
| **Census 2000 – 2010 Census** | <0.1 (0.09) | -0.1 (0.13) | **0.5 (0.19)*** | <0.1(0.17) |

Source: CPEX Sample and Response Files; Standard errors in parentheses.

*Denotes statistically significant difference between panels with an error rate of $\alpha$=0.10.

The item nonresponse analysis for the relationship question yielded no significant differences overall[7]. This finding is consistent with the results of the 2005 NCT which first tested many of these relationship changes (Rothhaas et al., 2006).

[7] While there was a significant difference in the Medium Response Stratum, the lack of an overall difference and the relatively small stratum difference suggests that this result is not of practical significance.

Table 10 shows the response distribution shifts in the relationship question. As noted previously, the Census 2000-style questionnaire contained a write-in for "Other relative" that needed to be re-coded in order to conduct this analysis. If the write-in was another valid category, it was re-coded to that category. If the write-in was a valid relative or nonrelative response, it was coded to the "Other relative" or "Other nonrelative" category. If the write-in was invalid or uncodable it was placed in the "Invalid" category.

**Table 10. Relationship Response Distributions and Differences by Panel**

| Relationship Categories | Census 2000 Content | 2010 Census Content | Difference (Census 2000 – 2010 Census) |
|---|---|---|---|
| **Husband or Wife** | 34.4 (0.31) | 34.0 (0.36) | 0.4 (0.48) |
| **Biological Son or Daughter** | 44.7 (0.42) | 44.7 (0.40) | <0.1 (0.59) |
| **Adopted Son or Daughter** | 1.4 (0.13) | 1.3 (0.12) | 0.1 (0.17) |
| **Step Son or Daughter** | 2.2 (0.16) | 2.3 (0.16) | -0.1 (0.23) |
| **Foster Child** | 0.1 (0.04) | N/A | N/A |
| **Brother or Sister** | 1.5 (0.11) | 1.6 (0.12) | -0.1 (0.16) |
| **Father or Mother** | 1.4 (0.11) | 1.7 (0.13) | **-0.4 (0.17)*** |
| **Grandchild** | 3.4 (0.19) | 3.3 (0.18) | 0.2 (0.25) |
| **Parent-in-Law** | 0.5 (0.06) | 0.7 (0.08) | **-0.2 (0.10)*** |
| **Son-in-Law or Daughter-in-Law** | 0.6 (0.07) | 0.8 (0.07) | -0.1 (0.10) |
| **Other Relative** | 1.5 (0.13) | 1.5 (0.12) | <0.1 (0.18) |
| **Roomer or Boarder** | 1.0 (0.10) | 0.6 (0.09) | **0.4 (0.13)*** |
| **Housemate or Roommate** | 2.3 (0.15) | 2.1 (0.16) | 0.2 (0.22) |
| **Unmarried Partner** | 3.6 (0.15) | 3.8 (0.15) | -0.3 (0.22) |
| **Other Nonrelative** | 1.0 (0.09) | 1.5 (0.12) | **-0.5 (0.15)*** |
| **Multiple Responses (Marked 2+)** | 0.3 (0.05) | 0.2 (0.03) | **0.2 (0.06)*** |
| **Invalid** | ** | N/A | N/A |

Source: CPEX Sample and Response Files; Standard errors in parentheses.
*Denotes statistically significant difference between panels with an error rate of $\alpha$=0.10.
**Denotes a cell size less than 10.
Note: The 2010 Census form did not have a "Foster Child" category, so these fields are not applicable (N/A). Additionally, the Census 2000-style questionnaire had an "Other Relative" write-in line, while the 2010 Census form did not. Write-in responses that could not be reclassified into an existing relationship category were labeled "Invalid" for the Census 2000 Content panel and are not applicable (N/A) for the 2010 Census Content panel.

It was hypothesized that the "Foster Child" responses would be redistributed into the "Other nonrelative" or "Other relative" categories. Results indicate that there is a higher proportion of "Other nonrelative" responses in the 2010 Census Content panel compared to the Census 2000 Content panel, but no significant differences in the "Other relative" category. The increase in "Other nonrelative" was 0.5 percentage points, which is higher than the 0.1 percent of people who responded with "Foster Child" in the Census 2000 Content panel. Therefore, the increase in the "Other nonrelative" category does not appear to be solely due to a shift from the "Foster Child" category.

There was a significant difference, between panels, for the multiple responses category, which represents the respondent marking two or more relationship responses. The Census 2000

Content panel had more multiple responses than the 2010 Census Content panel (difference of 1.0 percentage points). This is consistent with the 2005 NCT finding that the removal of the "If NOT RELATED to Person 1" spanner over the nonrelative categories led to a reduction in multiple relationship reporting (Rothhaas et al., 2006).

Table 10 also shows that the 2010 Census Content panel resulted in a significant increase of reporting in the "Parent-in-Law" category, as well as a significant decrease of reporting in the "Roomer or Boarder" category. It is possible that these results are due to a primacy effect. For each category, the panel in which significantly higher responses were found was the panel in which the category was at the top of the right column. That is, in the Census 2000 Content panel, the "Roomer or Boarder" category was the first item in the right column. The responses to this category significantly decreased in the 2010 Census Content panel, when the category was no longer at the top of the column. Likewise, a significant increase in reporting of "Parent-in-law" was found for the 2010 Census Content panel, when that category appeared at the top of the right column of response options. Lastly, the 2010 Census Content panel resulted in a significant increase of reporting in the "Father or Mother" category, but there is no research-based hypothesis for this increase.

*5.4.2 Sex*

The sex item did not undergo any changes between Census 2000 and the 2010 Census. Images of the sex question, as it appears in both panels, are below in Figure 4.

**Figure 4. Sex Question**

| | |
|---|---|
| **Census 2000 Content Panel** | **5.** What is Person 1's sex? *Mark* X *ONE box.*<br>☐ Male ☐ Female |
| **2010 Census Content Panel** | **6.** What is Person 1's sex? *Mark* X *ONE box.*<br>☐ Male ☐ Female |

Item nonresponse rates were computed for all occupied housing units. Table 11 shows the item nonresponse rates for the sex question overall and by stratum.

**Table 11. Sex Item Nonresponse Rates and Differences by Panel**

| PANEL | | RESPONSE STRATUM | | |
|---|---|---|---|---|
| | **Overall** | **High** | **Medium** | **Low** |
| **Census 2000 Content** | 1.4 (0.09) | 1.2 (0.11) | 1.6 (0.21) | 2.2 (0.19) |
| **2010 Census Content** | 1.7 (0.09) | 1.5 (0.12) | 1.9 (0.20) | 2.3 (0.16) |
| | **Difference (Census 2000 – 2010 Census)** | | | |
| **Census 2000 – 2010 Census** | **-0.3 (0.13)*** | **-0.3 (0.17)*** | -0.3 (0.29) | -0.1 (0.23) |

Source: CPEX Sample and Response Files; Standard errors in parentheses.
*Denotes statistically significant difference between panels with an error rate of $\alpha$=0.10.

The analysis revealed that the 2010 Census Content panel had item nonresponse rates that were higher, compared to the Census 2000 Content panel. At the stratum level, the higher item nonresponse rate was isolated to the High Response Stratum. Since there were no changes made to this item since Census 2000, we assume that the item nonresponse difference is due to the crowded appearance of the 2010 Census questionnaire. As seen in Figure 4, there is significantly less white space surrounding the sex question on the 2010 Census questionnaire compared to the Census 2000-style questionnaire.

Table 12 shows the response distributions and differences, by panel, for the sex question.

**Table 12. Sex Response Distributions and Differences by Panel**

| Sex Categories | Census 2000 Content | 2010 Census Content | Difference (Census 2000 – 2010 Census) |
|---|---|---|---|
| **Male** | 48.5 (0.23) | 48.1 (0.25) | 0.4 (0.33) |
| **Female** | 51.5 (0.23) | 51.9 (0.25) | -0.4 (0.33) |
| **Both** | <0.1 (0.01) | <0.1 (0.01) | <0.1 (0.01) |

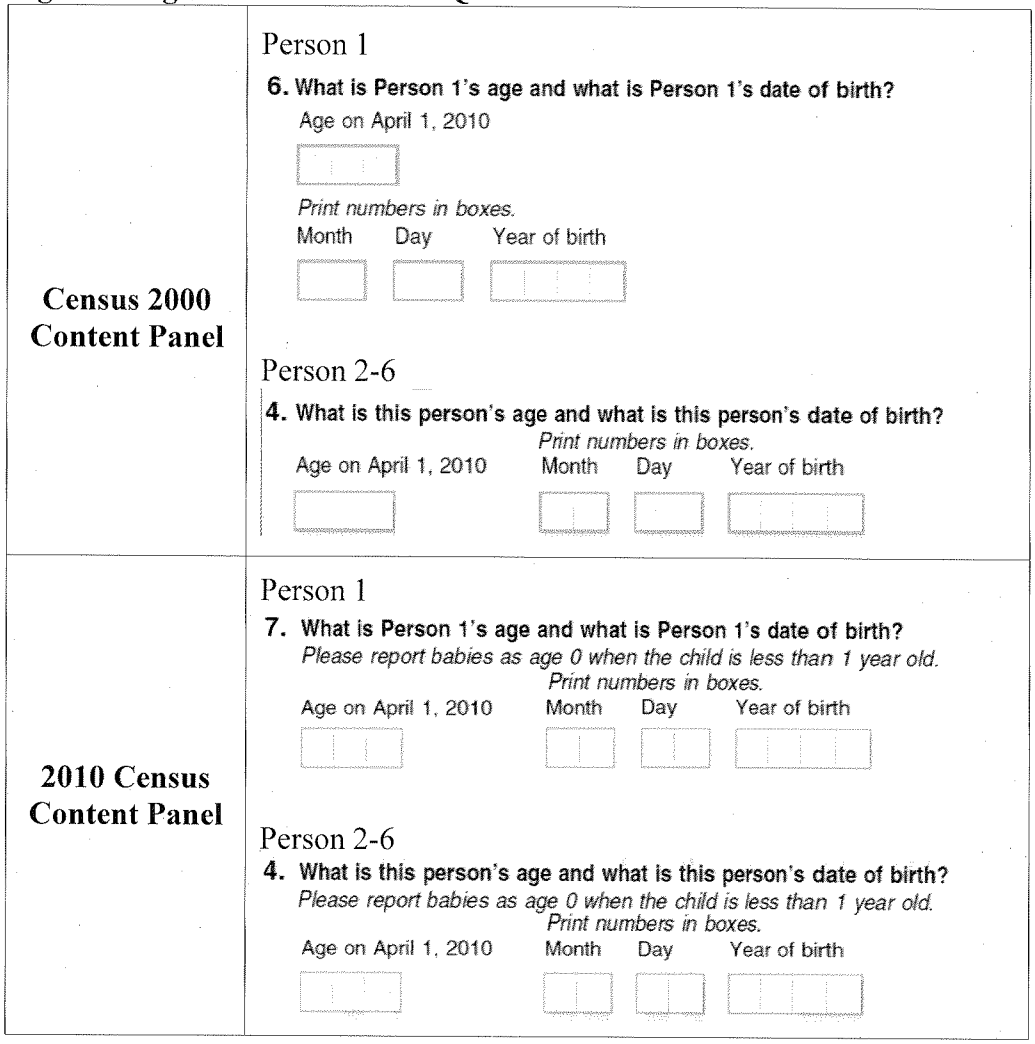
Source: CPEX Sample and Response Files; Standard errors in parentheses.
*Denotes statistically significant difference between panels with an error rate of $\alpha$=0.10.

As expected, due to the item being identical in both panels, there were no significant differences in the response distributions to sex.

*5.4.3 Age and Date of Birth*

For the age and date of birth questions, an additional instruction was included to clarify how respondents should report babies' ages. Previous research (Spencer and Perkins, 1998) has shown that the ages of babies less than one year old were frequently reported in months then erroneously captured as age in years. For example, a baby reported as "9 months" would be captured as "9 years." The 2005 NCT tested a new instruction that asked respondents to "Please report babies as age 0 when the child is less than 1 year old." As a result, the 2005 NCT saw an increase in reporting of age zero. The additional instruction was then implemented for the 2006 Census Test and also included on the 2010 Census questionnaire. Another difference between the Census 2000 Content panel and the 2010 Census Content panel is that the date of birth question was placed below the age question, for Person 1 only, in the Census 2000 panel questionnaire. On the 2010 Census form, age and date of birth appeared next to each other. For Persons 2 though 6, the age item was identical in both panels. For images of what the age and date of birth questions looked like, for Person 1 and Persons 2 through 6, refer to Figure 5.

**Figure 5. Age and Date of Birth Questions**




Item nonresponse rates were computed for all occupied housing units. Table 13 shows the item nonresponse rates for the age/date of birth item overall and by stratum. For the item nonresponse analysis presented below, age and date of birth are examined jointly because both items are used to determine age. If the date of birth was complete enough to calculate an age, the calculated age was used. If the date of birth was not complete enough, or invalid, but the respondent provided a valid age (less than 116 years), the respondent-provided age was used. In order to be considered a "nonresponse" in Table 13, both the date of birth and age responses must be missing.

**Table 13. Age/Date of Birth Item Nonresponse Rates and Differences by Panel**

| PANEL | | | RESPONSE STRATUM | | |
|---|---|---|---|---|---|
| | | **Overall** | **High** | **Med** | **Low** |
| **Person 1** | Census 2000 Content | 0.6 (0.08) | 0.6 (0.11) | 0.6 (0.14) | 0.7 (0.13) |
| | 2010 Census Content | 0.9 (0.10) | 0.9 (0.14) | 0.8 (0.17) | 0.9 (0.15) |
| **Persons 2-6** | Census 2000 Content | 1.0 (0.10) | 0.9 (0.13) | 0.8 (0.19) | 1.5 (0.20) |
| | 2010 Census Content | 0.8 (0.10) | 0.5 (0.11) | 1.2 (0.29) | 1.2 (0.19) |
| | | **Difference (Census 2000 – 2010 Census)** | | | |
| **Person 1** | 2000-2010 | **-0.3 (0.12)*** | **-0.3 (0.18)*** | -0.2 (0.22) | -0.2 (0.20) |
| **Persons 2-6** | 2000-2010 | 0.2 (0.13) | **0.4 (0.17)*** | -0.4 (0.33) | 0.3 (0.27) |

Source: CPEX Sample and Response Files; Standard errors in parentheses.
*Denotes statistically significant difference between panels with an error rate of $\alpha$=0.10.

Results show a significantly higher item nonresponse rate for the 2010 Census Content panel, for Person 1. This is likely attributed to the differences in formatting. As stated before, for Person 1 only, the age and date of birth questions were stacked in the Census 2000 Content form but side by side on the 2010 Census Content form (see Figure 5). It is possible that the side by side format on the 2010 Census-style questionnaire made the item easier to miss because it did not take up as much space as the item on the Census 2000-style questionnaire. There are no overall differences between panels for Persons 2 through 6.

Table 14 shows the response distributions and differences, by panel, for the age/date of birth item. Unlike the item nonresponse analysis (see Table 12), the response distribution analysis that follows uses only the respondent-provided age and does not take into account the date of birth. This was done because we were interested in examining how respondents reported age, rather than a composite response of age and date of birth. This is especially important for examining the effects of the instruction to "Please report babies as age 0 when the child is less than 1 year old."

**Table 14. Age Response Distributions and Differences by Panel**

| Age Categories | Census 2000 Content | 2010 Census Content | Difference (Census 2000 – 2010 Census) |
|---|---|---|---|
| **Person 1** | | | |
| **0** | ** | 0 | -- |
| **1-24** | 3.4 (0.17) | 3.3 (0.17) | 0.1 (0.23) |
| **25-44** | 31.3 (0.48) | 30.6 (0.48) | 0.7 (0.70) |
| **45-64** | 41.9 (0.53) | 42.7 (0.49) | -0.8 (0.75) |
| **65+** | 23.4 (0.44) | 23.4 (0.45) | <0.1 (0.65) |
| **Persons 2-6** | | | |
| **0** | 1.1 (0.08) | 1.6 (0.11) | **-0.5 (0.13)*** |
| **1-24** | 48.6 (0.41) | 47.9 (0.37) | 0.7 (0.56) |
| **25-44** | 22.2 (0.30) | 22.0 (0.30) | 0.2 (0.42) |
| **45-64** | 20.5 (0.34) | 20.9 (0.35) | -0.4 (0.49) |
| **65+** | 7.7 (0.22) | 7.6 (0.24) | 0.1 (0.31) |

Source: CPEX Sample and Response Files; Standard errors in parentheses.
*Denotes statistically significant difference between panels with an error rate of $\alpha$=0.10.
**Denotes a cell size less than 10.

The response distribution for respondent-provided age yielded a significantly higher proportion of respondents reporting age zero for Persons 2 though 6 in the 2010 Census Content panel. Based on this result, we would expect to see a significantly lower proportion of respondents reporting age 1-24, but we do not. Supplemental analyses examined the proportion of respondents reporting age 1-12. While the proportion decreases for the 2010 Census Content panel, the difference is not significant. However, it appears that the instruction to report babies as age zero was successful. It is not surprising that there were not enough data to support a difference calculation of age zero for Person 1, as Person 1 is supposed to be the reference person who owns or rents the residence. If a respondent correctly followed the instructions for selecting Person 1, this person should never be a child under the age of 13.

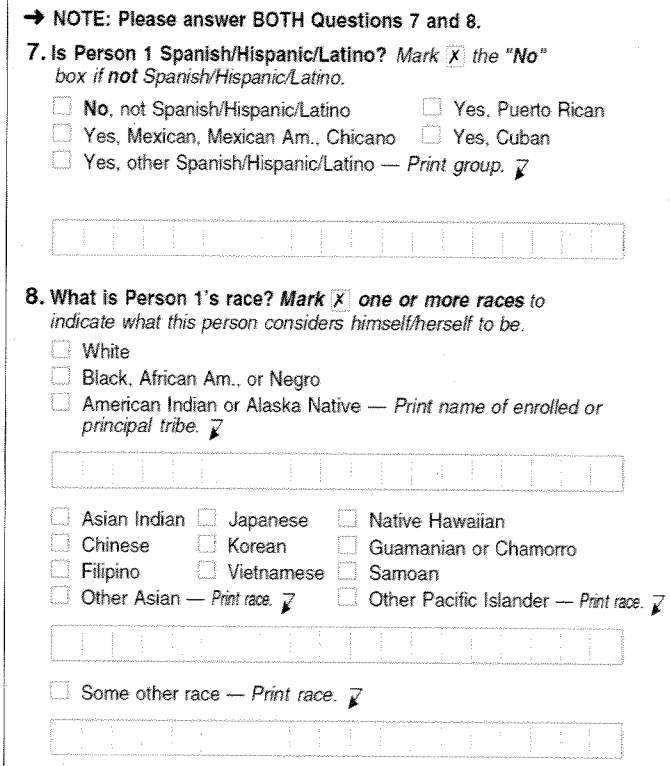
*5.4.4 Hispanic Origin and Race Item Results*

Changes to the Hispanic origin and race questions were extensively tested between Census 2000 and the 2010 Census. The changes to the Hispanic origin question were numerous. First, the wording of the question changed. In Census 2000, the question asked if the person was Spanish/Hispanic/Latino." In the 2010 Census, the question asked if the person is "of Hispanic, Latino, or Spanish origin." Second, the question in Census 2000 provided the instruction, "Mark (X) the '**No**' box if **not** Spanish/Hispanic/Latino," which the 2010 Census questionnaire removed. Third, in Census 2000, no Hispanic origin examples were provided to the "Yes, another Hispanic, Latino, or Spanish origin" category while examples of six Hispanic origin groups ("Argentinean, Colombian, Dominican, Nicaraguan, Salvadoran, Spaniard, and so on") were added in the 2010 Census questionnaire. Finally, the fourth change was the addition of a new instruction in the 2010 Census that was not used in Census 2000. The instruction stated, "NOTE: Please answer BOTH Question 8 about Hispanic origin and Question 9 about race. For this census, Hispanic origins are not races."

There were three changes to the race question. First, the 2010 Census removed the instruction "to indicate what this person considers himself/herself to be" from the question stem. Second, the Census 2000 race question asked the respondent to "Mark (X) one or more races" while the 2010 Census race question asked the respondent to "Mark (X) one or more boxes." Lastly, the 2010 Census race question provided examples to the "Other Asian" response category ("Hmong, Laotian, Thai, Pakistani, Cambodian, and so on") and the "Other Pacific Islander" response category ("Fijian, Tongan, and so on"). The Census 2000 race question did not provide any specific examples. For images of the Hispanic origin and race questions from both the Census 2000 Content panel and the 2010 Census Content panel, refer to Figure 6.

**Figure 6. Hispanic Origin and Race Questions**

**Census 2000 Content Panel**



→ **NOTE: Please answer BOTH Questions 7 and 8.**

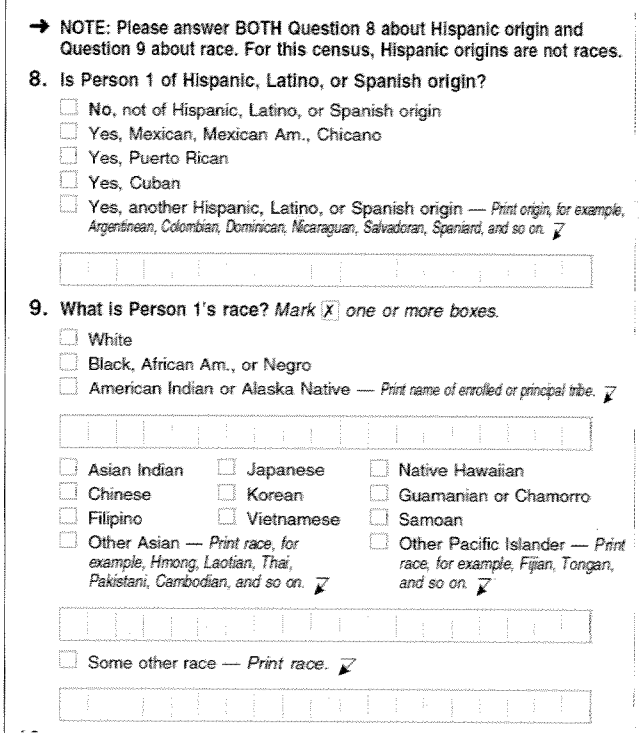
**7. Is Person 1 Spanish/Hispanic/Latino?** *Mark X the "**No**" box if **not** Spanish/Hispanic/Latino.*

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

**8. What is Person 1's race?** ***Mark X one or more races** to indicate what this person considers himself/herself to be.*

- ☐ White
- ☐ Black, African Am., or Negro
- ☐ American Indian or Alaska Native — *Print name of enrolled or principal tribe.*
- ☐ Asian Indian
- ☐ Japanese
- ☐ Native Hawaiian
- ☐ Chinese
- ☐ Korean
- ☐ Guamanian or Chamorro
- ☐ Filipino
- ☐ Vietnamese
- ☐ Samoan
- ☐ Other Asian — *Print race.*
- ☐ Other Pacific Islander — *Print race.*
- ☐ Some other race — *Print race.*

**2010 Census Content Panel**



→ NOTE: Please answer BOTH Question 8 about Hispanic origin and Question 9 about race. For this census, Hispanic origins are not races.

8. Is Person 1 of Hispanic, Latino, or Spanish origin?

- No, not of Hispanic, Latino, or Spanish origin
- Yes, Mexican, Mexican Am., Chicano
- Yes, Puerto Rican
- Yes, Cuban
- Yes, another Hispanic, Latino, or Spanish origin — *Print origin, for example, Argentinean, Colombian, Dominican, Nicaraguan, Salvadoran, Spaniard, and so on.*

9. What is Person 1's race? *Mark [X] one or more boxes.*

- White
- Black, African Am., or Negro
- American Indian or Alaska Native — *Print name of enrolled or principal tribe.*
- Asian Indian
- Chinese
- Filipino
- Other Asian — *Print race, for example, Hmong, Laotian, Thai, Pakistani, Cambodian, and so on.*
- Japanese
- Korean
- Vietnamese
- Native Hawaiian
- Guamanian or Chamorro
- Samoan
- Other Pacific Islander — *Print race, for example, Fijian, Tongan, and so on.*
- Some other race — *Print race.*

Hispanic origin and race data were coded and pre-edited by applying a simplified version of pre-edits used in 2010 Census production. Missing data were not imputed or allocated, as they would be in fully edited census data. Therefore, results may differ for fully edited census Hispanic origin and race data.

Item nonresponse rates were computed for all occupied housing units. Table 15 shows the item nonresponse rates for the Hispanic origin and race questions by panel. Item nonresponse is defined as no reported response to the item. While Hispanic origin and race responses are evaluated as a set in subsequent analyses, due to their related concepts, the item nonresponse analysis treats them as separate and independent. For example, if a respondent left the Hispanic origin question blank and then wrote "Hispanic" in any of the race write-in fields, this would be considered item nonresponse for Hispanic origin and a response for race. Likewise, if a respondent wrote "Black" in the Hispanic origin write-in field and left the race question blank, this would be considered a response for Hispanic origin and item nonresponse for race.

**Table 15. Hispanic Origin and Race Item Nonresponse Rates and Differences by Panel**

| PANEL | Hispanic Origin | Race |
|---|---|---|
| **Census 2000 Content** | 3.7 (0.17) | 4.2 (0.22) |
| **2010 Census Content** | 4.6 (0.20) | 3.0 (0.19) |
| | **Difference (Census 2000 – 2010 Census)** | |
| **Census 2000 – 2010 Census** | **-0.9 (0.27)*** | **1.1 (0.29)*** |

Source: CPEX Sample and Response Files; Standard errors in parentheses.
Note: Data included for Persons 1-6 only. For Relationship, Person 1 is treated as having been reported.
*Denotes statistically significant difference between panels with an error rate of $\alpha$=0.10.

The analysis revealed that, compared to the Census 2000 Content panel, the 2010 Census Content panel item nonresponse rates were higher for Hispanic origin but lower for the race item. Recall that several changes were made to the Hispanic origin and race questions throughout the decade (see Appendix A for a full list), so it is difficult to pinpoint any particular reason for the differences. However, one possible explanation may be the addition and removal of the instructional notes to the two items. The Hispanic origin item had a longer note in the 2010 Census Content panel (compared to the 2000 Content panel), which is where results showed significantly higher item nonresponse. Conversely, the race item had a shorter note in the 2010 Census Content panel (compared to the 2000 Content panel), which is where results showed significantly lower item nonresponse. It is possible that the longer notes/instructions appearing above the question caused respondents to overlook the question. However, it should be noted that the 2010 Census questionnaire was the first time all of the race and Hispanic origin changes were evaluated together on one form, as a composite set of treatments within a controlled experiment. Therefore, we are unable to determine if the specific item findings are a result of the individual Hispanic origin and race changes implemented together or whether these findings are a result of the presence of all other questionnaire changes made throughout the decade, in particular the considerable reduction in overall white space on the 2010 Census questionnaire. As noted previously, it is imperative to consider the combined effect of all changes to the form when assessing the causal nature of item-level differences.

The stratum-level Hispanic origin and race analysis can be found in Table 16. The higher Hispanic origin item nonresponse rate, for the 2010 Census Content panel, is isolated to the High and Low Response Strata while the lower race item nonresponse rate is isolated to the Medium and Low Response Strata.

**Table 16. Hispanic Origin and Race Item Nonresponse Rates and Differences by Panel and Stratum**

| PANEL | Hispanic Origin | | | Race | | |
|---|---|---|---|---|---|---|
| | High | Med | Low | High | Med | Low |
| **Census 2000 Content** | 3.1 (0.22) | 4.3 (0.40) | 5.1 (0.35) | 3.3 (0.28) | 5.2 (0.51) | 5.9 (0.41) |
| **2010 Census Content** | 3.9 (0.27) | 4.7 (0.40) | 6.7 (0.39) | 2.7 (0.25) | 3.0 (0.40) | 4.4 (0.34) |
| | **Difference (Census 2000 – 2010 Census)** | | | | | |
| **Census 2000 – 2010 Census** | **-0.9 (0.37)*** | -0.5 (0.55) | **-1.7 (0.51)*** | 0.6 (0.38) | **2.3 (0.64)*** | **1.5 (0.53)*** |

Source: CPEX Sample and Response Files; Standard errors in parentheses.
Note: Data included for Persons 1-6 only. For Relationship, Person 1 is treated as having been reported.
*Denotes statistically significant difference between panels with an error rate of $\alpha$=0.10.

Table 17 shows response distribution shifts in the Hispanic origin and race questions. For the analysis that follows, Hispanic origin and race responses are considered as a set, which is a different approach compared to that used for the item nonresponse analyses in Table 15 and Table 16. For the tables that follow, if a valid and codeable response was provided in any write-in field across the two questions, that response was placed into its appropriate category. For example, a write-in response of "Puerto Rican" would be included in the "Puerto Rican" Hispanic origin category and a write-in of "Caucasian" would be included in the "White" race category, regardless of whether the write-in was reported in a race or Hispanic origin write-in field. The same is true for valid write-ins that were not listed on the questionnaire. For example, a write-in response of "Hmong" would be included in the "Asian" race category. Otherwise, all

other valid write-in responses that do not map to an existing checkbox category are included in the "other" category (i.e., "Another Hispanic, Latino, or Spanish Origin" for the Hispanic origin question and "Some Other Race" for the race question). If two responses were provided (e.g., two checkbox items, two write-in responses, or a write-in and a checkbox item), the response is captured in either the "Two or More Hispanic Origins" category or the "Two or More Races" category.

The "Blank/Invalid" category refers to cases with a complete absence of a codeable response in either item. Unlike the item nonresponse analysis (presented in Table 15), the response distribution analysis considered responses to both the Hispanic origin and race questions together to assign responses to each item. For example, in the response distribution analysis, if a person left the Hispanic origin item unanswered but wrote "Cuban" in a race write-in field, their Hispanic origin response would be coded as "Cuban" and their race response would be coded as "Some Other Race." Likewise, if a person wrote "Black" in the Hispanic origin write-in and left race blank, their Hispanic origin response would be coded as "Not of Hispanic, Latino, or Spanish Origin" and their race response would be "Black, African Am., or Negro." This is the reason that the proportions of "Blank/Invalid" responses presented in Table 17 are so much lower than the proportions of item nonresponse presented in Table 15. The examples above, in which both a Hispanic origin and race response were assigned, would have yielded a nonresponse in the item nonresponse analysis (presented in Table 15), but is not assigned a "Blank/Invalid" value in the tables that follow.

**Table 17. Hispanic Origin and Race Distributions and Differences by Panel**

| Hispanic Origin Categories | Census 2000 Content | 2010 Census Content | Difference (Census 2000 – 2010 Census) |
|---|---|---|---|
| **Not of Hispanic, Latino, or Spanish Origin** | 82.3 (0.22) | 81.8 (0.23) | 0.5 (0.39) |
| **Yes, Hispanic, Latino, or Spanish Origin** | 13.9 (0.20) | 13.5 (0.20) | 0.4 (0.79) |
| Mexican, Mexican Am., Chicano | 6.9 (0.15) | 7.8 (0.16) | **-0.9 (0.27)*** |
| Puerto Rican | 1.4 (0.07) | 1.2 (0.06) | 0.2 (0.12) |
| Cuban | 0.6 (0.04) | 0.7 (0.05) | -0.1 (0.08) |
| Another Hispanic, Latino, or Spanish Origin | 4.8 (0.12) | 3.4 (0.11) | **1.4 (0.20)*** |
| Two or More Hispanic Origins | 0.2 (0.03) | 0.4 (0.04) | **-0.2 (0.06)*** |
| **Blank/Invalid** | 3.8 (0.11) | 4.8 (0.13) | **-1.0 (0.21)*** |
| **Race Categories** | | | |
| **White** | 71.3 (0.26) | 72.7 (0.26) | **-1.4 (0.46)*** |
| **Black, African Am., or Negro** | 10.9 (0.18) | 10.8 (0.18) | 0.1 (0.32) |
| **American Indian or Alaska Native** | 0.5 (0.04) | 0.5 (0.04) | <0.1 (0.07) |
| **Asian** | 4.6 (0.12) | 5.0 (0.13) | -0.3 (0.22) |
| **Native Hawaiian or Other Pacific Islander** | 0.1 (0.02) | 0.1 (0.02) | <0.1 (0.04) |
| **Some Other Race** | 6.8 (0.15) | 5.2 (0.13) | **1.6 (0.24)*** |
| **Two or More Races** | 4.2 (0.12) | 4.4 (0.12) | -0.2 (0.21) |
| **Blank/Invalid** | 1.5 (0.07) | 1.3 (0.07) | **0.2 (0.12)*** |

Source: CPEX Sample and Response Files; Standard errors in parentheses.

*Denotes statistically significant difference between panels with an error rate of $\alpha$=0.10.

Before looking at the Hispanic origin response distributions, it is important to note that there was no significant difference across panels in the percent of respondents reporting to be of Hispanic origin, as shown in Table 17. In terms of the response distributions, previous research showed that some of the changes made to the Hispanic origin item resulted in increased specific origin reporting (Sheppard et al., 2004). We see a similar indication here with a significant increase in reporting of the "Mexican, Mexican Am., Chicano" checkbox group but a significant decrease in "Another Hispanic, Latino, or Spanish Origin" for the 2010 Census Content panel, compared to the Census 2000 Content panel. The 2010 Census Content panel also resulted in significantly more reporting of two or more origins. Finally, the 2010 Census Content panel had significantly more blank or invalid Hispanic origin responses than the Census 2000 Content panel. This result is not surprising, given that the 2010 Census Content panel had a significantly higher item nonresponse rate for this item (see Table 15).

There was a significant decrease in responses to "Some other race" for the 2010 Census Content panel, compared to the Census 2000 Content panel, and a significant increase in reporting in the White category. This is likely a result of the addition to the note above the Hispanic origin question, which tells the respondent that, for this survey, Hispanic origins are not races. We know from previous research that people of Hispanic origin tend to mark the "Some Other Race" box and write in their Hispanic origin (Humes, 2009). The goal of making this addition to the note was to encourage people of Hispanic origin to not write in their origin in the "Some Other Race" category, but to instead mark one of the checkbox categories. A similar result was found when the addition of this note was first tested as part of the 2005 NCT (Alberti, 2006).

Table 18 provides the race distribution differences by Hispanic origin and panel.

**Table 18. Race Distributions and Differences by Hispanic Origin by Panel**

| Race Categories | HISPANIC | | | NOT HISPANIC | | |
|---|---|---|---|---|---|---|
| | Census 2000 Content | 2010 Census Content | Difference (2000 - 2010) | Census 2000 Content | 2010 Census Content | Difference (2000 - 2010) |
| **White** | 44.5 (0.73) | 54.0 (0.75) | **-9.5 (1.29)*** | 79.5 (0.26) | 79.7 (0.26) | -0.2 (0.46) |
| **Black, African Am., or Negro** | 2.3 (0.22) | 2.3 (0.23) | <0.1 (0.39) | 11.8 (0.21) | 11.4 (0.21) | 0.4 (0.37) |
| **American Indian or Alaska Native** | 1.2 (0.16) | 1.4 (0.18) | -0.2 (0.29) | 0.4 (0.04) | 0.4 (0.04) | <0.1 (0.07) |
| **Asian** | 0.8 (0.13) | 0.5 (0.11) | 0.3 (0.21) | 5.0 (0.14) | 5.5 (0.15) | **-0.5 (0.26)*** |
| **Native Hawaiian or Other Pacific Islander** | 0.3 (0.08) | 0.1 (0.05) | 0.2 (0.12) | 0.1 (0.02) | 0.1 (0.02) | <0.1 (0.04) |
| **Some Other Race** | 33.2 (0.69) | 26.7 (0.66) | **6.5 (1.19)*** | 0.1 (0.02) | 0.1 (0.02) | <0.1 (0.04) |
| **Two or More Races** | 2.2 (0.21) | 3.2 (0.26) | **-1.0 (0.42)*** | 2.0 (0.09) | 1.9 (0.09) | 0.1 (0.16) |
| **Blank** | 14.8 (0.52) | 11.0 (0.47) | **3.8 (0.87)** | 0.7 (0.05) | 0.6 (0.05) | 0.1 (0.09) |
| **Invalid** | 0.6 (0.11) | 0.8 (0.13) | -0.2 (0.22) | 0.4 (0.04) | 0.3 (0.04) | 0.1 (0.07) |

Source: CPEX Sample and Response Files; Standard errors in parentheses.
*Denotes statistically significant difference between panels with an error rate of $\alpha$=0.10.

There was a significant decrease in the proportion of respondents who reported being both Hispanic and "Some other race" and an increase in Hispanics reporting in the White category. Additionally, there was a decrease in blank responses among Hispanics. These results lend support to the inclusion of the "Hispanic origins are not races" instruction, as it appears to have produced the intended result. Table 18 also shows an increase in Hispanics reporting two or more races. Among respondents who are not Hispanic, we see an increase in Asian reporting, which may be a result of the inclusion of examples in the Other Asian category.

In the Census 2000 Content panel, the Hispanic origin response options were double-banked in which the "Yes, Puerto Rican" and "Yes, Cuban" response options were to the right of the other response options. In the 2010 Census Content panel, all of the Hispanic origin responses were in a single column. It was hypothesized that respondents in the Census 2000 Content panel may have more easily overlooked the Puerto Rican and Cuban response options and thus, would produce fewer responses for those categories when compared to the 2010 Census Content panel. Additionally, the 2010 Census questionnaire provided examples for the "other" Hispanic origin response, while the Census 2000 questionnaire did not. To examine the results of both of these changes, Table 19 presents the response distributions for each of the detailed Hispanic origin categories and differences by panel, for all respondents who indicated they were of Hispanic, Latino, or Spanish origin.

**Table 19. Detailed Hispanic Origin Distributions and Differences by Panel**

| Detailed Hispanic Origin Categories | Census 2000 Content | 2010 Census Content | Difference (2000 – 2010) |
|---|---|---|---|
| **Total persons identified as Hispanic** | **15,395** | **15,299** | |
| "Check box groups": Hispanic groups with separate check boxes in both questionnaires (sum of 1-3) | 64.0 (0.39) | 72.1 (0.36) | **-8.1 (0.66)*** |
| 1 Mexican, Mexican Am., Chicano | 49.4 (0.40) | 58.0 (0.40) | **-8.6 (0.70)*** |
| 2 Puerto Rican | 10.1 (0.24) | 9.2 (0.23) | **0.9 (0.42)*** |
| 3 Cuban | 4.5 (0.17) | 5.0 (0.18) | -0.5 (0.30) |
| "Example Groups": listed as examples on the 2010 Census (Control) questionnaire but not on Census 2000 Content questionnaire (sum of 4-9) | 8.3 (0.22) | 11.2 (0.25) | **-2.9 (0.42)*** |
| 4 Argentinean | 0.5 (0.06) | 1.0 (0.08) | **-0.5 (0.12)*** |
| 5 Colombian | 1.4 (0.09) | 2.0 (0.11) | **-0.6 (0.18)*** |
| 6 Dominican | 3.1 (0.14) | 3.2 (0.14) | -0.10 (0.25) |
| 7 Nicaraguan | 0.2 (0.04) | 0.6 (0.06) | **-0.4 (0.09)*** |
| 8 Salvadoran | 2.8 (0.13) | 3.0 (0.14) | -0.2 (0.24) |
| 9 Spaniard | 0.2 (0.04) | 1.3 (0.09) | **-1.1 (0.12)*** |
| All other specific Hispanic groups | 8.6 (0.23) | 10.5 (0.25) | **-1.9 (0.42)*** |
| Write-in is a general descriptor ("Hispanic" / "Latino" / "Spanish") | 12.0 (0.26) | 2.9 (0.14) | **9.1 (0.37)*** |
| Other Hispanic checkbox without a write-in or a write-in that is uncodable | 7.1 (0.21) | 3.3 (0.14) | **3.8 (0.31)*** |
| **Total** | **100%** | **100%** | |

Source: CPEX Sample and Response Files; Standard errors in parentheses.
*Denotes statistically significant difference between panels with an error rate of $\alpha$=0.10.
Note: Standard errors were derived by assuming a simple random sample survey design and inflating the estimate by 1.24, which is an empirical estimate of the contribution of the within-household variance to the estimate of sampling error.

The 2010 Census Content panel resulted in significantly more responses to the "Mexican, Mexican Am., and Chicano" checkbox category (difference of 8.6 percentage points). However, we see the opposite of our expected result for the "Puerto Rican" response category. The 2010 Census Content panel had significantly fewer responses to the "Puerto Rican" category (difference of 0.9 percentage points). This, along with the absence of an effect on the "Cuban" responses, was not expected given the placement of those response boxes on the Census 2000-style questionnaire. It is possible that this is due to an unintended effect of the revised layout of the questionnaire. In the Census 2000 Content panel, the "Puerto Rican" response category extends out past the question stem and might draw the respondent's eye. Additionally, if respondents read across categories, instead of down, "Puerto Rican" is the first "Yes" response option. Therefore, we might be seeing a primacy effect for the Census 2000 Content panel. In the 2010 Census Content Panel, where respondents are forced to read in a downward direction,

the "Mexican, Mexican Am., Chicano" response category is the first "Yes" response and we see higher proportions of respondents providing an answer in this category for this panel.

There was also an increase in reporting of the example groups in the 2010 Census Content panel (difference of 2.9 percentage points). This is most likely due to the fact that the example groups were listed as examples on the 2010 Census questionnaire but were absent from the Census 2000 questionnaire. The specific example groups with increased reporting in the 2010 Census Content panel were Argentinean, Colombian, Nicaraguan, and Spaniard. There was a 1.9 percentage point increase in reporting all other specific Hispanic origin groups (i.e., those not listed as examples) in the 2010 Census Content panel, compared to the Census 2000 Content panel. Again, the presence of examples on the 2010 Census form is likely to have prompted respondents to write in specific examples instead of just checking the "other" checkbox.

The 2010 Census Content panel saw a significant decrease in general descriptor write-ins such as "Hispanic," "Latino," or "Spanish" (difference of 9.1 percentage points). As supported by previous research, it is likely that the inclusion of examples on the 2010 Census form helped provide context to respondents by what was meant by "other" Hispanic origins. We also saw a 3.8 percentage point decrease in responses to the "other" Hispanic checkbox that either did not have a write-in or had a write-in that was uncodeable, which is also encouraging. This means that respondents who checked "Yes, another Hispanic, Latino, or Spanish origin" provided valid write-ins more often for the 2010 Census Content panel than the Census 2000 Content panel.

In summary, the changes to the Hispanic origin item resulted in: more responses to the checkbox groups; more write-ins of the example groups; fewer write-ins that were general descriptors; and fewer "Yes, another Hispanic, Latino, or Spanish origin" responses that were not accompanied by a valid write-in. All of these results were expected, given the mid-decade testing that occurred. It is encouraging to see that these findings held, in the presence of all other questionnaire changes that were made to the questionnaire throughout the decade.

In addition to providing example groups to the "other" Hispanic origin item, the 2010 Census form also provided examples for the "Other Asian" and "Other Pacific Islander" items. The "Other Asian" examples were Hmong, Laotian, Thai, Pakistani, and Cambodian. The "Other Pacific Islander" examples were Fijian and Tongan. The response distributions for each of the detailed Asian origins can be found in Table 20.

**Table 20. Detailed Asian Origin Distributions and Differences by Panel**

| Detailed Asian Origin Categories | Census 2000 Content | 2010 Census Content | Difference (2000 – 2010) |
|---|---|---|---|
| **Total persons identified as Asian** | **1,536** | **1,618** | |
| "Check box groups": Asian groups with separate check boxes in both questionnaires (sum of 1-6) | 89.0 (0.80) | 88.6 (0.79) | 0.4 (1.39) |
| 1 Asian Indian | 17.4 (0.97) | 16.1 (0.91) | 1.3 (1.65) |
| 2 Japanese | 9.6 (0.75) | 9.0 (0.71) | 0.6 (1.28) |
| 3 Chinese | 22.2 (1.06) | 25.7 (1.09) | **-3.5 (1.88)*** |
| 4 Korean | 10.9 (0.80) | 10.8 (0.77) | 0.1 (1.37) |
| 5 Filipino | 18.8 (1.00) | 18.2 (0.96) | 0.6 (1.72) |
| 6 Vietnamese | 10.1 (0.77) | 8.9 (0.71) | 1.2 (1.30) |
| "Example Groups": listed as examples on the 2010 Census (Control) questionnaire but not on Census 2000 Content questionnaire (sum of 7-11) | 9.0 (0.73) | 7.9 (0.67) | 1.1 (1.23) |
| 7 Hmong | 2.6 (0.41) | 1.6 (0.31) | 1.0 (0.63) |
| 8 Laotian | 1.4 (0.30) | 1.2 (0.27) | 0.2 (0.50) |
| 9 Thai | 1.4 (0.30) | 1.3 (0.28) | 0.1 (0.51) |
| 10 Pakistani | 1.4 (030) | 2.2 (0.36) | -0.8 (0.59) |
| 11 Cambodian | 2.2 (0.37) | 1.6 (0.31) | 0.6 (0.60) |
| All other specific Asian groups | 3.8 (0.49) | 4.8 (0.53) | -1.0 (0.89) |
| Write-in is a general descriptor ("Asian") | 0.8 (0.23) | 0.4 (0.16) | 0.4 (0.34) |
| Asian, no write-in or write-in uncodeable | 2.0 (0.36) | 2.2 (0.36) | -0.2 (0.63) |

Source: CPEX Sample and Response Files; Standard errors in parentheses.
*Denotes statistically significant difference between panels with an error rate of $\alpha$=0.10. Standard errors were derived by assuming a simple random sample survey design and inflating the estimate by 1.24, which is an empirical estimate of the contribution of the within-household variance to the estimate of sampling error.
Note: Categories are not mutually exclusive; Respondents who provided multiple Asian origin responses were captured in each category they indicated.

Results of the detailed Asian origin distributions yielded only one significant result. There was a significantly higher response to "Chinese" in the 2010 Census Content panel, compared to the Census 2000 Content panel. Considering that the Chinese response option was identical in both panels, it is likely that this difference is attributable to random error. It does not appear that the inclusion of specific origin examples for the "Other Asian" response had significant impact on the response distribution of the 2010 Census Content, compared to the Census 2000 Panel, in the presence of all other questionnaire changes.

Results of the detailed Pacific Islander origin distributions were also examined, but the number of people of Pacific Islander origin in each panel was very small (about 100 per panel). There was a significantly lower response to "Samoan" in the 2010 Census Content panel, compared to

the Census 2000 Content panel (difference of 13.2 percentage points; SE=6.03) but, considering that the Samoan response option was identical in both panels and sampling error was relatively large, we attribute this difference to random error. As with the previous research (Alberti, 2006), we did not find a significant impact on response distributions as a result of the inclusion of specific origin examples for the "Other Pacific Islander" response.

### 5.5 Within-Household Coverage

The 2010 Census questionnaire contained two questions that did not appear on the Census 2000 form: a household-level undercount question that asked if there were individuals who were not counted, but were staying at that location; and a person-level overcount question which asked respondents whether or not each person lived elsewhere part of the time[8]. These questions are important in identifying the correct number of residents that belong to a certain household, which we refer to as "within-household coverage." For images of the undercount and overcount questions, refer to Figure 7.

**Figure 7. Undercount and Overcount Questions from the 2010 Census Questionnaire**

| | |
|---|---|
| **Undercount** | **2. Were there any additional people staying here April 1, 2010 that you did not include in Question 1?**<br>*Mark ☒ all that apply.*<br>☐ Children, such as newborn babies or foster children<br>☐ Relatives, such as adult children, cousins, or in-laws<br>☐ Nonrelatives, such as roommates or live-in baby sitters<br>☐ People staying here temporarily<br>☐ No additional people |
| **Overcount** | **10. Does Person 1 sometimes live or stay somewhere else?**<br>☐ No ☐ Yes — *Mark ☒ all that apply.*<br>☐ In college housing<br>☐ In the military<br>☐ At a seasonal or second residence<br>☐ For child custody<br>☐ In jail or prison<br>☐ In a nursing home<br>☐ For another reason |

[8] Although the questions did not appear on the Census 2000 form, they are not new concepts. Other versions of these questions did appear on the 1990 Census form.

Table 21 displays the proportion of households sent to CFU for count discrepancies, by panel. A questionnaire met the count discrepancy criteria if the number of valid people on the roster differed from the respondent-provided population count (Item 1 on both questionnaires). Cases were flagged as "High" count discrepancy if the number of valid people on the roster was higher than the respondent-provided population count. Conversely, cases were flagged as "Low" count discrepancy if the number of valid people on the roster was lower than the respondent-provided population count. For more details concerning the CFU eligible universe, see Kostanich and Linse, 2009.

**Table 21. Percent of Households Sent to CFU for Count Discrepancies by Panel**

| PANEL | Total | Percent of Households Sent to CFU for Count Discrepancy | |
|---|---|---|---|
| | | High | Low |
| **Census 2000 Content** | 11,505 | 1.2 (0.10) | 2.0 (0.13) |
| **2010 Census Content** | 11,762 | 1.5 (0.11) | 0.7 (0.08) |
| | | **Differences (Census 2000 – 2010 Census)** | |
| **Census 2000 – 2010 Census** | | **-0.3 (0.15)*** | **1.3 (0.15)*** |

Source: CFU Analysis File derived from the 2010 Decennial Response File (DRF); Programming assistance provided by the Enumeration Methods and Requirements Branch, DSSD.
*Denotes statistically significant difference between panels with an error rate of $\alpha$=0.10.
Note: Standard errors, in parentheses, were derived by assuming a simple random sample survey design, which generally yields conservative estimates of sampling error.

Table 21 shows a significant difference in the proportion of households sent to CFU for both "High" and "Low" count discrepancy. The 2010 Census Content panel had a significantly higher proportion of cases sent for "High" count discrepancy than the Census 2000 Content panel. This result is consistent with the 2005 NCT which showed that the presence of coverage questions resulted in more instances of count discrepancy.

Conversely, the 2010 Census Content panel had a significantly lower proportion of cases sent for "Low" count discrepancy. This was an unexpected finding and is likely due to cases being sent to CFU at a higher rate in the Census 2000 Content panel due to the 2010 count discrepancy definition of valid persons. Unlike the 2010 Census Content panel, the Census 2000 Content panel only allowed respondents to provide a name for Persons 7-12. This meant that Persons 7-12 could not be considered data-defined, or valid, because they only had one census data item (i.e., name). Since Persons 7-12 on the Census 2000 Content panel were automatically flagged as invalid, there was likely a disproportionately high number of "Low" count discrepancy cases in this panel.

## 6. Related Assessments, Evaluations, and/or Experiments

This experiment was part of the 2010 AQE. Other components of the 2010 AQE included the race and Hispanic origin experimental treatments and an alternative coverage overcount question treatment. Related 2010 Assessments included the Mail Response/Return Rate Assessment and the Item Nonresponse Rates Assessment.

## 7. Lessons Learned, Conclusions, and Recommendations

*Conclusions*

The 2010 Census Content panel had lower overall return rates than the 2000 Census Content panel. Additionally, many item nonresponse rates, such as population count, sex, age/date of birth, and Hispanic origin, were worse for the 2010 Census Content panel. In general, response distributions were in the expected direction, given the mid-decade test results. However, we must still consider the combined effect of all questionnaire changes when assessing item-level results.

Upon close review of the 2010 Census form, it is clear that it violates a few principles from a body of survey research on visual design and layout for self-administered questionnaires. One principle of visual design is the identification of a clear starting point. Although the 2010 Census questionnaire maintained the use of the words "Start here," it is smaller and less prominent than on the Census 2000-style questionnaire. In addition, the first question on the Census 2000-style questionnaire immediately followed the "Start here" instruction while the "Start here" on the 2010 Census questionnaire was immediately followed by lengthy instructions, thereby pushing the first question halfway down the page. Therefore, we believe that the starting point on the 2010 Census questionnaire was not as clear as it was on the 2000 Census-style form, which may have resulted in higher item nonresponse to the first question.

Visual design principles also assert that an extra blank link should be inserted between questions to ensure more space between questions than between question sub-elements. This was done on the Census 2000-style questionnaire but was not possible on the 2010 Census questionnaire, due to lengthier content.

The violation of these principles contributed to an overall cluttered look and reduction in white space on the 2010 Census questionnaire. Research supports the theory that the visual design of a self-administered questionnaire can significantly impact response behavior and contribute to a respondent's perception of burden (Dillman, 2000; Christian and Dillman, 2004; Sudman and Bradburn, 1982). Therefore, we believe this may have been an over-arching factor in the lower overall return rates and higher item nonresponse rates for some items on the 2010 Census Content panel compared to the Census 2000 Content panel. In summary, the crowded look of the 2010 Census questionnaire may have caused some respondents to be less willing to complete it.

*Recommendation*

We recommend considering an alternative form design to achieve an increase in white space on the form. However, the method used to gain the increase in white space must be considered in terms of a cost to benefit ratio. For example, if it is decided that a larger form is needed, that larger paper form will likely cost more to produce and mail. The increased cost in production will need to be compared to any potential savings in nonresponse followup costs (due to the potential gains in mail return rates) to determine the overall impact. Additional research and testing should be dedicated to determining a solution.

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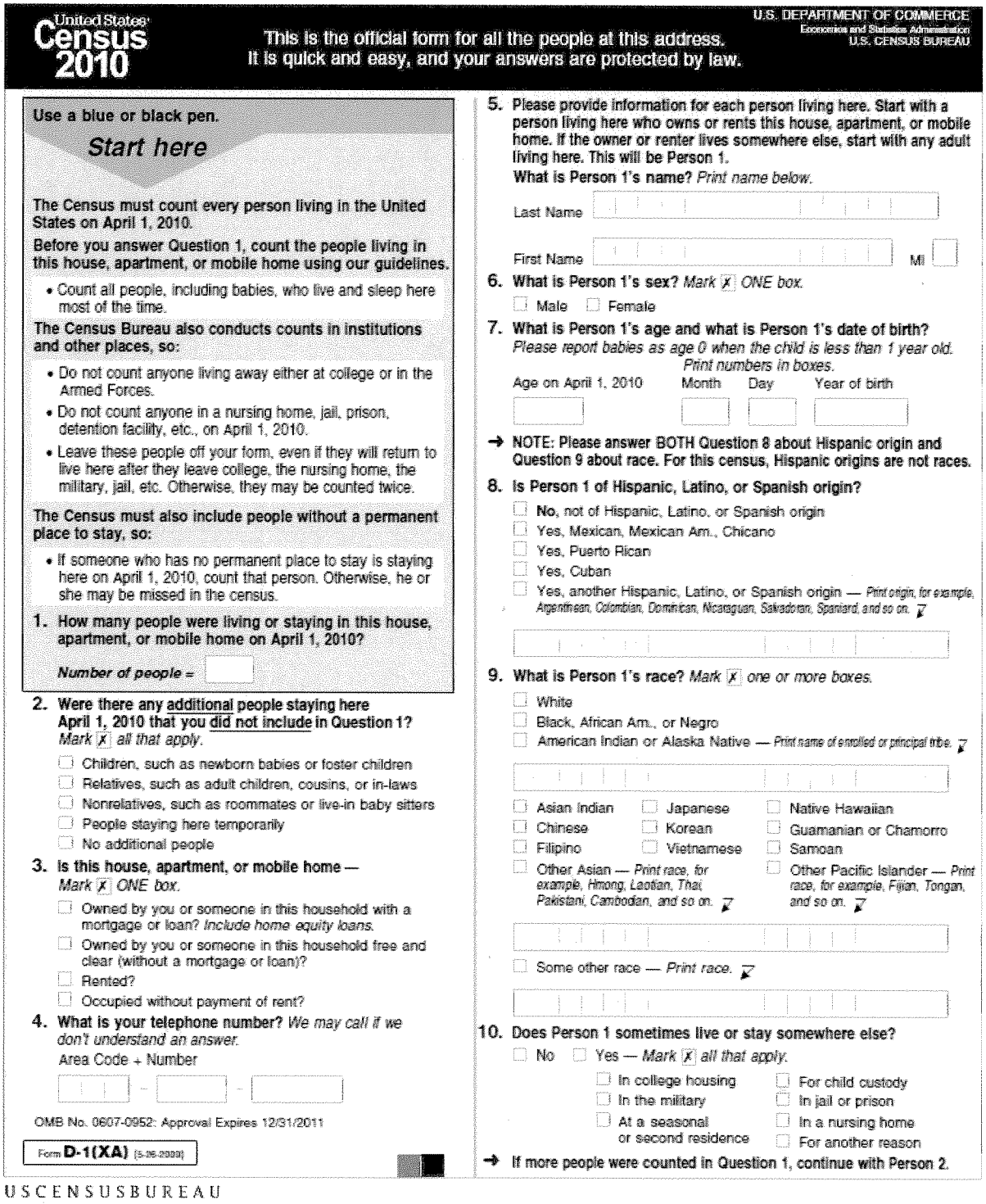
## Appendix A
## Changes Made to the Census Short Form Since 2000

| | | |
|---|---|---|
| **Header** | Header modified with text inline and triangle, no seal from the United States Department of Commerce | Implemented 2004 Census Test |
| | Header text smaller | Implemented in 2005 NCT |
| **Population Count** | Box placed around instruction and population count field | Implemented in 2004 Census Test |
| | The response box moved until after the instructions | Implemented in 2004 Census Test |
| | Residence rules instruction have been modified | Implemented in 2004 Census Test |
| **Undercount** | This is a new question that has been added for the 2010 Census | Tested in 2005 Census Test<br>Implemented in 2006 Census Test |
| **Tenure** | Statement, "Include home equity loans" at the end of the first response category | Tested 2005 NCT<br>Implemented in 2008 DR |
| | Dropped, "for cash rent" from "rented" category | Tested 2005 NCT Implemented in 2008 DR |
| | Drops "cash" from "Occupied without payment of cash rent" category | Tested 2005 NCT Implemented in 2008 DR |
| **Phone Number** | "What is your telephone number" instead of "What is Person 1's telephone number" | Implemented in 2004 Census Test |
| | Reverse order of Phone number and Person 1 name questions | Implemented 2004 Census Test |
| **Person 1's Name** | Moved from bottom of column 1 to the top of column 2. | Implemented in 2004 Census Test |
| | Instructions for who to list as Person 1 were changed | Different versions tested throughout decade. 2010 Census version implemented in 2008 DR. |
| | Response boxes appear to the right instead of below | Implemented in 2006 Census Test |
| **Person 2-6 Name** | Response boxes to the right instead of below | Implemented in 2006 Census Test |
| | Removal of "What is Person 2's name? *Print name below.*"<br>Replaced with "Print name of Person 2." | Implemented 2003 NCT |
| **Sex** | No changes made | N/A |
| **Age/Date of Birth** | Age and Date of Birth are next to each other instead of stacked on each other for Person 1 | Implemented in 2004 Census Test |
| | Has instructions for reporting babies as age zero if child is under one year | Tested 2005 NCT Implemented in 2006 Census Test |

| | | |
|---|---|---|
| **Hispanic Origin** | Instructions state, "For this census, Hispanic origins are not races." | Tested in 2003 NCT<br>Implemented in 2006 Census Test |
| | Order of Hispanic, Latino, or Spanish terms are different | Tested in 2005 NCT Implemented in 2006 Census Test |
| | Hispanic, Latino, or Spanish origin (term "origin" added) and uses commas (,) instead of slashes (/) | Tested in 2003 NCT<br>Implemented in 2004 Census Test |
| | Removes instruction to mark "x" in the "No" box | Implemented in 2006 Census Test |
| | Response categories are stacked on top of each other starting with the "No" response instead of two columns | Implemented in 2008 DR<br>In 2006 Census Test, only response categories are "Yes" and "No" |
| | Adds examples of other Hispanic origins | Tested in 2003 NCT<br>Implemented in 2004 |
| **Race** | Removes instruction, "to indicate what this person considers himself/herself to be." | Implemented in 2006 Census Test |
| | Adds examples to 'Other Asian' and 'Other Pacific Islander' categories | Tested in 2003 NCT<br>Implemented in 2004 Census Test |
| **Overcount** | This is a new question that has been added for the 2010 Census | Tested in 2005 Census Test<br>Implemented in 2006 Census Test |
| **Relationship** | Removal of "If NOT RELATED to Person 1" spanner | Tested 2005 NCT Implemented in 2006 Census Test |
| | Uses "Biological" instead of "Natural-born" | Tested 2005 NCT Implemented in 2006 Census Test |
| | Removed "other relative" write-in field | Tested in 2004 Census, Verified in 2005 NCT, Implemented in 2006 Census Test |
| | Does not have "Foster Child" response category | Implemented in 2008 DR |
| | Uses "or" instead of slashes (/) or commas (,) | Implemented in 2004 NCT |
| **Person 2 - 6** | Does not have graphic or statement at top of page about helping the community | Implemented in 2003 NCT |
| **Person 7 - 12** | Has added sex, age, date of birth, and relation to person one | Implemented in 2004 Census Test |

# Appendix B
# Panel Questionnaire Examples

## Example of the Control Panel (2010 Census) Questionnaire – Page 1



United States Census 2010

This is the official form for all the people at this address.
It is quick and easy, and your answers are protected by law.

U.S. DEPARTMENT OF COMMERCE
Economics and Statistics Administration
U.S. CENSUS BUREAU

**Use a blue or black pen.**

*Start here*

**The Census must count every person living in the United States on April 1, 2010.**

**Before you answer Question 1, count the people living in this house, apartment, or mobile home using our guidelines.**

- Count all people, including babies, who live and sleep here most of the time.

**The Census Bureau also conducts counts in institutions and other places, so:**

- Do not count anyone living away either at college or in the Armed Forces.
- Do not count anyone in a nursing home, jail, prison, detention facility, etc., on April 1, 2010.
- Leave these people off your form, even if they will return to live here after they leave college, the nursing home, the military, jail, etc. Otherwise, they may be counted twice.

**The Census must also include people without a permanent place to stay, so:**

- If someone who has no permanent place to stay is staying here on April 1, 2010, count that person. Otherwise, he or she may be missed in the census.

**1. How many people were living or staying in this house, apartment, or mobile home on April 1, 2010?**

*Number of people =*

**2. Were there any additional people staying here April 1, 2010 that you did not include in Question 1?** *Mark [X] all that apply.*

- ☐ Children, such as newborn babies or foster children
- ☐ Relatives, such as adult children, cousins, or in-laws
- ☐ Nonrelatives, such as roommates or live-in baby sitters
- ☐ People staying here temporarily
- ☐ No additional people

**3. Is this house, apartment, or mobile home —** *Mark [X] ONE box.*

- ☐ Owned by you or someone in this household with a mortgage or loan? *Include home equity loans.*
- ☐ Owned by you or someone in this household free and clear (without a mortgage or loan)?
- ☐ Rented?
- ☐ Occupied without payment of rent?

**4. What is your telephone number?** *We may call if we don't understand an answer.*

Area Code + Number

OMB No. 0607-0952: Approval Expires 12/31/2011

Form **D-1(XA)** (5-06-2009)

**5. Please provide information for each person living here. Start with a person living here who owns or rents this house, apartment, or mobile home. If the owner or renter lives somewhere else, start with any adult living here. This will be Person 1.**

**What is Person 1's name?** *Print name below.*

Last Name

First Name MI

**6. What is Person 1's sex?** *Mark [X] ONE box.*

☐ Male ☐ Female

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

*Please report babies as age 0 when the child is less than 1 year old.*
*Print numbers in boxes.*

| Age on April 1, 2010 | Month | Day | Year of birth |
|---|---|---|---|
| | | | |

→ **NOTE: Please answer BOTH Question 8 about Hispanic origin and Question 9 about race. For this census, Hispanic origins are not races.**

**8. Is Person 1 of Hispanic, Latino, or Spanish origin?**

- ☐ **No,** not of Hispanic, Latino, or Spanish origin
- ☐ Yes, Mexican, Mexican Am., Chicano
- ☐ Yes, Puerto Rican
- ☐ Yes, Cuban
- ☐ Yes, another Hispanic, Latino, or Spanish origin — *Print origin, for example, Argentinean, Colombian, Dominican, Nicaraguan, Salvadoran, Spaniard, and so on.*

**9. What is Person 1's race?** *Mark [X] one or more boxes.*

- ☐ White
- ☐ Black, African Am., or Negro
- ☐ American Indian or Alaska Native — *Print name of enrolled or principal tribe.*
- ☐ Asian Indian
- ☐ Chinese
- ☐ Filipino
- ☐ Japanese
- ☐ Korean
- ☐ Vietnamese
- ☐ Native Hawaiian
- ☐ Guamanian or Chamorro
- ☐ Samoan
- ☐ Other Asian — *Print race, for example, Hmong, Laotian, Thai, Pakistani, Cambodian, and so on.*
- ☐ Other Pacific Islander — *Print race, for example, Fijian, Tongan, and so on.*
- ☐ Some other race — *Print race.*

**10. Does Person 1 sometimes live or stay somewhere else?**

☐ No ☐ Yes — *Mark [X] all that apply.*

- ☐ In college housing
- ☐ In the military
- ☐ At a seasonal or second residence
- ☐ For child custody
- ☐ In jail or prison
- ☐ In a nursing home
- ☐ For another reason

→ **If more people were counted in Question 1, continue with Person 2.**

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# Example of the Control Panel (2010 Census) Questionnaire – Page 2

**1. Print name of Person 2**

Last Name

First Name MI

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

- ☐ Husband or wife
- ☐ Biological son or daughter
- ☐ Adopted son or daughter
- ☐ Stepson or stepdaughter
- ☐ Brother or sister
- ☐ Father or mother
- ☐ Grandchild
- ☐ Parent-in-law
- ☐ Son-in-law or daughter-in-law
- ☐ Other relative
- ☐ Roomer or boarder
- ☐ Housemate or roommate
- ☐ Unmarried partner
- ☐ Other nonrelative

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

☐ Male ☐ Female

**4. What is this person's age and what is this person's date of birth?**
*Please report babies as age 0 when the child is less than 1 year old.*
*Print numbers in boxes.*

Age on April 1, 2010 | Month | Day | Year of birth

**→ NOTE: Please answer BOTH Question 5 about Hispanic origin and Question 6 about race. For this census, Hispanic origins are not races.**

**5. Is this person of Hispanic, Latino, or Spanish origin?**

- ☐ **No,** not of Hispanic, Latino, or Spanish origin
- ☐ Yes, Mexican, Mexican Am., Chicano
- ☐ Yes, Puerto Rican
- ☐ Yes, Cuban
- ☐ Yes, another Hispanic, Latino, or Spanish origin — *Print origin, for example, Argentinean, Colombian, Dominican, Nicaraguan, Salvadoran, Spaniard, and so on.*

**6. What is this person's race?** *Mark ☒ one or more boxes.*

- ☐ White
- ☐ Black, African Am., or Negro
- ☐ American Indian or Alaska Native — *Print name of enrolled or principal tribe.*
- ☐ Asian Indian
- ☐ Chinese
- ☐ Filipino
- ☐ Japanese
- ☐ Korean
- ☐ Vietnamese
- ☐ Native Hawaiian
- ☐ Guamanian or Chamorro
- ☐ Samoan
- ☐ Other Asian — *Print race, for example, Hmong, Laotian, Thai, Pakistani, Cambodian, and so on.*
- ☐ Other Pacific Islander — *Print race, for example, Fijian, Tongan, and so on.*
- ☐ Some other race — *Print race.*

**7. Does this person sometimes live or stay somewhere else?**

☐ No ☐ Yes — *Mark ☒ all that apply.*

- ☐ In college housing
- ☐ In the military
- ☐ At a seasonal or second residence
- ☐ For child custody
- ☐ In jail or prison
- ☐ In a nursing home
- ☐ For another reason

**→ If more people were counted in Question 1 on the front page, continue with Person 3.**

**1. Print name of Person 3**

Last Name

First Name MI

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

- ☐ Husband or wife
- ☐ Biological son or daughter
- ☐ Adopted son or daughter
- ☐ Stepson or stepdaughter
- ☐ Brother or sister
- ☐ Father or mother
- ☐ Grandchild
- ☐ Parent-in-law
- ☐ Son-in-law or daughter-in-law
- ☐ Other relative
- ☐ Roomer or boarder
- ☐ Housemate or roommate
- ☐ Unmarried partner
- ☐ Other nonrelative

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

☐ Male ☐ Female

**4. What is this person's age and what is this person's date of birth?**
*Please report babies as age 0 when the child is less than 1 year old.*
*Print numbers in boxes.*

Age on April 1, 2010 | Month | Day | Year of birth

**→ NOTE: Please answer BOTH Question 5 about Hispanic origin and Question 6 about race. For this census, Hispanic origins are not races.**

**5. Is this person of Hispanic, Latino, or Spanish origin?**

- ☐ **No,** not of Hispanic, Latino, or Spanish origin
- ☐ Yes, Mexican, Mexican Am., Chicano
- ☐ Yes, Puerto Rican
- ☐ Yes, Cuban
- ☐ Yes, another Hispanic, Latino, or Spanish origin — *Print origin, for example, Argentinean, Colombian, Dominican, Nicaraguan, Salvadoran, Spaniard, and so on.*

**6. What is this person's race?** *Mark ☒ one or more boxes.*

- ☐ White
- ☐ Black, African Am., or Negro
- ☐ American Indian or Alaska Native — *Print name of enrolled or principal tribe.*
- ☐ Asian Indian
- ☐ Chinese
- ☐ Filipino
- ☐ Japanese
- ☐ Korean
- ☐ Vietnamese
- ☐ Native Hawaiian
- ☐ Guamanian or Chamorro
- ☐ Samoan
- ☐ Other Asian — *Print race, for example, Hmong, Laotian, Thai, Pakistani, Cambodian, and so on.*
- ☐ Other Pacific Islander — *Print race, for example, Fijian, Tongan, and so on.*
- ☐ Some other race — *Print race.*

**7. Does this person sometimes live or stay somewhere else?**

☐ No ☐ Yes — *Mark ☒ all that apply.*

- ☐ In college housing
- ☐ In the military
- ☐ At a seasonal or second residence
- ☐ For child custody
- ☐ In jail or prison
- ☐ In a nursing home
- ☐ For another reason

**→ If more people were counted in Question 1 on the front page, continue with Person 4.**

## Example of the Census 2000 Panel Questionnaire – Page 1

United States Census 2010

This is the official form for all the people at this address. It is quick and easy, and your answers are protected by law. Complete the Census and help your community get what it needs - today and in the future.

U.S. DEPARTMENT OF COMMERCE
Economics and Statistics Administration
U.S. CENSUS BUREAU

**Start Here** **Please use a black or blue pen.**

**1. How many people were living or staying in this house, apartment, or mobile home on April 1, 2010?**

Number of people

***INCLUDE*** in this number:

- foster children, roomers, or housemates
- people staying here on April 1, 2010 who have no other permanent place to stay.
- people living here most of the time while working, even if they have another place to live

***DO NOT INCLUDE*** in this number:

- college students living away while attending college
- people in a correctional facility, nursing home, or mental hospital on April 1, 2010
- Armed Forces personnel living somewhere else
- people who live or stay at another place most of the time

**2. Is this house, apartment, or mobile home —** *Mark [X] ONE box.*

- ☐ 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?

**3. Please answer the following questions for each person living in this house, apartment, or mobile home. Start with the name of one of the people living here who owns, is buying, or rents this house, apartment, or mobile home. If there is no such person, start with any adult living or staying here. We will refer to this person as Person 1.**

**What is this person's name?** *Print name below.*

Last Name

First Name MI

**4. What is Person 1's telephone number?** *We may call this person if we don't understand an answer.*

Area Code + Number

( ) - -

**5. What is Person 1's sex?** *Mark [X] ONE box.*

☐ Male ☐ Female

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

Age on April 1, 2010

*Print numbers in boxes.*

Month Day Year of birth

→ **NOTE: Please answer BOTH Questions 7 and 8.**

**7. Is Person 1 Spanish/Hispanic/Latino?** *Mark [X] 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.*

**8. What is Person 1's race?** ***Mark [X] one or more races*** *to indicate what this person considers himself/herself to be.*

- ☐ White
- ☐ Black, African Am., or Negro
- ☐ American Indian or Alaska Native — *Print name of enrolled or principal tribe.*
- ☐ Asian Indian
- ☐ Japanese
- ☐ Native Hawaiian
- ☐ Chinese
- ☐ Korean
- ☐ Guamanian or Chamorro
- ☐ Filipino
- ☐ Vietnamese
- ☐ Samoan
- ☐ Other Asian — *Print race.*
- ☐ Other Pacific Islander — *Print race.*
- ☐ Some other race — *Print race.*

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→ **If more people live here, continue with Person 2.**

Form D-1(X1) (7-23-2009)

USCENSUSBUREAU

## Example of the Census 2000 Panel Questionnaire – Page 2

**Person 2**

Your answers are important! Every person in the Census counts.

1. **What is Person 2's name?** *Print name below.*
   Last Name
   First Name MI
2. **How is this person related to Person 1?** *Mark [X] 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
3. **What is this person's sex?** *Mark [X] ONE box.*
   - [ ] Male [ ] Female
4. **What is this person's age and what is this person's date of birth?**
   *Print numbers in boxes.*
   Age on April 1, 2010 | Month | Day | Year of birth

→ **NOTE: Please answer BOTH Questions 5 and 6.**

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, other Spanish/Hispanic/Latino — *Print group.*
   - [ ] Yes, Puerto Rican
   - [ ] Yes, Cuban
6. **What is this person's race?** ***Mark [X] one or more races*** *to indicate what this person considers himself/herself to be.*
   - [ ] White
   - [ ] Black, African Am., or Negro
   - [ ] American Indian or Alaska Native — *Print name of enrolled or principal tribe.*
   - [ ] Asian Indian
   - [ ] Chinese
   - [ ] Filipino
   - [ ] Other Asian — *Print race.*
   - [ ] Japanese
   - [ ] Korean
   - [ ] Vietnamese
   - [ ] Native Hawaiian
   - [ ] Guamanian or Chamorro
   - [ ] Samoan
   - [ ] Other Pacific Islander — *Print race.*
   - [ ] Some other race — *Print race.*

→ **If more people live here, continue with Person 3.**

**Person 3**

Census information helps your community get financial assistance for roads, hospitals, schools, and more.

1. **What is Person 3's name?** *Print name below.*
   Last Name
   First Name MI
2. **How is this person related to Person 1?** *Mark [X] 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
3. **What is this person's sex?** *Mark [X] ONE box.*
   - [ ] Male [ ] Female
4. **What is this person's age and what is this person's date of birth?**
   *Print numbers in boxes.*
   Age on April 1, 2010 | Month | Day | Year of birth

→ **NOTE: Please answer BOTH Questions 5 and 6.**

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, other Spanish/Hispanic/Latino — *Print group.*
   - [ ] Yes, Puerto Rican
   - [ ] Yes, Cuban
6. **What is this person's race?** ***Mark [X] one or more races*** *to indicate what this person considers himself/herself to be.*
   - [ ] White
   - [ ] Black, African Am., or Negro
   - [ ] American Indian or Alaska Native — *Print name of enrolled or principal tribe.*
   - [ ] Asian Indian
   - [ ] Chinese
   - [ ] Filipino
   - [ ] Other Asian — *Print race.*
   - [ ] Japanese
   - [ ] Korean
   - [ ] Vietnamese
   - [ ] Native Hawaiian
   - [ ] Guamanian or Chamorro
   - [ ] Samoan
   - [ ] Other Pacific Islander — *Print race.*
   - [ ] Some other race — *Print race.*

→ **If more people live here, continue with Person 4.**