

2020 Census Research and Testing 2012 National Census Test Contact Strategy, Optimizing Self-Response

A New Design for the 21st Century

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Prepared by Decennial Statistical Studies Division



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Executive Summary

Study Overview

The Census Bureau is committed to using the Internet as a primary response option for the 2020 Census. Recent Census Bureau Internet research has developed around the Internet Push methodology, in which households do not receive a paper questionnaire in the initial mailing. Questionnaires were only sent to households who did not respond by a pre-determined date. This approach was intended to maximize self-response, while considerably reducing the mailing costs associated with a decennial census.

This test served as an opportunity to establish baseline response rate indicators that we can continue to monitor as we approach the 2020 Census. The 2012 National Census Test assessed the relative self-response rates and Internet self-response rates across various contact strategies in the presence of an Internet Push methodology. In addition to a control panel, five experimental contact strategy panels were tested, all in the presence of an Internet Push methodology.

Results

The following sections provide summary results to answer the five research questions.

- 1) **What are the relative overall self-response rates (and self-response rate differences) associated with each of the six contact strategies? What are the Internet self-response rates by contact strategy?**
 - **Panel 1: Advance letter (Control):**
 - 60.3 percent self-response rate
 - 38.1 percent Internet, 17.2 percent Mail, 5.1 percent Telephone
 - **Panel 2: Absence of advance letter:**
 - 58.0 percent self-response rate
 - 37.2 percent Internet, 16.5 percent Mail, 4.3 percent Telephone
 - **Panel 3: Second reminder prior to questionnaire (and absence of advance letter):**
 - 64.8 percent self-response rate
 - 42.3 percent Internet, 13.6 percent Mail, 8.9 percent Telephone
 - **Panel 4: Accelerated questionnaire followed by second reminder (and absence of advance letter):**
 - 63.7 percent self-response rate
 - 38.1 percent Internet, 20.3 percent Mail, 5.3 percent Telephone
 - **Panel 5: Telephone number at initial contact, accelerated questionnaire, and second reminder (and absence of advance letter):**
 - 64.5 percent self-response rate
 - 37.4 percent Internet, 17.6 percent Mail, 9.4 percent Telephone
 - **Panel 6: Accelerated questionnaire, content tailored to nonrespondents, and second reminder (and absence of advance letter):**
 - 65.0 percent self-response rate
 - 37.6 percent Internet, 22.2 percent Mail, 5.2 percent Telephone

2) What are the Internet item nonresponse rates?

No statistically significant differences were found for item nonresponse rates across the six contact strategy panels when controlling for multiple comparisons. We consider the observed item nonresponse rates to be low, with all census data items having less than three percent item nonresponse.

3) What are the Internet item nonresponse rates, distributions, and proportions of detailed groups provided in the write-in fields (by the six race and origin groups) for each of two versions of the combined race and Hispanic origin question? Did the use of predictive text reduce the need for clerical race and origin coding?

The distributions between the two race and origin question versions were similar overall, with the exception of a higher proportion who reported Asian alone and a lower proportion of Hispanics who also reported a race category in the two-part question version. In addition, the two-part version had significantly lower item nonresponse than the one-part version. It is possible that this was due to a less cluttered appearance of the two-part question version.

Asian respondents tended to provide the most detail, of the major groups. The proportion of detailed reporting on the 2012 National Census Test Internet questionnaire (streamlined version) was generally less than the proportion from 2012 National Census Test paper questionnaires (streamlined version). The results did not indicate the expected benefit of enhanced reporting of detailed race and origin groups.

We hypothesized that predictive text would reduce the need for clerical race and origin coding by providing responses that a respondent could select rather than type in themselves. We found that the proportion of responses requiring clerical coding was higher for the Internet compared to paper, but we cannot attribute causal meaning since other factors may have contributed to this difference.

4) What is the reason code distribution for Telephone Questionnaire Assistance calls and overall Telephone Questionnaire Assistance workload associated with an Internet Push methodology to use as a baseline (where one of the treatments contained the Telephone Questionnaire Assistance phone number and another included a strong message tailored to nonrespondents)? What are the completed interview rates for telephone by contact strategy panel?

Telephone interviews were completed for 4,044 of 6,226 calls. Panel 3 and Panel 5 achieved the highest rates of telephone completes (8.9 percentage points and 9.4 percentage points respectively.)

The majority of the Telephone Questionnaire Assistance call sheets (76.0 percent) indicated that the respondent had computer or Internet access issues. Another frequently used category was difficulty with the Internet instrument (14.7 percent). Finally, the

“Other” category (14.8 percent) included calls from people who wanted to do the survey over the telephone, those with a disability that prohibited paper or Internet completion (e.g., blindness), and people calling to see if they could complete the survey for their elderly relative or neighbor.

5) What do the paradata tell us about respondent navigation of the Internet instrument, such as break-off rates, location of break-off, use of help screens, answer changes, access failures, completion times, etc.?

- 91 percent of Internet respondents logged into the instrument only once.
- The median completion time for the survey was 8.4 minutes.
- The break-off rate for the Internet questionnaire was 3.8 percent.
- Roughly 88 percent of the edit messages that occurred did so in the demographic section of the instrument and about 81 percent of all edit messages happened on the race and origin screens.
- Among the demographic items, help link usage was highest for the race and origin items.
- Nearly 93 percent of Internet respondents accessed the survey by computer, 2.4 percent by smartphone, and 4.7 percent by tablet.
- Over half of the sessions were accessed in Internet Explorer, 15.8 percent in Mozilla Firefox and 14.3 percent in Google Chrome.

Recommendations

- **Incorporate multiple components of the panel strategies in future contact strategy testing.**
- **Include a telephone number on all mailing materials, as well as the bolded, tailored statements on all nonresponse mailings.**
- **Develop question presentation for race and origin groups via Internet with edit messaging that encourages accurate detailed reporting, but does not promote satisficing response behavior that results in artificial detailed reporting.**
- **Analyze further the paradata to provide more intelligence on the interaction between Internet data collection technology and respondent behavior, as well as to examine detailed race and origin reporting patterns and a study of the American Community Survey detailed responses before and after the implementation of the production Internet response option.**
- **Design a National Test to study the effects of relatively lower cost contact methods.**
- **Research reporting patterns in the presence of predictive text.**
- **Investigate using email address as a contact strategy or as a followup.**
- **Test the Internet response mode and materials in languages other than English since reporting patterns may differ by population groups.**
- **Analyze 2012 National Census Test results by the eight segmentation clusters developed for the 2010 Census Integrated Communication Program in an effort to identify differing subpopulation response patterns.**
- **Evaluate changes in content resulting from optimizing Internet data collection for mobile devices.**

1. Introduction

To meet the strategic goals and objectives for the 2020 Census, the Census Bureau is making fundamental changes to the design, implementation, and management of the decennial Census. These changes will build upon the successes and address the challenges of the previous Censuses while also balancing challenges of cost containment, quality, flexibility, innovation, and disciplined and transparent acquisition decisions and processes.

The U.S. Census Bureau is committed to using the Internet as a primary response option in the 2020 Census. However, much research and testing is needed throughout the next decade to develop and implement a successful, secure, and user-friendly online instrument. The primary goal of the 2012 National Census Test (NCT) was to evaluate new within-household coverage strategies on the Internet. This test was also the first opportunity to establish baseline response rate indicators which we can continue to monitor as we approach the 2020 Census. To this end, the 2012 NCT assessed the relative self-response rates across various contact strategies. By honing in on the more successful strategies in 2012, additional Internet tests can make efficient use of sample and resources. Strategies tested in the 2012 NCT built off previous Census and American Community Survey (ACS) research and included an Internet Push methodology with additional reminders, new motivational wording, and various timing strategies for the paper questionnaire mailout.

The main objective of the 2012 NCT was to test new, dynamic approaches for collecting the number of people in a household, which are not feasible on a paper questionnaire. The concept of “usual residence” is the main principle in determining where people are counted in a census. Usual residence is defined as the place where a person lives and sleeps most of the time. The standard paper questionnaire used in a census typically begins with the residence rule instructions to guide the respondent as to whom to include as members of the household as of a specific reference date. After the residence rule is presented on the questionnaire, the respondent is asked about people who the respondent may have missed (undercounted) or included by mistake (overcounted). In a self-administered Internet data collection instrument, the respondent can be guided through a series of questions and conditional probes about usual residence to allow us to gain a better understanding of who was living in the household on the reference day.

For the 2012 NCT, the Census Bureau aimed to optimize the presentation of the residence rule instructions in an Internet data collection mode and identify validated methods for determining the appropriate number of people in a household in accordance with its residence rule. To fully assess the validity of the new approaches, a real-time, targeted, probing, coverage reinterview was conducted by telephone with a sample of households that responded by Internet. The purpose of this reinterview was to evaluate the accuracy of within-household coverage by comparing the final household population roster collected via each Internet coverage approach to the final roster collected via telephone. The goal was to obtain a “truth” measure for who was living in the household on the reference day, with the reinterview assumed to be closer to the truth due to its in-depth, interviewer-guided, probing questions.

A secondary objective of the 2012 NCT was to obtain baseline self-response rate indicators, Internet self-response rates and item nonresponse rates under the Internet Push methodology. The Census Bureau aimed to study the relative self-response rates associated with various contact strategies under an Internet Push methodology in which households are encouraged to respond online, and do not receive a paper questionnaire unless they have not responded by a pre-determined date. Contact strategies were built off previous census and ACS research and include alternate reminder and replacement questionnaire approaches, as well as variations on the timing of the replacement questionnaire.

The 2012 NCT also presented the opportunity to experimentally evaluate two versions of a combined Hispanic origin and race question in the Internet environment. Based on 2010 Census Race and Hispanic Origin Alternative Questionnaire Experiment (AQE) results, the combined race and Hispanic origin question showed to be a promising strategy (Compton, et al., 2012). In addition, we incorporated the use of predictive text in this question. That is, the open-ended text boxes in the Hispanic origin and race question produced a dynamic drop-down list of suggested options based on the initial text string entered in the box. We hypothesized that predictive text would reduce the need for clerical race and origin coding by providing responses that a respondent could select rather than type in themselves. This was anticipated to have resulted in fewer typos, misspellings, and other formatting differences that would require a clerical review, thereby automating and streamlining the race and Hispanic origin coding process¹. This functionality could be an important component in fostering an adaptive design for the 2020 Census data collection, as it would allow for the use of edited data in the adaptive design process.

Finally, another benefit of the 2012 NCT was the opportunity to build on previous paradata research, by collecting data related to respondent interaction with the census Internet questionnaire such as break-off rates and completion times. Laboratory usability testing conducted prior to fielding the 2012 NCT also provided navigational data, such as eye-tracking, keystroke analysis, and mouse-tracing results for the personal computer environment.

1.1 Scope

The 2012 NCT plays an early role in 2020 Census planning. The intent is to use the quantitative survey results to focus the Census Bureau's Internet development and design resources for continued testing. This survey design work will be integrated with additional response option and contact strategy research within the 2020 testing cycle, with the ultimate goal of establishing the optimal Internet data collection strategy for the 2020 Census.

1.2 Intended Audience

This report is intended primarily for internal use by the U.S. Census Bureau.

¹ When respondents typed in the first three letters of their write-in response, matching options from the race and origin database appeared. Respondents could choose from these or keep typing another response.

2. Background

2.1 Internet Response Option and Contact Strategy Research

The Census Bureau has conducted much Internet research over the last decade. Various Internet response option strategies were first tested in the 2003 NCT, including the use of Internet Push and Choice methods (Brady et al., 2004). Multiple panels tested a push strategy in which respondents did not receive a paper questionnaire in the initial mailing, but instead received a letter that described how to respond using either the Internet or by telephone using Interactive Voice Response (IVR). Note that this study did not include a panel that tested the push strategy for the Internet mode alone since it was not a realistic alternative census contact strategy due to Internet coverage issues at that time in the planning cycle. Various choice strategies were also tested in which respondents did initially receive a paper questionnaire, but were also offered the choice of responding using the Internet or IVR (or both). The results showed that households that were pushed to use the electronic modes were significantly less likely to respond (by about 5.7 percentage points). There was no difference in response for the households that were offered a choice of alternative modes, with some of the responses simply shifting from paper to either Internet or IVR. For the choice panels offering Internet as a response option, the Internet response rate was less than seven percent. Finally, the item nonresponse rates for the Internet responses were significantly lower for almost all items compared to the paper returns. This was assumed to be due to the use of soft edits in the Internet application.

Internet testing continued in the 2005 NCT. Unlike the 2003 NCT, all households in the 2005 test were given the option to respond using the Internet. One experiment tested encouraging Internet response in the replacement mailing (Bentley and Tancreto, 2006) whereby respondents received a letter (in lieu of a paper replacement questionnaire) asking them to respond by Internet if they had not already responded or to return their initial census paper questionnaire. The results indicated that households who were encouraged to use the Internet at the replacement mailing stage were significantly less likely to respond overall (by about 3.7 percentage points).

The Census Bureau tested an Internet option for the ACS in two separate tests during 2011. The first test, conducted in April 2011, found that implementing an Internet Push methodology, which removed the paper questionnaire from the first mailing (combined with an accelerated mailing of the paper questionnaire to nonrespondents), was successful in terms of Internet response, as well as in keeping overall response very close to (or better than) the mail-only production rates (Tancreto, et al., 2012). The second test, conducted in November 2011, was a followup study designed to validate the findings of the April test and investigate other strategies to determine the best way to present the Internet mode in ACS mailings to maximize self-response, particularly Internet response (Matthews, et al., 2012). As a result of this testing, the Internet Push methodology (with an additional postcard reminder) was adopted by the ACS for production implementation beginning in January 2013.

External research projects on Internet response rates have limited relevance to the use of a census Internet response mode option because the census environment, including the sizable advertising campaign and mandatory participation requirement, is unique in the survey world. However, studies conducted on the Canadian Census apply more closely to a U.S. Decennial Census in that

it is conducted within a similar survey environment. Statistics Canada has included an Internet response option throughout their most recent decade of research. For the 2011 Canadian Census, an attempt was made to obtain as many responses as possible by Internet. In 2011, 60 percent of Canadian households did not receive a paper questionnaire. Instead, those households received a letter providing the website address, a secure access code, and a toll-free number to call for a questionnaire. Statistics Canada anticipated a 40 percent Internet response rate using this methodology (Cote and Laroche, 2009), but ultimately realized a 54.4 percent Internet response rate in their 2011 Census (Statistics Canada, 2012). This is an encouraging result in terms of the use of an Internet response option in a census environment.

2.2 Internet Instrument Design Research

Following the 2010 Census, the Census Bureau conducted the 2010 Census Quality Survey (CQS), which provided estimates of measurement error associated with the design and content of a self-administered, census Internet questionnaire. This was a census reinterview evaluation and was not intended to evaluate public compliance (as measured by unit-level response rates), since an Internet response strategy study conducted shortly after the 2010 Census production cycle would be critically limited by a census-sponsored message stating that there was no Internet data collection for the census. The CQS implemented three different contact strategy approaches: Internet Push, Internet/Mail Choice, and Mail Only.

The CQS found that, across contact strategies, both Internet and mail respondents provided consistent responses to the survey compared to the 2010 Census. The gross difference rates for the Internet respondents were not higher than those of the mail respondents, and in some cases significantly smaller, suggesting that responses to an Internet census instrument would have similar measurement error compared to the census paper questionnaire (Bentley et al., 2011).

The study also found lower rates of missing data for Internet responses, which is attributed to the use of soft edits² in the Internet instrument.

² Most data items were subject to “soft edits.” When an error was made (e.g., an item was left blank or the response was invalid), a message appeared at the top of the screen, above the main questions, indicating that no answer was provided or that there was a problem with the information entered. The respondent was given the opportunity to change the information and continue. However, if nothing was changed or the error still existed and the respondent again pressed “Next,” they were allowed to bypass the error and continue entering data for the next question (Bentley et al., 2011).

3. Methodology

The general methodology for the 2012 NCT focused on the use of new Internet-based coverage approaches³, as well as an Internet Push approach tested across six contact strategies. The advance letter was sent on August 23, 2012 (to one panel only). Data collection began on August 30, 2012 after the initial mailing was sent with a survey reference date of September 5, 2012. Data collection concluded on October 18, 2012.

Telephone response and TQA were available throughout the data collection period. Telephone agents answered respondent questions and encouraged respondents to complete the survey online, but also gave the respondent the opportunity to complete the interview over the telephone. In the initial mailing, the telephone as a response option was only offered to sample households in one panel. The remaining households first received the telephone number in the subsequent mailing, the reminder postcard⁴. However, note that the reminder postcard did not explicitly say that they could respond by telephone. The telephone number was presented in the following context, “If you need help completing your survey, please call 1-800-972-5650.”

3.1 Research Questions

The research questions presented in this report are related to contact strategies, item response, two versions of a combined race and origin question, Telephone Questionnaire Assistance (TQA), and Internet paradata⁵.

- 1) What are the relative overall self-response rates (and self-response rate differences) associated with each of the six contact strategies? What are the Internet self-response rates by contact strategy?
- 2) What are the Internet item nonresponse rates?
- 3) What are the Internet item nonresponse rates, distributions, and proportion of detailed groups provided in the write-in fields (by the six race and origin groups) for each of two versions of the combined race and Hispanic origin question? Did the use of predictive text reduce the need for clerical race and origin coding?
- 4) What is the reason code distribution for TQA calls and overall TQA workload associated with an Internet Push methodology to use as a baseline (where one of the treatments contained the TQA telephone number and another included a strong message tailored to nonrespondents)? What are the completed interview rates for telephone by contact strategy panel?

³ Recall that results related to the 2012 NCT coverage strategies will be presented in a separate report.

⁴ TQA was conducted using the same web instrument that was designed for respondents (with a slightly different entry screen). Some of the question screens were not easy to transition from a self-response mode to an interviewer-administered mode and interviewers had to make these alterations on the fly, using handouts presented during training. Ideally, the TQA instrument would have been optimized as an interviewer-administered instrument, but due to time constraints, this was not possible.

⁵ Results for research questions related to coverage strategies will be presented in a separate report.

- 5) What are the paradata for the Internet questionnaire, such as break-off rates, location of break-off, use of help screens, answer changes, access failures, completion times, etc.?

3.2 Assumptions

Research and planning for the 2020 Census has been focused on major innovations to the design of the census oriented around the major cost drivers of the 2010 Census. Identification of those cost drivers led us to four major design principles with the following overarching assumptions (Bishop, 2014):

Reengineering Address Canvassing:

- In-field address canvass only 20 percent of total housing units
- Eliminate early-opening local census offices (manage from Regional Census Centers)
- Redesign the training strategy to reduce enumerator training hours by 35 percent
- Reduce the number of crew leader assistants by 50 percent
- Establish a training pay rate of \$1.50 lower than the production pay rate

Optimizing Self-Response:

- Promote for internet self-response from 55 percent of the population
- Mail paper questionnaires to only a targeted 20 percent of nonrespondents
- Achieve a reduction in paper data capture operations and infrastructure as compared to the 2010 Census

Utilizing Administrative Records:

- Reduce the total NRFU workload by 11 percent through the removal of vacants and deletes
- Reduce the total number of local census offices by 12 percent through the removal of vacants and deletes
- Eliminate Coverage Followup and Vacant/Delete Operations
- Reduce the total number of NRFU visits

Reengineered Field Operations:

- Increase NRFU productivity by 20 percent with automation
- Remove late responses from the NRFU workload
- Reduce the total number of local census offices by 5 percent
- Reduce the total square footage of local census offices by 70 percent
- Eliminate Crew Leader assistants
- Reduce the number of clerical staff by 20 percent with automation
- Redesign the training strategy to reduce enumerator training hours by 35 percent
- Establish a training pay rate \$1.50 lower than the production pay rate
- Allow seventy-five percent of enumerators to bring their own device (BYOD)
- Reduce the phone/personal visit contact cycle relative to the 2010 Census
- Use routing and dynamic case management to allocate resources efficiently

This report focuses on the assumptions associated with Optimizing Self-Response.

3.3 OMB Clearance

This research project, 2012 National Census Test, is covered under OMB clearance number 0607-0970 which expired 03/31/2013.

3.4 Schedule

- Prepare initial Draft of Optimizing Self-Response Project Report.....04/16/2013
- Distribute initial draft to critical reviewers for review.05/01/2013
- Incorporate comments.....05/17/2013
- Results presented at 2020 Census Management Review.09/24/2013
- Incorporate comments.10/17/2013
- Brief final draft product to the 2020 R&T Strategies Group.09/04/2014
- Report released in DSSD Memorandum Series.11/06/2014

3.5 Sample Design

For the 2012 NCT, the initial sample was selected from housing units in mailout/mailback areas of the 50 states and the District of Columbia, using the July 2011 extract of the Master Address File. Group quarters and housing units in any other types of enumeration areas were not included in the sampling frame. Further, to reduce burden on respondents, any housing units selected for the 2012 ACS sample (entire year) were also excluded from the sampling frame.

In preparing the 2012 NCT sample design, we closely examined response rates in the 2003 and 2005 NCTs, as well as the 2010 CQS, to determine the response rate assumptions for the 2012 NCT. The 2010 CQS Internet Push panel is the starting point for the methodology and design of the 2012 NCT. That test is not directly comparable, since it was a reinterview of households that had already responded by mail to the 2010 Census and thus were already more inclined to respond to surveys, but 24.8 percent responded using the Internet survey and 46.5 percent responded overall. Given the further increase in Internet accessibility and usage in the two years since the CQS, we expected 25 percent of the 2012 NCT to respond by Internet and at least 45 percent to respond by some means (Internet, mail, or telephone).

A sample of 80,000 housing units was randomly assigned to one of five Internet content paths (based on differences in coverage design as well as race and origin question versions) and one of six contact and notification strategies. The test panels were assigned in two stages, first by pre-assigning each selected housing unit to an Internet content path, and then by assigning each selected unit to a contact strategy (Bentley and Meier, 2012).

Two sampling strata were used. The first stratum, “CFU,” included a substantial oversampling of units that were in the 2010 Census Coverage Followup (CFU) operation, in order to optimize the sample in an attempt to reach more units with unique coverage situations. The sample size for the CFU stratum was 50,000 housing units. The second stratum, “All Other,” consisted of all other eligible housing units in the sampling frame and had a sample size of 30,000 housing units.

Due to budgetary reasons, the maximum reinterview workload was capped at 20,000 housing units. Reduction groups, that is random groups of specific size, were pre-assigned to sample households to avoid exceeding the maximum number of reinterview cases assigned for reinterview. One or more of those groups could be designated to be dropped from sample, in which case housing units from those groups that had not yet been reinterviewed would not be added to the reinterview workload. Households from those groups that had already been reinterviewed remained in sample. This method ensured that late responders were included in the reinterview, but the 20,000 case limit was not surpassed (Bentley and Meier, 2012).

3.6 Study Design and Implementation

3.6.1 Contact Strategies

The 2012 NCT tested six different contact strategies utilizing Internet Push methodology. The base contact strategy was modeled after the core approach used in the 2010 Census (advance letter, initial survey request, reminder postcard, and a final survey request sent only to nonrespondents). Across all panels, the initial survey request included an initial cover letter and an instruction card (in place of a questionnaire) containing information on how to access the survey online. A combination of motivational strategies was included on the initial cover letter, as well as subsequent mailing pieces. This built on the results of the 2010 Census Deadline Messaging and Compressed Mailing Schedule Experiment, which found an increase in mail response in the presence of a cost savings message, a notification that nonrespondents may be visited by an enumerator, and the use of “respond by” as opposed to the use of the term “deadline” (Stokes et al., 2011). All households in each panel received a reminder postcard that was sent out about a week after the initial survey request. As mentioned earlier, the reminder postcard contained the TQA phone number for respondents to call if they needed help completing their survey.

For applicable panels, a second reminder was sent to nonrespondents in the form of a postcard. The postcard was blue and slightly larger than the first postcard to distinguish it as a separate mailing piece. A second reminder postcard successfully increased response in the 2011 ACS Internet Followup Test when it followed an accelerated questionnaire⁶ mailing (Matthews et al., 2012). The second reminder postcard treatment was based on this success.

The cover letter that accompanied the paper questionnaire targeted to nonrespondents provided a choice of Internet or paper response options. This continued the paper “replacement” methodology, in which both a paper questionnaire and the Internet response option were offered. This methodology performed well in the 2010 CQS and both 2011 ACS Internet Tests. This was a chance for those with neither Internet nor telephone access to respond to the mandatory data collection. Table 1 displays the 2012 NCT contact strategy panel design. Detailed descriptions of the individual panel treatments follow. See Appendix A for copies of all mail materials. See Appendix B for a copy of the mail questionnaire.

⁶ A questionnaire sent one week earlier than the typical mailing schedule.

Table 1. 2012 NCT Contact Strategy Panel Design

Panel	Thursday August 23, 2012	Thursday August 30, 2012	Tuesday September 4, 2012	Friday September 14, 2012*	Friday September 21, 2012*
1) Advance Letter (n=13,334)	Advance letter	Letter + Internet instructions	Reminder postcard		Mail questionnaire (w/choice)
2) Absence of Advance Letter (n=13,334)		Letter + Internet instructions	Reminder postcard		Mail questionnaire (w/choice)
3) 2nd Reminder prior to questionnaire (n=13,333)		Letter + Internet instructions	Reminder postcard	2 nd Reminder Postcard (blue)	Mail questionnaire (w/choice)
4) Accelerated Q followed by 2nd reminder (n=13,333)		Letter + Internet instructions	Reminder postcard	Accelerated Mail questionnaire (w/choice)	2 nd Reminder Postcard (blue)
5) Telephone number at initial contact, accelerated Q, and 2nd reminder (n=13,333)		Letter + Internet instructions with telephone number	Reminder postcard	Accelerated Mail questionnaire (w/choice)	2 nd Reminder Postcard (blue)
6) Accelerated Q, content tailored to nonrespondents, and 2nd Reminder (n=13,333)		Letter + Internet instructions	Reminder postcard	Accelerated Mail questionnaire (w/choice) with content tailored to nonrespondents	2 nd Reminder Postcard (blue) with content tailored to nonrespondents

*These mailings were targeted to nonrespondents.

Panel 1: Advance Letter (Control)

The control panel implemented a strategy most comparable to previous censuses in terms of contact materials and timing. Households in this panel received an advance letter, initial package with instructions for accessing the Internet instrument, reminder postcard, and targeted replacement package with a paper questionnaire and choice of Internet or mail response.

Panel 2: Absence of advance letter

This panel tests the removal of the advance letter prior to the initial survey request. As Dillman (2000) states, research has shown consistently that a pre-notice letter will improve response rates to mail surveys, but it is unclear whether the effect stems from the fact that it is one additional mailing and the more contacts the higher the response rate, or whether it is a unique type of contact. The advance letter was viewed by many as government waste in the 2010 Census (Emery, 2010; Harper, 2010; Hicks, 2010). Although its purpose is to establish survey legitimacy and alert households to the coming survey request, the use of

an advance letter may draw more criticism when received as part of an Internet Push methodology. That is, from a cost-savings perspective, sending a paper letter notifying respondents that a web survey invitation is coming, may appear even more wasteful, when the letter itself does not provide any actionable response mode options. Additionally, a decennial census carries with it an extensive advertising and promotional campaign, which we expect will urge respondents to use the Internet response mode in 2020. This advertising campaign may effectively serve as advance notice and thereby further reduce the usefulness of an advance letter. Furthermore, Statistics Canada did not use an advance letter in their 2011 Census (which implemented an Internet Push methodology).

Panel 3: Second reminder notice prior to questionnaire (and absence of advance letter)

A second reminder of a different color (blue) was sent prior to the questionnaire in this panel. This panel was a variation on a second reminder approach tested in the 2011 ACS Internet Test, and now used in ACS production and incorporated some of the same motivational phrases (e.g., “Now is the time to respond.”) The second reminder is tested against only one reminder.

Panel 4: Accelerated mailing of paper questionnaire followed by second reminder (and absence of advance letter)

Mailing a paper questionnaire to nonrespondents one week earlier followed by a second reminder was successful in the second 2011 ACS Internet Test, and this strategy is now used in ACS production. This treatment tests the effect of mailing the paper questionnaire to nonrespondents (followed by a second reminder) one week after the first reminder postcard, as opposed to two weeks after the reminder postcard.

Panel 5: Telephone number provided at initial contact, accelerated questionnaire, and second reminder (and absence of advance letter)

Providing a telephone number at the initial Internet invitation is similar to a strategy used in the 2011 Canadian Census (Statistics Canada, 2012). In this panel, we included the telephone number in place of a statement that tells respondents a paper form will be mailed to them in a few weeks.⁷ The assumption is that inbound telephone data collection in the 2020 Census will be less expensive than attempting to enumerate nonrespondents via personal visit. We consider this treatment an implicit choice of Internet and telephone response, since the respondent was asked to respond by Internet, but the telephone number was listed later in the letter as a fallback option in the following way, “If you are unable to complete the survey online, you may call 1-800-972-5650 to provide your census information over the phone.” Telephone number was not listed in the initial letter for all other panels, since the goal was to maximize Internet response.

⁷ The assurance that a paper form will be mailed later was suggested by Don Dillman during the development of materials associated with the 2010 CQS, in order to provide advance notification of an alternative response option for Internet Push recipients who do not have Internet access. The assertion is that this notice on the Internet invitation cover letter may mimic a choice option. However, offering an Internet and paper response choice reduced overall response compared to the push strategy in the targeted stratum of the April 2011 ACS Internet Test and resulted in a lower relative Internet self-response rate in the 2010 CQS.

Panel 6: Accelerated questionnaire, content tailored to nonrespondents, and second reminder (and absence of advance letter)

This treatment is based on the hypothesis that a targeted reminder with content tailored to the nonrespondents might yield an increase in self-response rates. The following statement was added within a bolded box at the top of the reminder (or cover letter) before the greeting: **“Important Note: This survey is required by law. You are receiving this notice because we did not receive your response by September XX, 2012.”** The outbound envelope (and front of postcard) contains the standard phrasing, **“Your response is required by law”** followed by the additional statement, **“We have not yet received your response.”** This strategy assumes that the explicit inclusion of the cut date would provoke in the respondent a perceived lack of anonymity. This message aimed at nonrespondents may compel some recipients to respond who would not otherwise have responded. This panel was inspired by the second reminder letter used in the 2011 Canadian Census, in which the following wording was used, “Important note: If you refuse to complete a census questionnaire, this information may be documented and referred to the Public Prosecution Service of Canada for further action.”

3.6.2 *Internet Instrument Development*

The design of the Internet instrument built on that of the 2010 CQS instrument, which benefited from external consultation. However, the design of the 2012 NCT instrument had some different design features, which were tailored to the 2012 objectives. Improvements were also made to the instrument based on lessons learned in the 2010 CQS. Although some changes were made for the 2012 instrument, including color and look and feel, the overall layout and design were the same as the 2010 CQS instrument.

Access/Authentication:

Respondents accessed the Internet survey by using a ten-digit access code,⁸ which was provided to the respondent in the initial survey request via mail. Since security procedures in the 2020 Census are expected to be much more advanced, no attempt was made to replicate the 2010 Census process of using the relatively long Census ID as the access code. A four-digit personal identification number (PIN) was auto-generated to allow respondents to come back and finish the survey at a later login time.

The instrument also contained a new verification question feature. Upon entering the survey, respondents were asked to provide an answer to a verification question of their choosing. Respondents could use this feature to access the survey at a later date, if they had forgotten or lost their PIN. Instrument developers worked with internal security experts to ensure that the access strategy met security standards and existing requirements. This strategy is described in detail in the 2012 National Census Test Online Instrument Security Profile (DSSD, 2012).

⁸ The ten-digit access code contained two check digits to reduce the likelihood that a respondent would mistype their access code and, in doing so, match another household’s access code.

Instrument Appearance:

The appearance of the 2012 NCT Internet instrument was designed to be consistent with the look and feel of an ‘official’ federal survey. The color scheme and overall design was consistent with www.census.gov.

Topic-Based Format:

The 2012 NCT Internet instrument was designed with topic-based ordering of person items instead of person-based, as presented on the paper questionnaire. The planned approach in Nonresponse Followup (NRFU) on the hand-held computers for the 2010 Census was to collect items by topic since cognitive research showed that respondents preferred a topic-based approach (Childs, 2008). The 2010 Telephone Questionnaire Assistance (TQA) data collection instrument was also topic-based. Although these differ from the 2012 NCT Internet instrument in that they are interviewer-administered data collection instruments, they both display one item per screen.⁹ The 2010 CQS also collected data in a topic-based format, which worked well.

Respondent Assistance:

The respondent had the ability to click on links in the top banner of the page to access instructions and general survey Frequently Asked Questions (FAQs), which included information on navigation, estimated burden, and the types of questions being asked. The logout button was also contained in the top banner. In addition, information links appeared on the bottom right of every screen that allowed respondents to access information about the Census Bureau’s policies on privacy, security, and accessibility. While general information on privacy and security was included in the FAQs, the links at the bottom of the screen took respondents to the actual www.census.gov page that outlined the Census Bureau’s privacy and security policies. All census data items (i.e. items asked of all persons) contained item-specific help¹⁰. The “Help” link appeared next to the question stem but not next to each response option since this would clutter the screen. For item-specific help, a respondent could click on the “Help” link next to the question and a new window would open on top of the current survey window. This new window was not a pop-up since many people have pop-up blockers on their computers. This help window included explanatory text on how to answer the item, which was based on the help information available in TQA as well as the FAQs for the 2010 Census. The window contained an “X” in the upper right hand corner, as well as a “Close” button at the bottom to close the window. If the window was not closed, it would remain open in the background when the respondent clicked the “Next” button in the instrument or clicked anywhere on the screen. If they clicked the “Help” link again, the new help window would become active and replace the old help window that was never closed.

⁹ Note that the topic-based Internet instrument used in the 2005 NCT had a different topic-based format in that the questions were asked all on one screen for the entire household using a different line for each person, as opposed to one question per person per screen.

¹⁰ Mail respondents to the 2012 NCT had access to help by calling a toll-free TQA number listed on the back of the paper questionnaire and in some mailing pieces.

Data Pre-fills:

The 2012 NCT Internet instrument made use of web-based survey technology by using pre-fills for names in the question stem for the person data items (as well as using the address pre-fill in address-based questions). For example, if a respondent listed “John L Doe” on the roster, the sex question asked “What is John L Doe’s sex?” The pre-fills were used to increase clarity and potentially reduce errors in the presence of the topic-based format.

Automated Edits:

Most data items were subject to “soft edits.” When an error was made (e.g., an item was left blank or the response was invalid), a message with red text appeared at the top of the screen, above the main questions, indicating that there was a problem with the information entered. The respondent was given the opportunity to change the information and continue. However, if nothing was changed and the respondent again pressed the “Next,” button, they were allowed to bypass the error and continue entering data for the next question. If respondents changed the answer to something that was also incorrect, the edit message would not appear a second time. Note that the respondent name screen and the roster screen required an answer for the respondent to be allowed to continue the survey (i.e., a “hard edit.”) Since names are pre-filled in the question stems, the instrument cannot be completed without some kind of response in the name fields. It is imperative that the respondent understand to whom each question is referring. During roster completion, we provided up to two edit messages that explicitly told respondents that they could use a nickname or description in place of full name. It should also be noted that a single character in any of the name fields constituted a response and would not trigger an edit.

In addition to the red edit messages, which were used in the 2010 CQS, the 2012 NCT introduced the use of green edit messages on the age/date of birth and race and origin screens. Green edit messages occurred on the age/date of birth screen to accommodate respondents who might not know the exact date of birth or the exact age of all household members. Green messages also occurred on the race and origin screen for respondents who did not know the detailed origin for the household members as well as for those who did not identify with a detailed race or origin beyond the Office of Management and Budget (OMB) categories. In these instances, the respondent was shown a green edit message with an “i” icon (for information) that explained the request for additional information and explicitly told the respondent they could press the “Next” button to continue if they did not know the requested information. These alternate edit messages were the result of respondent difficulty with the race and origin item in the usability lab. Requesting detailed origin information and providing a red edit message when left blank (leading respondents to believe they had to change the information in order to continue) caused some respondents to provide an origin to which they did not legitimately have a connection. For example, one “White” participant from the instrument usability test added the “Chinese” origin because she grew up with an Asian caretaker to whom she was close (reference forthcoming).

Telephone Number:

Telephone number was asked of the respondent and formatted in the same way as the typical paper questionnaire item.

Figure 1. Telephone Number Question

What is your name and your telephone number? We may contact you if there is a question.

First Name MI Last Name

Area
 Code Number
 - -

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Tenure:

The tenure question in the 2012 NCT Internet instrument was formatted in a similar manner as the typical paper questionnaire item. However, we were able to enhance the question by inserting the address as a fill, to ensure the respondent was reporting for the correct household.

Figure 2. Tenure Question

On September 5, 2012, was the house, apartment, or mobile home at 123 MAIN STREET — [\(Help\)](#)

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?

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Relationship:

Research has shown that respondents often invert relationships (e.g., report child as parent) for the relationship question that asks how the person is related to the reference person (Love and Byrne, 2005). To improve accuracy and reduce confusion, the relationship question for the 2012 NCT instrument took advantage of the ability to fill the names of both the reference person and the person for whom the relationship information is requested. For example, the question reads, “Sally J Doe is John L Doe’s _____” instead of the typical paper version, which reads, “How is this *person* related to *Person I*?” This revision was inspired by successful cognitive testing results during the 2010 NRFU automated questionnaire development (Childs, 2008). In the 2012 NCT Internet instrument, the relationship categories were displayed in a single column, starting with the relative categories and ending with the non-relative categories.

Figure 3. Relationship Question

Next, we need to record each person's relationship to GRANDPA D DOE.

JOHN A DOE is GRANDPA D DOE's _____. [\(Help\)](#)

- 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

Sex:

The sex question in the 2012 NCT Internet instrument was formatted such that the response boxes were aligned vertically, which is consistent with the formatting of other response boxes within the instrument.

Figure 4. Sex Question

What is JOHN A DOE's sex? [\(Help\)](#)

- Male
- Female

Age/Date-of-Birth:

The age and date-of-birth (DOB) questions in the 2012 NCT Internet instrument appeared on the same screen, but were not as crowded as on the paper questionnaire. The DOB question appeared first and age was then automatically calculated based on the respondent-provided DOB (the respondent could revise both fields). The instruction for reporting age 0 when the child is less than one year old as of September 5, 2012 was placed next to the age verification. This format takes advantage of web-based survey technology to improve the accuracy of the age data. This is consistent with the universal presentation guidelines, which encourage use of technology (Martin et al., 2007).

For the first time in a census Internet instrument, the date of birth fields were implemented as drop down boxes. Research suggests that drop down boxes are optimal because they are shown to produce a reduction in partial answers while eliminating ill-formed answers (Couper et al.,

2011). The use of drop down boxes for this question is consistent with the current ACS production Internet instrument.

Figure 5. Age and Date of Birth Questions

What is JOHN A DOE's date of birth? [\(Help\)](#)

Month Day Year

Verify or enter correct age on September 5, 2012. Please report babies as age 0 when the child is less than 1 year old.

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Race and Hispanic Origin:

Based on promising results from the 2010 Census Race and Hispanic Origin AQE (Compton, et al. 2012), we used this opportunity to test two versions of a combined race and Hispanic origin question in a different data collection mode.

The first version (known as “X3”) is considered a “streamlined” combined question approach. This approach treats all OMB race and ethnic groups equitably by providing examples and write-in areas for each response category. All groups that were national origin checkboxes in the race question on the 2010 Census form (e.g. Puerto Rican, Chinese, etc.) were added to the examples. The expectation is that this would offset any decrease in the reporting of these particular groups.

Figure 6. "Streamlined" Approach for Combined Race and Hispanic Origin Question (X3)

What is JOHN A DOE's race or origin? Select one or more boxes **AND** enter the specific race(s) or origin(s). [\(Help\)](#)

White — Enter origin(s), for example, German, Irish, Lebanese, Egyptian, and so on.

Black or African Am. — Enter origin(s), for example, African American, Haitian, Nigerian, and so on.

Hispanic, Latino, or Spanish origin — Enter origin(s), for example Mexican, Mexican Am., Puerto Rican, Cuban, Argentinean, Colombian, Dominican, Nicaraguan, Salvadoran, Spaniard, and so on.

American Indian or Alaska Native — Enter name of enrolled or principal tribe(s), for example, Navajo, Mayan, Tlingit, and so on.

Asian — Enter origin(s), for example, Asian Indian, Chinese, Filipino, Japanese, Korean, Vietnamese, Hmong, Laotian, Thai, Pakistani, Cambodian, and so on.

Native Hawaiian or Other Pacific Islander — Enter origin(s), for example, Native Hawaiian, Guamanian or Chamorro, Samoan, Fijian, Tongan, and so on.

Some other race or origin — Enter race(s) or origin(s).

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Another design (known as “X4”), is considered a “very streamlined” approach in that it removes the national origin checkboxes and treats all OMB race/ethnic groups equitably by providing one

shared area for all detailed responses. There are no examples next to the race/ethnic group categories. The intent was to move away from associating race groups with specific countries since we recognize that international migration is diversifying many countries across the world.

Figure 7. "Very Streamlined" Approach for Combined Race and Hispanic Origin Question (X4)

Please answer BOTH questions on race and origin.

What is JOHN A DOE's race or origin? *Select one or more boxes.* [\(Help\)](#)

White

Black or African Am.

Hispanic, Latino, or Spanish origin

American Indian or Alaska Native

Asian

Native Hawaiian or Other Pacific Islander

Some other race or origin

Enter JOHN A DOE's specific race, origin, or enrolled or principal tribe - *For example, African Am., Argentinean, Chinese, Egyptian, German, Marshallese, Mexican, Mexican Am., Mongolian, Native Hawaiian, Navajo, Nigerian, Tlingit, and so on.* [\(Help\)](#)

Enter the specific race(s), origin(s), or tribe(s).

In order to use the benefits of the electronic mode to offset a decrease in detailed reporting for some groups that we saw in the 2010 AQE, we implemented a soft edit or reminder prompt in green that popped up if a box was checked but no write-in was provided¹¹. In addition, we attempted to reduce clerical race and origin coding and enhance real-time coding functionality by using a predictive text feature for the write-ins. When respondents typed in the first three letters of their write-in response, matching options from the race and origin database appeared. Respondents could choose from these or keep typing another response (see Figure 8).

¹¹ The wording of this prompt is "If you would like to provide more detail, please enter the specific origin(s) in the space(s) below the checked box(es). If not, use the "Next" button to continue." See Figure 17.

Figure 8. Predictive Text

Hispanic, Latino, or Spanish origin — Enter origin(s), for example Mexican, Mexican Am., Puerto Rican, Cuban, Argentinean, Colombian, Dominican, Nicaraguan, Salvadoran, Spaniard, and so on.

col

- Cold Lake First Nations
- Cold Springs Rancheria of Mono Indians
- Coldwater Band
- Colombian
- Colombian Indian
- Colorado River Indian Tribes
- Columbia
- Columbia River Chinook

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Email Address:

New to a census Internet questionnaire is the collection of email address. It was collected in an effort to inform future research on the use of email as a contact method. It was the last question in the instrument, prior to the review screen.

Figure 9. Email Address Question

Please provide your email address.

Enter email address:

Confirm email address:

Why are we asking for your email address? In the past, the Census Bureau has mailed most households in the United States a paper census form and visited people who did not respond. In an effort to reduce the cost of the census, we are considering alternative ways of contacting people, such as email. The information you provide here will assist us in that research.

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Review Screen:

A review screen was displayed at the end of the Internet instrument so that respondents could review and edit their responses to census data items¹². Respondents could also submit the survey without review. The 2012 NCT review screen was modeled after the 2010 CQS review screen. The format was a table with shortened question labels on the left and the respondent-provided answers on the right. The answers were hyperlinks that took the respondent back to the screen

¹² Note that responses to some questions, such as household roster and coverage questions, could not be edited from the review screen because responses to many of these questions affected how the rest of the instrument branched. We could not accommodate an entire path change if a respondent went back and changed one of these answers.

containing the question they wished to edit; this screen had a “Return to Review” button in place of the “Previous” and “Next” buttons so that the respondent could only return to the review screen and did not lose his/her place in the instrument. The review screen had “Submit” buttons at the top and bottom of the screen. If a respondent left an item blank, the review screen would show “[NO ANSWER]” in bold font, all capitalized, in brackets.

Since both versions of the race and origin question allowed for multiple responses, the answers were displayed in the order they were provided. Each checkbox and write-in response was displayed on its own line. In Figure 10, “German, Irish, Italian, and Polish” is listed on the same line for John Doe because all of this was typed into a single write-in box.

Figure 10. Review Screen

AN OFFICIAL WEBSITE OF THE UNITED STATES GOVERNMENT

United States Census Bureau 2012 National Census Test

Instructions FAQs Logout

Review & Edit

- To change a response, click on the underlined answer in the table below.
- To complete an unanswered question, click on the underlined **[NO ANSWER]** in the table below.
- Once you have completed your review, click Submit.

Submit

JOHN A DOE:	
Relationship to JOHN A DOE	Not Applicable
Sex	<u>Male</u>
Date of Birth	[NO ANSWER]
Age (on 9/5/2012)	[NO ANSWER]
Race or Origin	<u>White</u> <u>German, Irish, Italian, and Polish</u>

JANE B DOE:	
Relationship to JOHN A DOE	<u>Husband or Wife</u>
Sex	<u>Female</u>
Date of Birth	[NO ANSWER]
Age (on 9/5/2012)	<u>43</u>
Race or Origin	<u>Black or African Am.</u> <u>American Indian or Alaska Native</u> <u>Asian</u> <u>Nigerian</u> <u>Tlingit</u> <u>Japanese</u>

Submit

Note: The information provided in this screen shot is fictitious; no personally identifiable information is displayed.

3.6.3 Pre-testing of Internet Instrument and Contact Materials

In the development phase, the instrument underwent internal laboratory usability testing set in the personal computer environment. Usability testing included observing the participants' behaviors, noting difficulties and comments, and conducting post-testing interviews to gain qualitative feedback about potential confusion. In addition, quantitative measures were also gathered, which included the duration of time that participants took to complete the survey, their

score on a post-interview satisfaction questionnaire, and eye-tracking variables (e.g., number of fixations and durations).

One round of testing was completed to evaluate the fully-programmed Internet survey instrument. During usability testing, we looked for any response behavior that may indicate user trouble, specifically with the new coverage approaches as well as the use of drop down boxes for collecting date of birth. Respondents were asked to complete the 2012 NCT survey for their own real-life household, and then asked to answer questions for seven coverage-focused vignettes. The vignettes were written to represent the complex, specific coverage issues that can occur in real life but may not have been captured through participant recruiting. Testing also incorporated accessibility testing to check for compliance with Section 508 of the U.S. Rehabilitation Act. The accessibility testing used Jaws 11 screen-reading software to evaluate whether visually impaired users could use the instrument accurately and efficiently. As a result of this testing, a few issues were identified and corrected by the programmers prior to implementation.

Following testing, key qualitative and quantitative results were provided to the 2012 NCT team so that the 2012 NCT instrument could be revised/improved to address the problems or issues identified during usability testing.

3.6.4 Mail Questionnaire and Contact Materials Review

All associated contact materials, such as the 2012 NCT invitation and reminders, underwent an internal expert review. In selecting members of the expert review panel, we sought a diverse group of methodological and subject-matter experts including people with expertise in survey methodology, questionnaire design, and research psychology.

The mail questionnaire that was used as part of the 2012 NCT was one of the experimental forms previously tested as part of the 2010 AQE, and included the X3 race and Hispanic origin question. Thus, the mail questionnaire content went through comprehensive cognitive testing in preparation for the 2010 Census.

3.6.5 Paper Data Capture

Due to funding limitations, data from the mail questionnaires were not initially captured. This did not impact the overall goals of the test, since the primary objectives were based on Internet data collection. Paper forms went through a check-in process to provide the necessary self-response rate data and were then stored for possible data capture in the future, should funding become available. During the analysis phase, we realized the need to capture some data from paper forms based on unexpected preliminary Internet results. Limited data from 2,810 forms were keyed by Census Bureau Headquarters employees. Keyed data included household ID, person number, age, date of birth, and race and origin. A different set of Census Bureau Headquarters employees conducted an independent keying operation on five percent of the forms for quality control purposes.

3.6.6 Data Processing and Matching

Data received from the Internet were processed by Headquarters staff, which included running pre-edits similar to those run in production. Pre-edit procedures ensured that valid race and origin codes were assigned to write-in responses during the coding operation, eliminated duplicate race and origin codes, and assigned priority to specific codes when both general and specific race and origin codes were provided. Survey measures are based on pre-processed survey responses in order to more directly measure respondent reaction to specific race/origin treatments. Since this survey was not intended to produce area population estimates, the data that were analyzed did not go through full Census production edit and imputation systems.

3.7 Data Analysis

This section provides an overview of the analytical methods that were used in order to answer the 2012 NCT contact strategy research questions. Specifically, we studied self-response rates by contact strategy (Section 3.3.1); Internet item nonresponse rates (Section 3.3.2); item nonresponse, distributions, and detailed reporting of race and origin groups (Section 3.3.3); TQA reasons for call (Section 3.3.4); and Internet paradata analysis (Section 3.3.5).

3.7.1 *What are the relative self-response rates (and self-response rate differences) associated with each of the six Internet Push contact strategies? What are the Internet self-response rates by contact strategy?*

Self-response rates are the primary analytical measure used to evaluate the success of the Internet Push contact strategy panels. Response rates are a measure of respondent cooperation and tell us if housing units in one panel are more (or less) likely to respond than another panel. Self-response rates are calculated by mode, as well as overall.

$$\text{Self-response rate} = \frac{\text{Unduplicated responses (Internet, telephone, or mail)}}{\text{Total sample size} - \text{UAAs}^{13}} * 100 \text{ percent}$$

When evaluating self-response rates, we look at both individual treatment effects as well as composite treatment effects. Due to the large number of comparisons in this study, the Bonferroni-Dunn correction for multiple comparisons is used where necessary to maintain the error rate at $\alpha=0.10$.

Individual Treatment Effects¹⁴

Panel 1 vs. Panel 2: Assesses the impact of removing the advance letter.

Panel 2 vs. Panel 3: Assesses the impact of a second reminder before mailing a paper questionnaire to nonrespondents.

¹³ A household was considered to be a UAA when the materials from the first mailing were returned by the post office, and no survey response was received.

¹⁴ Refer to Table 1 for panel descriptions.

Panel 3 vs. Panel 4: Assesses the order effect of the second reminder and questionnaire mailings. That is, the impact of mailing a paper questionnaire to nonrespondents on an accelerated schedule followed by a second reminder versus sending a second reminder before mailing the questionnaire on the regular schedule.

Panel 4 vs. Panel 5: Assesses the impact of providing a telephone response option in place of telling respondents that we will send them a paper questionnaire (this is tested in the presence of an accelerated questionnaire).

Panel 4 vs. Panel 6: Assesses the impact of a questionnaire cover letter with content tailored to nonrespondents and the same content on a second reminder (this is tested in the presence of an accelerated questionnaire).

Composite Treatment Effects

Panel 1 vs. Panel 3: Assesses the impact of removing the advance letter and adding a second reminder before mailing a paper questionnaire to nonrespondents. This is intended to test whether any response gains from the advance letter are surpassed by the second reminder in place of an advance letter since the cost would be comparable or less.

Panel 1 vs. Panel 4: Assesses the advantages of an advance letter compared to the advantages of a second reminder postcard (sent after an accelerated questionnaire), while having the same number of total mailings.

Panel 2 vs. Panel 4: Assesses the impact of mailing a paper questionnaire to nonrespondents on an accelerated schedule with a second reminder afterwards. This comparison is intended to test against the standard 2010 mailing schedule without an advance letter.

Panel 1 vs. 5: Compares the 2010 mailing strategy to a strategy with no advance letter, phone number inclusion on the initial Internet invitation cover letter, an accelerated paper questionnaire mailing, and a second reminder. The hypothesis is that a composite treatment containing these three response improvement techniques will yield substantial gains in response.

Panel 1 vs. 6: Compares the 2010 mailing strategy to a strategy with no advance letter, an accelerated paper questionnaire mailing, a second reminder, and content tailored to nonrespondents on the final two mailings. The hypothesis is that a composite treatment containing these three response improvement techniques will yield substantial gains in response.

3.7.2 *What are the Internet item nonresponse rates?*

The item nonresponse rates are computed at the item level for all occupied cases in the following manner. “Missing” refers to responses that were not reported by the respondent.

$$\frac{\text{Number of missing responses}}{\text{Total records}} * 100 \text{ percent}$$

3.7.3 *What are the Internet item nonresponse rates, distributions, and proportion of detailed groups provided in the write-in fields (by the six race and origin groups) for each of two versions of the combined race and Hispanic origin question? Did the use of predictive text reduce the need for clerical race and origin coding?*

By comparing two versions of the combined Hispanic origin and race question, we assess whether one of the versions:

- increases reporting of OMB ethnic and racial groups and/or decreases “Some Other Race” reporting
- has lower item nonresponse
- elicits more detailed ethnic reporting for all groups

Predictive text is assessed by comparing the percent of residual coding (i.e. race and origin write-ins that cannot be coded with the auto-coder) from the 2012 NCT to the percent of residual coding from a previous census Internet instrument (the 2010 CQS) as well as the paper responses from the 2010 AQE. The use of predictive text was expected to lower the residual coding workload. We also assess whether any unusual data heaping occurs, particularly for the races/origins that appear at the beginning of the predictive text lists.

3.7.4 *What is the overall reason code distribution for TQA calls and overall TQA workload associated with an Internet Push methodology to use as a baseline (where one of the treatments contained the TQA phone number and another included a strong message tailored to nonrespondents)? What are the TQA completed interview rates by contact strategy panel?*

Telephone agents were asked to complete “reason for call” sheets for each call they handled (see Appendix C.) These results were tallied to provide baseline TQA information under an Internet Push methodology. Call centers also provided summary data regarding TQA workload overall and across time, as well as the number of completed interviews overall and by contact strategy panel.

3.7.5 What do the paradata tell us about respondent navigation of the Internet instrument, such as break-off rates, location of break-off, use of help screens, answer changes, access failures, completion times, etc.?

In general, paradata enable us to learn more about how people complete a census questionnaire online and on what platform. Some examples of the paradata considered for analysis are described below:

- Access issues, including initial logins and re-entry with a PIN.
- Session information, including number of sessions to complete and number of logouts.
- Answer changes after accessing the review screen.
- Number of break-offs, including logouts and other break-offs.
- Completion times overall and by household size.
- Delivery of soft edits, that is, data on which question edits were served.
- Use of help links, instructions, and FAQs.
- Environment information such as device, operating system, and browser used.

4. Limitations

4.1 Questionnaires in English Only

The Internet and paper questionnaires (as well as TQA) were provided in English only. The optimal design would include Spanish/English bilingual questionnaires, as well as questionnaires in other languages since results may be different for respondents who might need language assistance. During the design phase, the Census Bureau lacked resources and was confronted with timing constraints and, thus could not include languages other than English. Note that this research is the beginning of the 2020 testing cycle. Plans for future testing include electronic data collection instruments in additional languages, given sufficient resources.

4.2 Anticipated Expansion of Internet Access and Usage

Internet access and usage is expected to substantially expand within this decade (Pew, 2012). Furthermore, the platforms (e.g., mobile and handheld devices) on which respondents would access the Internet are expected to change over the next decade and would impact the 2020 Census Internet instrument design. These issues, as well as the absence of the census environment, limit the ability to generalize the self-response results from this study to the 2020 Census. The relative panel results and general trends from the 2012 NCT survey, as well as usability laboratory results, are key to focusing the Census Bureau's Internet development/design resources for the decade's testing cycle, and provide the opportunity to establish baseline response rate indicators that we can continue to monitor as we approach the 2020 Census. However, the results from this test cannot directly reflect the magnitude of Internet response for the 2020 Census Internet application.

4.3 Paper Data Capture

Due to resource constraints, we did not conduct a full data capture of the paper mail returns. Instead, a check-in procedure was used to check in all returns received at the National Processing Center (NPC) by the end of data collection. As such, the mail self-response rates presented in this report may be slightly inflated, since we were unable to incorporate the typical data capture process of removing paper returns that are determined to be blank (though this number is typically low).

5. Results

5.1 Self-Response Rates

What are the relative self-response rates (and self-response rate differences) associated with each of the six contact strategies?

The self-response rates by panel and mode are shown in Table 2. The self-response rate is the percent of responses received (by mail, telephone or Internet) divided by the number of households that received the survey materials. The rate excludes households from the denominator for which no response was received and the first mailing was returned as undeliverable as addressed (UAA).

Table 2. Self-Response Rates by Panel and Response Mode

Panel	Internet	Mail	TQA	Total
1. Advance letter	38.1 (0.68)	17.2 (0.53)	5.1 (0.33)	60.3 (0.66)
2. Absence of advance letter	37.2 (0.62)	16.5 (0.48)	4.3 (0.25)	58.0 (0.62)
3. 2 nd reminder prior to questionnaire	42.3 (0.70)	13.6 (0.46)	8.9 (0.40)	64.8 (0.65)
4. Accelerated questionnaire followed by 2 nd reminder	38.1 (0.61)	20.3 (0.51)	5.3 (0.28)	63.7 (0.60)
5. Telephone number at initial contact, accelerated questionnaire, and 2 nd reminder	37.4 (0.64)	17.6 (0.49)	9.4 (0.40)	64.5 (0.65)
6. Accelerated questionnaire, content tailored to nonrespondents and 2 nd reminder	37.6 (0.64)	22.2 (0.59)	5.2 (0.32)	65.0 (0.63)

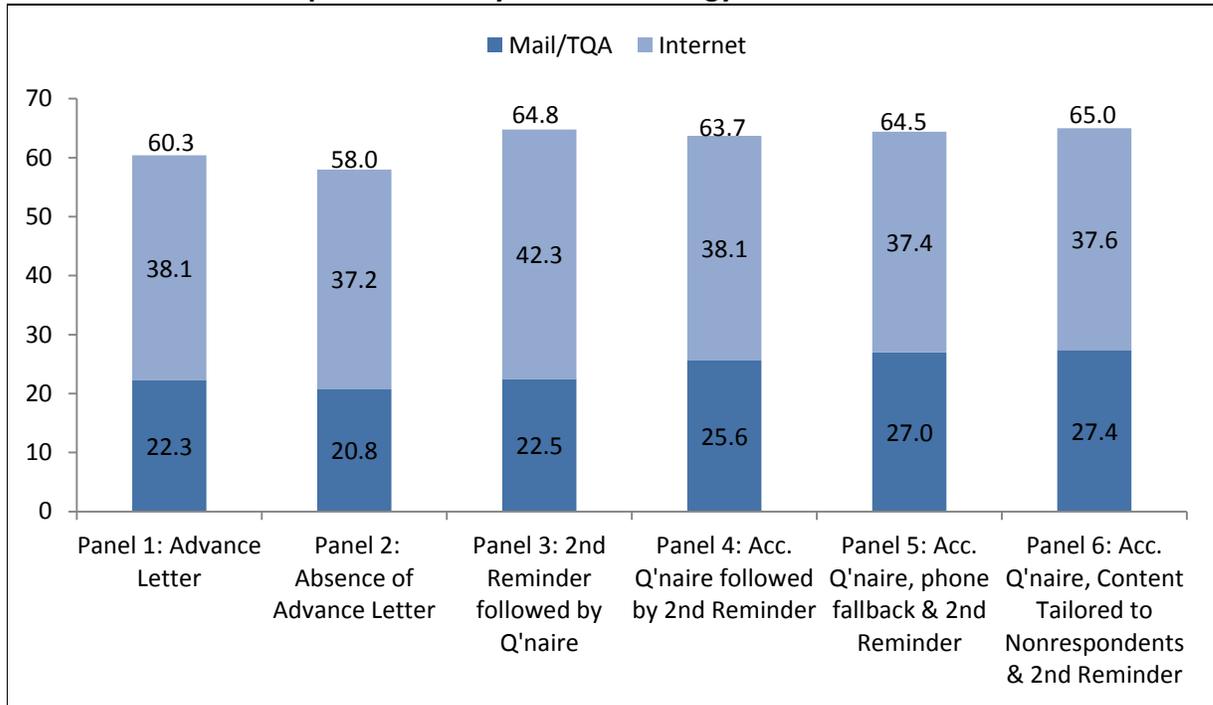
Source: 2012 NCT data. Note: Estimates are weighted with standard errors in parentheses.

What are the Internet self-response rates by contact strategy?

In addition to overall self-response rates, we were also interested in learning which panel(s) produced the highest Internet self-response rates. The Internet self-response rate is a part of the overall self-response rate and can be considered the proportion of all sample housing units that responded by Internet. Panel 3, which included a second reminder postcard prior to the mail

questionnaire, produced the highest Internet self-response rate, at 42.3 percentage points. The overall self-response for this panel was also among the highest (64.8 percent). The Internet self-response rates for the remaining panels ranged from 37.2 percentage points to 38.1 percentage points. In each of the six panels, more than half of all responses were by Internet.

Figure 11. Internet Self-Response Rates by Contact Strategy Panel



Source: 2012 NCT data.

We also analyzed the timing of responses by contact strategy since this information may be useful for a cost/benefit analysis. See Appendix D for these results.

Individual Treatment Effects

As noted in Section 3.3.1, we made a number of comparisons to evaluate individual treatment effects across the six contact strategies. Differences were calculated at $\alpha = 0.10$ with a multiple comparison factor¹⁵ applied, for a critical value of 2.72.

Removal of the Advance Letter

To assess the impact of removing the advance letter from the mailing strategy in the 2012 NCT, we compared Panel 1 and Panel 2. The overall self-response rate for the panel without an advance letter (Panel 2) was not significantly different from the panel with the advance letter (Panel 1). Further, there was no significant increase in Internet self-response for the advance letter panel. Looking forward to the next census in 2020, it seems unlikely that an advance letter

¹⁵ To help ensure the validity of statistical inference when making multiple panel comparisons, multiple comparison corrections were used to maintain the familywise error rate at $\alpha = 0.10$. The Dunn/Bonferroni procedure was applied to reduce the possibility of erroneous conclusions (i.e., false positives).

would be useful in terms of notifying households that the census is coming in the presence of a widespread national advertising campaign.

Impact of a Second Reminder

Recall from Section 3.3 that this test incorporated a second reminder into the mailing strategy¹⁶ in a couple of different ways. To assess the impact of sending a second reminder before mailing a paper questionnaire to nonrespondents, we compared Panel 2 and Panel 3. Panel 3, which included the second reminder, realized an overall self-response rate that was significantly higher than Panel 2, by 6.8 percentage points. Internet responses made up the bulk of this gain with a 5.1 percentage point increase in Internet responses for Panel 3 over Panel 2. This is a promising result, as it increased both overall response and Internet response, however we also acknowledge that this treatment increased telephone response as well.

To assess the impact of mailing a paper questionnaire to nonrespondents on an accelerated schedule followed by a second reminder versus sending the second reminder before mailing the questionnaire on the regular schedule, we compared Panels 3 and 4. The difference in overall self-response rates for these two panels was not statistically significant. However, we did realize a statistically significant gain in Internet responses by sending the second reminder prior to mailing the questionnaire. In Panel 3, where the second reminder was sent before the questionnaire, Internet self-response was significantly higher than Panel 4 (where the second reminder was sent after the questionnaire), by 4.2 percentage points. Panel 3 also saw a significant increase in telephone responses, by 3.7 percentage points. Panel 4, where the mail questionnaire was sent on an accelerated schedule, saw a significant increase in mail responses, by 6.7 percentage points.

The addition of a second reminder appears to be a promising strategy. Most promising, it seems, is to send the second reminder prior to the mail questionnaire, as it not only produces a higher overall response rate, but also produces a boost in Internet response.

Impact of Telephone Number at Initial Contact

Recall that in this panel (Panel 5), we included the telephone number in the initial contact in place of a statement that tells respondents a paper form will be mailed to them in a few weeks.

By comparing Panel 4 and Panel 5, we were able to assess the impact of providing a telephone response option in the initial letter, in place of telling respondents that we will send them a paper questionnaire (this was tested in the presence of an accelerated questionnaire). The difference in the overall self-response rates and Internet self-response rates between these treatments was not statistically significant. We did, however, see a significant increase of 4.1 percentage points in the percentage of completed TQA interviews for Panel 5, where the telephone number was listed on the initial invitation, compared to Panel 4, where the telephone number was not listed on the initial invitation.

¹⁶ During the 2010 Census, a second postcard (referred to as the direct mail postcard) was sent to households in certain zip codes based on areas identified as needing language assistance.

Content Tailored to Nonrespondents on the Questionnaire Cover Letter

We assessed the impact of using wording tailored to nonrespondents on the cover letter for the paper questionnaire (and the same wording on a second reminder postcard), tested in the presence of an accelerated questionnaire, compared to the standard letter language by comparing Panel 4 and Panel 6. There were no significant differences in self-response rates overall or by mode.

Combined Treatment Effects

In addition to assessing individual treatment effects across the six contact strategies, we also looked at a number of combined treatment effects. Panels 3 and 4 tested the mailing of a second reminder postcard, in place of mailing an advance letter. Panel 3 implemented the second reminder prior to the mail questionnaire, while Panel 4 implemented the second reminder after the mail questionnaire (in the presence of an accelerated mailing schedule for the questionnaire). These panels were designed to assess the impact of adding a second reminder in place of mailing an advance letter.

To assess the impact of removing the advance letter and adding a second reminder before mailing a paper questionnaire to nonrespondents, we compared Panel 1 and Panel 3. This was intended to test whether any response gains from the advance letter were surpassed by the second reminder in place of an advance letter since the cost would be comparable or less expensive. Panel 3, which implemented the second reminder prior to the mail questionnaire, resulted in a significant gain in overall response, over the traditional mailing strategy in Panel 1 (4.5 percentage points).

By comparing Panel 1 and Panel 4, we were able to assess the impact of an advance letter compared to the impact of a “final mailing.” In this comparison, we can assess whether any response gains from the advance letter are surpassed by a final mailing/second reminder after the questionnaire, where both strategies have four mailings. As with the previous comparison, the cost of such a mailing would be comparable or less expensive. Recall that Panel 1 was implemented with the traditional strategy of an advance letter preceding the remaining mail pieces, while Panel 4 did not incorporate an advance letter. Instead, Panel 4 sent a final reminder after the mail questionnaire¹⁷. Panel 4 realized an overall self-response rate that was significantly higher by 3.4 percentage points compared to Panel 1. This gain was made up almost entirely of mail returns (3.1 percentage points).

By comparing Panel 2 to Panel 4, we assessed the impact of mailing a paper questionnaire to nonrespondents on an accelerated schedule with a second reminder afterwards compared to the strategy without an advance letter. Panel 4 realized a 5.7 percentage point self-response rate gain over Panel 2, which was statistically significant. Across modes, the difference was only significant for the mail mode. Mail response in Panel 4 was significantly higher than Panel 2 by 3.8 percentage points.

¹⁷ Note that the mailing of the paper questionnaire was accelerated in Panel 4.

A comparison of Panel 1 and Panel 5 assesses the difference between the 2010 Census mailing strategy versus no advance letter with a second reminder, accelerated paper questionnaire mailing, and phone number inclusion on initial Internet invitation cover letter. Again, the hypothesis was that a composite treatment containing these three response improvement techniques would yield substantial gains in response. As expected, Panel 5 had a significantly higher rate of total self-response (4.2 percentage points). This panel also resulted in significantly higher TQA response (4.3 percentage points).

Lastly, we compared Panel 1 and Panel 6 to assess the difference between the traditional mailing strategy versus no advance letter with a second reminder, accelerated paper questionnaire mailing, and content tailored to nonrespondents. The hypothesis was that a composite treatment containing these three response improvement techniques will yield substantial gains in response. As expected, Panel 6 realized a significant increase in total self-response (4.7 percentage points). This increase was primarily seen in the mail mode with an increase of 5.0 percentage points.

Based on these results, we recommend incorporating multiple components of these strategies as we move forward with future contact strategy testing. In terms of contact strategies, due to its positive impact on both Internet self-response and overall self-response, we recommend moving forward with the Panel 3 treatment, which did not include an advance letter and sent a second reminder postcard prior to mailing a paper questionnaire.

In terms of the content of mailing materials, we recommend including telephone number as an implicit choice on the initial Internet invitation, as well as the bolded, tailored statements on all nonresponse mailings. The telephone number should also be present in some form on all other mail materials. Although neither of these treatments yielded gains in overall self-response, there are compelling reasons to move forward with them. Because the TQA telephone number was not provided to all sample households from the beginning, respondents were unsure whom to contact if they had questions. This led to respondents calling various telephone numbers throughout the Census Bureau, which resulted in a multitude of calls forwarded to the Headquarters staff to handle. This was operationally inefficient, and thus, in the future, we recommend including the TQA telephone number on all contact materials, however, a cost benefit analysis must be performed to assess the impact to the TQA workload.

Results also indicated that the treatment that implemented a second reminder with content tailored to nonrespondents did not yield gains in overall self-response or Internet response. However, since this strategy can be implemented into a test design at no additional cost, and the results showed no harm to self-response rates, we recommend continued research. We hypothesize that this treatment may appeal to a specific demographic, since the 2010 Census Deadline Messaging and Compressed Mailing Schedule Experiment found a statistically significant increase in overall mail response with the use of “respond by [date]” specific to the Low Response Stratum (Stokes et al., 2011), which is a similar type of treatment. In terms of future research we are eager to see how the content tailored to nonrespondents performs in conjunction with mailing a second reminder prior to the paper questionnaire.

Although not a key component of the analysis, response distributions by mode and contact strategy may be found in Appendix E. In general, as we would expect, the Internet and paper response distributions differ somewhat. The main reason for this is the self-selecting nature of the design (choosing to respond online, or by mail), which results in differences in the demographics associated with respondents of the various modes.

5.2 Item Nonresponse Rates

What are the Internet item nonresponse rates?

In the 2012 NCT instrument, soft edits warned respondents when no response was provided to a question, however those warnings could be ignored (see Figure 16). As shown in Table 3, item nonresponse for all data items (excluding telephone number) across all panels was below three percent.

Table 3. Internet Item Nonresponse by Panel

Panel	Telephone Number	Tenure	Relationship	Sex	Age	Race and Origin*
1. Advance letter	4.7 (0.45)	1.8 (0.28)	1.3 (0.29)	1.1 (0.24)	1.8 (0.29)	2.1 (0.35)
2. Absence of advance letter	4.8 (0.48)	1.6 (0.28)	1.4 (0.30)	1.0 (0.19)	1.6 (0.24)	1.6 (0.26)
3. 2 nd reminder prior to questionnaire	4.6 (0.46)	1.7 (0.27)	1.2 (0.23)	0.9 (0.17)	2.1 (0.31)	1.8 (0.29)
4. Accelerated questionnaire followed by 2 nd reminder	3.7 (0.41)	1.5 (0.29)	0.9 (0.18)	0.6 (0.12)	1.7 (0.27)	2.0 (0.31)
5. Telephone number at initial contact, accelerated questionnaire, and 2 nd reminder	4.7 (0.45)	2.0 (0.32)	1.8 (0.39)	1.3 (0.26)	2.3 (0.37)	2.6 (0.40)
6. Accelerated questionnaire, content tailored to nonrespondents, and 2 nd reminder	5.0 (0.49)	1.9 (0.27)	1.1 (0.11)	0.8 (0.19)	2.1 (0.35)	1.9 (0.34)

Source: 2012 NCT data. Note: Estimates are weighted with standard errors in parentheses.

*These rates reflect the combined item nonresponse across two versions of the race and origin question. Further information on each race and origin version can be found in Section 4.

As expected, we found no statistically significant differences when we compared item nonresponse rates across the six contact strategy panels when controlling for multiple comparisons.

The 2012 NCT was the first time that a census Internet questionnaire collected a respondent-provided email address (see Figure 9). The vast majority of respondents (92.3 percent) provided

an email address¹⁸ that was formatted correctly (i.e., they contained both an "@" symbol and a period). While this result is promising, we did not have the resources at the time of this analysis to assess if these email addresses were accurate, in terms of whether each was an address at which the respondent could actually be contacted.

5.3 Race and Origin Analysis

What are the Internet item nonresponse rates, distributions, and proportion of detailed groups provided in the write-in fields (by the six race and origin groups) for each of two versions of the combined race and Hispanic origin question? Did the use of predictive text reduce the need for clerical race and origin coding?

Table 4 below shows the weighted distribution for the two versions of the race and origin questions, the X3 “streamlined” approach (See Figure 6) and the X4 “very streamlined” approach (see Figure 7). The content of these two versions of the race and origin combined questions were similar to the content of two of the paper questionnaire versions (“streamlined” and “very streamlined,” respectively) tested in the 2010 Census Race and Hispanic Origin Alternative Questionnaire Experiment (AQE). As the results show, the distributions between the X3 and X4 panels were similar overall. There was no significant difference in the level of Hispanic responses between the two panels (9.9 percent in panel X3 and 10.3 percent in panel X4). There were also no significant differences in the reporting of the following groups: White alone, Black alone, American Indian or Alaska Native (AIAN) alone, Native Hawaiian or Pacific Islander (NHPI) alone, Some Other Race, Non-Hispanic Two or More Responses, Hispanic alone.

¹⁸ Note that the question stated that this collection was part of a research effort and implied that we would not be using this email address to contact respondents.

Table 4. Weighted Combined Race and Hispanic Origin Distributions for Internet Responses

	<u>Non-Hispanic</u>							<u>Hispanic</u>			
	White Alone	Black Alone	American Indian or Alaska Native Alone	Asian Alone	Native Hawaiian or Pacific Islander	Some Other Race	Two or More Responses	Two or More Responses Alone	Two or More Responses	Invalid Response Alone	Non-response
X3	70.1 (0.59)	5.7 (0.29)	0.2 (0.05)	6.6 (0.34)	0.1 (0.02)	0.5 (0.08)	4.5 (0.21)	6.8 (0.34)	3.0 (0.18)	0.1 (0.04)	2.3 (0.19)
X4	70.9 (0.64)	5.9 (0.35)	0.2 (0.04)	5.6 (0.36)	0.1 (0.02)	0.5 (0.11)	4.7 (0.27)	6.3 (0.37)	4.0 (0.26)	0.1 (0.03)	1.8 (0.19)
Diff	-0.9 (0.82)	-0.2 (0.45)	<0.1 (0.06)	0.9* (0.45)	<0.1 (0.03)	<0.1 (0.14)	-0.2 (0.34)	0.5 (0.48)	-0.9 * (0.32)	<0.1 (0.05)	0.6* (0.27)

Source: 2012 NCT data. Note: Estimates are weighted with standard errors in parentheses.

Two or More Responses for the non-Hispanic population represent those who reported more than 1 of the 6 race groups (e.g., White *and* Black). Two or More Responses for the Hispanic population represent those who reported a Hispanic origin with one or more races (e.g., Mexican *and* White).

*Denotes statistically significant difference at $\alpha=0.10$.

However, there was a significantly higher proportion who reported Asian alone in panel X3 (6.6 percent) than in X4 (5.6 percent), whereas there was a higher proportion of Hispanics who also reported a race category in panel X4 (4.0 percent) than in X3 (3.0 percent). We are currently conducting more extensive research into specific reporting patterns for these groups to identify the source of the differences.

Lastly, item nonresponse was significantly lower in panel X4 (1.8 percent) than in X3 (2.3 percent). This could potentially be due to the less cluttered appearance of the two-part question version. 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 higher item nonresponse rates for one-part question version.

Next, we examine the reporting of detailed race and ethnic groups. Compton et al. (2012) describes this as follows: "For example, a general or nonspecific response would be to mark the '[Asian]' checkbox but not to provide a more detailed origin in the write-in field. A specific, or detailed, response would be to...write a specific group such as 'Cambodian' in the write-in field." Both of the combined race and origin questions X3 and X4 included checkboxes for OMB race and origin categories and provide write-in spaces for detailed reporting. The X3 had write-in spaces corresponding to each checkbox category and X4 had one extended write-in space following the list of checkbox categories (see Figures 6 and 7). If a write-in response was not initially provided by the respondent, a soft edit was displayed. The soft edits were implemented in the same way across both questions. See Section 5.5.8 for more details on this process.

In the 2010 AQE, the combined questions had mixed results in eliciting detailed reporting. The introduction of write-in fields for White and Black resulted in a significant increase in detailed reporting for those groups. However, the loss of some checkboxes resulted in a decline in

detailed reporting for Asian and Hispanic respondents compared to the separate question formats.

Table 5 shows the detailed race and origin results for panels X3 and X4 in the 2012 NCT (for Internet mode only). Asian respondents most frequently provided detail (80.7 percent of Asian respondents provided specific detail in X3 and 83.3 percent did so in X4). There were a few statistically significant differences in detailed reporting between the two panels. Panel X3 respondents were more likely to provide White detailed responses (41.4 percent) than the X4 respondents (29.6 percent). Conversely, panel X4 respondents were more likely to provide Black detailed responses (69.5 percent compared to 47.2 percent in X3) and Hispanic detailed responses (69.6 percent compared to 63.5 percent in X3).

Table 5. Detailed Reporting for Select Race Groups and Hispanic Origin for Internet Responses

	White	Black or African American	Hispanic, Latino, or Spanish	American Indian or Alaska Native	Asian	Native Hawaiian or Other Pacific Islander
X3	41.4 (0.67)	47.2 (2.23)	63.5 (1.73)	58.0 (3.16)	80.7 (1.68)	59.0 (10.35)
X4	29.6 (0.73)	69.5 (2.59)	69.6 (2.15)	59.8 (3.50)	83.3 (1.76)	42.3 (8.72)
Diff	11.9* (0.98)	-22.3* (3.45)	-6.1* (2.71)	-1.8 (4.50)	-2.7 (2.53)	16.7 (13.05)

Source: 2012 NCT data. Note: Estimates are weighted with standard errors in parentheses.

Note: Each race and origin group includes people who reported that group *alone or in combination* with another race or origin (for example, "White" includes people who reported White alone, White and Black, White and Asian, etc.).

*Denotes statistically significant difference at $\alpha=0.10$.

In comparison, Table 6 shows the detailed reporting for these groups from the corresponding X3 and X4 paper responses in the 2010 Census AQE. We note that this comparison has substantial limitations and is intended to provide general relative order of magnitude. The 2012 NCT was not implemented in an actual decennial census environment with its significant attention and awareness, the 2010 Census AQE data were based on paper mailback responses only, which has been shown to be a characteristically different self-selected population (Bentley et al., 2011), and the navigation/usability of the electronic instrument was substantially different from the paper, all of which can directly affect response behavior. Table 6 shows that, generally, there was a lower proportion of detailed reporting in the 2012 NCT Internet response data across nearly all major categories.

Table 6. 2010 Census Race and Hispanic Origin Alternative Questionnaire Experiment: Detailed Reporting for Select Race Groups and Hispanic Origin

	White	Black or African American	Hispanic, Latino, or Spanish	American Indian or Alaska Native	Asian	Native Hawaiian or Other Pacific Islander
X3	50.4 (1.13)	76.6 (1.59)	77.7 (1.64)	64.5 (5.21)	94.5 (1.08)	81.9 (5.25)
X4	29.4 (1.00)	87.6 (1.27)	80.0 (1.30)	60.3 (4.91)	92.6 (1.31)	48.1 (6.01)

Source: 2010 Census AQE Auxiliary Data Files. Note: Estimates are weighted with standard errors in parentheses. Note: Each race and origin group includes people who reported that group *alone or in combination* with another race or origin (for example, “White” includes people who reported White alone, White and Black, White and Asian, etc.). Compton et al. (2012)

For instance, we observe that in the 2010 Census AQE, over 92 percent of Asian respondents provided detail in the write-ins, compared to 80.7 to 83.3 percent in the 2012 NCT. Further, about 80 percent of Hispanic respondents provided a detailed response, compared to 63.5 percent to 69.6 percent in the 2012 NCT. Black detailed reporting showed a similar decline.

One of the expected benefits of a census Internet instrument was the enhanced reporting of detailed race and origin groups through the use of soft edits and other features that take advantage of the electronic mode. However, these results seem to indicate that further investigation is needed to determine the driver of the detail reporting differences. There are several possible reasons for the apparent decrease in race and origin detail:

- sampling error;
- difference in the response populations (due to self-selection, Internet respondents may be different from paper respondents);
- mode bias (something about Internet as a response mode makes reporting of detail less likely);
- real change since 2010 (there may be a shift in the likelihood of respondents’ willingness to give specific detail compared to the 2010 Census);
- or, a technical or processing issue.

We conducted a comprehensive investigation to explore the possible reasons. Sampling error was deemed very unlikely since the decline in detailed reporting was systematic in nature across all race groups and both sampling strata, and the order of magnitude of the differences far exceeded sampling error. Population cultural change was also regarded as highly unlikely, especially in a short two-year period. We were suspicious that there may have been a technical or processing issue, perhaps related to the use of predictive

text for the race and origin write-ins. However, an examination of the raw paradata concluded that this did not seem to be the case¹⁹.

That left two possible causes: difference in the response populations or mode bias.

To further investigate the unexpected results from the detailed reporting analysis, we keyed and analyzed a sample of about 22 percent of the 2012 NCT paper forms. Unlike the Internet response data, the paper response data did not undergo residual/expert coding for the write-ins that could not be computer-coded and the data were not subject to the full pre-editing process. Since the distribution of detailed reporting typically changes based on the coding and pre-editing processes, we attempted to extrapolate the detailed paper response estimates based on coding and pre-edit results for the Internet data so that the results would be more comparable.²⁰

Recall that due to the self-selecting design of the 2012 NCT, we expected to see differences in respondent demographics across mode. Specifically, the paper questionnaire was only sent to nonrespondents, who tend to differ somewhat from early respondents. People who chose to respond by paper were significantly less frequently White (about 66 percent, compared to 70 percent for Internet), more frequently Black (11 percent, compared to 6 percent for Internet), less frequently Asian (4 percent, compared to about 6 percent for Internet), and more frequently Hispanic (13 percent, compared to about 10 percent for Internet). Results on the paper form detailed race reporting are shown in Table 7. Recall that the paper form contained the X3 version of the combined race and origin question.

Table 7. Detailed Reporting for Select Race Groups and Hispanic Origin for 2012 NCT Paper Responses

	White	Black or African American	Hispanic, Latino, or Spanish	American Indian or Alaska Native	Asian	Native Hawaiian or Other Pacific Islander
X3	45.4 (1.64)	74.2 (3.63)	75.9 (3.73)	69.6 (8.17)	92.3 (3.26)	57.5 (20.57)

Source: 2012 NCT data. Note: Estimates are weighted with standard errors in parentheses.

Note: Each race and origin group includes people who reported that group *alone or in combination* with another race or origin (for example, “White” includes people who reported White alone, White and Black, White and Asian, etc.).

We observe that, for most of the race and origin groups, the level of detailed reporting appears to be substantially higher for the NCT paper questionnaire responses than for

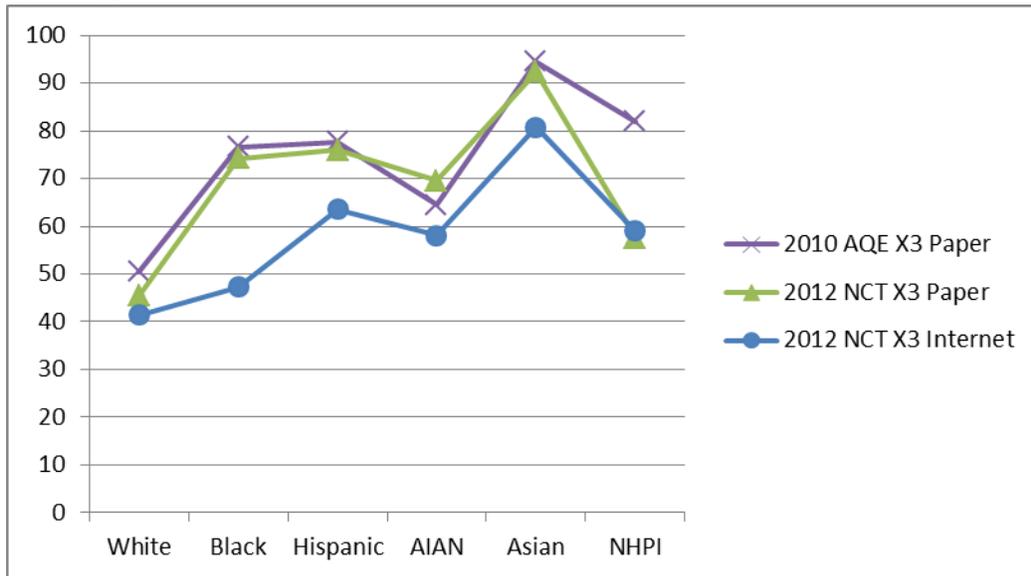
¹⁹ We reviewed the paradata for clues that there may have been a problem with the predictive text functionality such as a low number of race and origin write-ins or partial write-ins. Furthermore, this feature was tested prior to launching the instrument and no problems were uncovered.

²⁰ Note that the extrapolated estimates for paper responses in this report only approximate results that would have been obtained from keying the full set of paper returns and implementing the complete coding and pre-edit processes. Since the subset of keyed forms was not a controlled statistical sample and the accuracy of the extrapolation methodology is subject to the robustness of the corresponding assumptions, the estimates are a rough approximation of the true values.

the Internet responses. For instance, about 75.9 percent of Hispanic or Latino paper respondents provided a detailed origin, compared to 63.5 percent on the Internet version. An estimated 92.3 percent of Asian paper respondents provided a detailed response, compared to 80.7 percent on the Internet version.

Figure 12 summarizes the estimated level of detailed reporting for each of six race and origin groups for three measures of the X3 questionnaire: 2010 AQE paper respondents, 2012 NCT paper respondents, and 2012 NCT Internet respondents.

Figure 12. Detailed Reporting Percentage for X3 Questionnaire in the 2010 AQE and the 2012 NCT



In general, the detailed reporting for the paper questionnaire responses is closer to the estimate from the 2010 AQE analysis than to the Internet response data. Without further investigation and research, we are unable to differentiate between the two most likely reasons for the differences in detailed race reporting between 2012 NCT Internet and paper respondents: (1) difference in the response populations, due to the self-selecting nature of the Internet Push design; or (2) mode bias, possibly due to an inherent issue with Internet respondents being less likely to provide detailed race information when responding online compared to when they would respond to a paper questionnaire. Additional research is needed to examine detailed race and origin reporting patterns, which would guide the revision of question presentation and edit messages.

Predictive text

In order to quantitatively evaluate the use of predictive text in the Internet write-in fields, we measured the percentage of write-ins that needed residual coding. The hypothesis was that the predictive text functionality would tend to standardize the race and origin write-ins and decrease potential typos and extraneous characters. To get a relative order of magnitude, we also computed the percentage of write-ins requiring residual coding for the NCT paper responses and in the 2010 AQE race and Hispanic origin analysis. The NCT and AQE results are not directly

comparable for reasons noted earlier above Table 6, including the difference in mode, the presence versus absence of increased awareness within the 2010 Census environment, and potential differences in the response populations. The results are shown in Table 8.

Table 8. Percentage of Write-Ins Requiring Residual Coding in the 2012 NCT (Internet and Paper Responses) and the 2010 AQE (Paper Responses)

	2012 NCT Internet Responses			2012 NCT Paper Responses			2010 AQE Paper Responses		
	Number of write-ins	Number with residual coding	Percent	Number of write-ins	Number with residual coding	Percent	Number of write-ins	Number with residual coding	Percent
All write-ins									
X3	25,998	2,885	11.1	5,033	212	4.2	47,146	1,546	3.3
X4	21,900	1,458	6.7	N/A	N/A	N/A	57,380	1,373	2.4
Total	47,898	4,343	9.1	5,033	212	4.2	104,556	2,919	2.8
Unique write-ins									
X3	4,185	2,169	51.8	801	167	20.8	3,928	1,216	31.0
X4	2,532	1,148	45.3	N/A	N/A	N/A	3,988	1,050	26.3
Total	6,717	3,317	49.4	801	167	20.8	7,916	2,266	28.6

Source: 2010 Census AQE Auxiliary Data Files and 2012 NCT data. Estimates are unweighted.

Contrary to our initial hypothesis, the 2012 NCT Internet responses resulted in a relatively high rate of residual write-in coding; the 2012 NCT paper residual coding rates and the 2010 AQE paper residual coding rates are relatively low (albeit not directly comparable). Over half of all unique X3 write-ins for the NCT Internet responses did not match to the race and origin auto-coding file (and, thus required clerical residual coding). About a fifth of unique write-ins for the NCT paper responses did not match and just under a third of unique X3 write-ins in 2010 did not match. The residual coding results for X4 show a similar trend.

It is also interesting that a relatively high proportion of all write-ins were unique in the 2012 NCT. For example, about 16 percent of the X3 Internet responses were unique (4,185 out of 25,998) and about 8 percent of the AQE X3 responses (3,928 out of 47,146).

The use of predictive text in the Internet instrument was expected to reduce the need for residual coding by reducing typos, misspellings, and other formatting differences, which would have required clerical review/coding. However, we found that the proportion of responses requiring clerical coding was higher for the Internet versus paper. Some studies have found that respondents provide longer responses in open-ended questions administered by web versus paper (DeMay et al., 2002; Elig and Waller, 2001) and in fact, we did examine the length of the write-ins for each field and found that the Internet respondents did tend to have somewhat longer responses, but we cannot attribute causal meaning since other factors may have contributed to this difference. More research is needed on reporting patterns in the presence of predictive text to determine the source of this unexpected outcome.

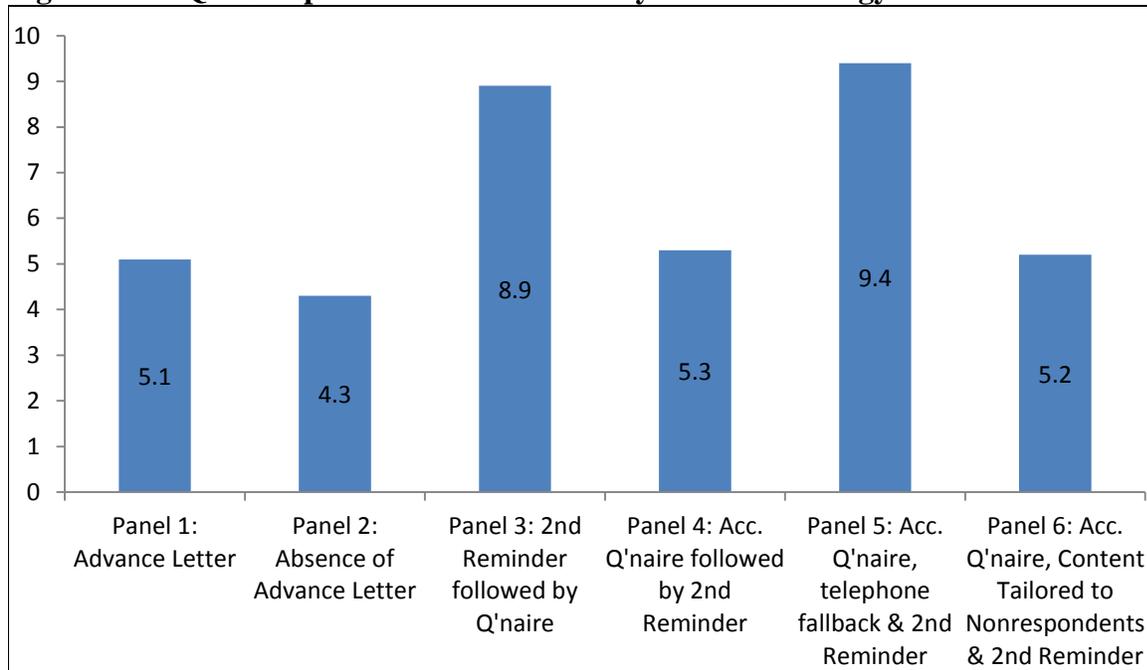
5.4 Telephone Questionnaire Assistance Reasons for Call

What is the reason code distribution for TQA calls and overall TQA workload associated with an Internet Push methodology to use as a baseline? What are the TQA completed interview rates by contact strategy panel?

The TQA operation was available during the full data collection period via a toll-free telephone number. The operation was launched in all three census telephone centers (Tucson, Jeffersonville, and Hagerstown). Agents were trained to both answer respondent concerns and take interviews over the telephone. According to the weekly status reports provided by the Telephone Center Coordination Office (TCCO), the three call centers handled a total of 6,226 calls, with the bulk of those received during the second and third week of data collection. Telephone interviews were completed for 4,044 households.

As expected, the percent of interviews completed by TQA is small in comparison to Mail/Internet. As shown in Figure 13, Panels 3 and 5 produced the most TQA interviews, with 8.9 percentage points and 9.4 percentage points, respectively.

Figure 13. TQA Completed Interview Rates by Contact Strategy Panel



Source: 2012 NCT data.

Panel 5 respondents were given the telephone number as a response option in the initial mailing, so it is not surprising to see a higher rate of telephone interviews for that panel compared to those panels without the telephone number in the initial mailing. The high rate of telephone interviews for Panel 3 is also not a surprise. Households in that panel received a second reminder that also contained the TQA telephone number prior to a paper questionnaire. So, it is likely that respondents who could/would not respond by Internet resorted to calling TQA and completing an interview in that mode.

Telephone agents were asked to complete a “Reason for Call Sheet” (Appendix C) for each call they received from a respondent. A total of 5,017 forms were completed across the three telephone centers. Just over two-thirds of the call sheets were for calls that resulted in an interview being completed over the telephone.

In addition to completing telephone interviews, the TQA agents were asked to address respondent concerns, with the hope that the respondent would then complete the survey online. Approximately 15 percent of the call sheets indicated that the respondent informed the agents that they intended to complete the survey on their own. It is likely that more respondents intended to do this, but did not explicitly state this during the telephone call.

There were a couple of places on the form for agents to write in comments about the call or list specific items that respondents were calling about. In terms of specific items, respondents called most often to discuss the collection of names on the roster, collection of age and date of birth, and collection of race and origin information. Respondents wanted to know how to report these items or why these items were important. During telephone interviews, these items were also most often cited as items that respondents refused to provide.

The most important question on the “Reason for Call Sheet” asked for the purpose of the call and allowed interviewers to check all the categories that were relevant. For this analysis, we removed the forms on which none of the checkboxes were marked. There were 31 distinct categories and an “Other” category, so there should be no reason that at least one reason would not be endorsed. Since a complete absence of checkmarks would indicate that the agent did not complete this section of the form, we removed them and were left with 4,181 forms for this analysis (see Appendix F for the full distribution of responses). When looking at this subset of forms,

- The majority (76.0 percent) of the call sheets indicated that the respondent had computer or Internet access issues. Not every call that was categorized under this heading included a specific reason. Therefore, it is difficult to know exactly what the predominant issues were for these calls. However, we did receive specific information for 768 of these instances (24.1 percent), which falls into one of four sub-categories:
 - 580 call sheets (75.5 percent) were due to a respondent not owning a computer, not having Internet access, or not feeling familiar enough with computers or the Internet to confidently complete the form by themselves online.
 - 97 call sheets (12.6 percent) indicated the respondent had difficulty with the website address or URL. Most of these cases included respondents who entered the wrong URL or attempted to enter the URL into the search engine box instead of the address bar of their browser. This category also included respondents who claimed to be entering the correct URL in the correct location but were taken to a site other than our survey.
 - 40 call sheets (5.2 percent) indicated the respondent had access code issues. This category included, not being able to locate the access code on their mailing

materials, not understanding where to enter the access code, and those who said they did enter the access code but the instrument refused to allow them access.

- 51 call sheets (6.6 percent) indicated the respondent had problems with the survey freezing, shutting down, or other glitches. Other types of comments in this sub-category include respondents who tried to advance to a screen and either received a website error that would not allow the page to load or were spontaneously taken back to the start of the survey. It is unknown whether these types of problems were due to respondents' own systems or the Census Bureau servers.
- Another frequently used category was difficulty with the Internet instrument (14.7 percent), which included respondents who had problems entering data, did not understand how to submit their data, or were confused about how to go back and change responses.
- Finally, the "Other" category (14.8 percent) included calls from people who wanted to do the survey over the telephone, those with a disability that prohibited paper or Internet completion (e.g., blindness), and people calling to see if they could complete the survey for their elderly relative or neighbor.

5.5 Paradata Analysis

What do the paradata tell us about respondent navigation of the Internet instrument, such as break-off rates, location of break-off, use of help screens, answer changes, access failures, completion times, etc.?

Paradata were collected in order to get a better understanding of respondents' experiences while completing the online 2012 NCT questionnaire. This section provides insight into navigation issues, highlights questions that might be confusing, and provides other useful pieces of information.²¹ A more detailed analysis, in which we use paradata to help explain anomalies in the data, is planned for a separate memorandum.

5.5.1 Paradata Limitations

Respondents must have JavaScript enabled on their computer in order to collect paradata information. We received a total of 26,841 nonblank Internet records and were able to collect paradata for 26,791 respondents. Thus, we have paradata for 99.8 percent of the respondents who provided Internet responses. Presumably, the remaining 0.2 percent did not have JavaScript enabled, meaning we could not collect paradata from them. All analyses in this section will be based on the 26,791 households for which we have paradata.

Another limitation is that the collection of paradata can only start when a respondent successfully enters their access code. We were not able to produce data regarding the length of time a respondent spent trying to access the survey or the number of access attempts made.

²¹ For paradata analysis results tables, we do not display estimates of sampling error since we do not make direct statistical comparisons, rather the intent of the results provided is to identify navigational trends and potential problematic items.

5.5.2 Logins and Submits

A total of 71,223 households received materials containing login information for the 2012 NCT web survey²². Of these, we have a paradata record for 26,791 (37.6 percent) households. There is no way to determine which of the remaining 44,432 households chose not to access the website, tried to enter the website with an incorrect ID, or were unable to access the website at all. In addition, as with any mailout survey, it is possible that some households did not receive the survey materials that were sent to them or received them but ignored the request.

The majority of Internet respondents (91 percent) logged in only once and seven percent logged in twice (Table 9).

Table 9. Frequency and Percent of Logins by Respondent

# of Logins by Respondent	Frequency	Percent
Logged in once	24,380	91.0
Logged in multiple times	2,411	9.0
2 Logins	1,886	7.0
3 Logins	341	1.3
4 Logins	95	0.4
5+ Logins	89	0.3
Total	26,791	100.0

Source: 2012 NCT paradata.

Of the 26,791 respondents for which we have paradata, just over 95 percent (25,596) used the “Submit” button to finalize a completed survey.

5.5.3 Multiple Logins with PIN

Once the survey instrument determined that the respondent was providing answers for the correct address and that there was somebody living at the residence on the reference date, the respondent was provided with an automatically-generated PIN. This PIN allowed respondents who left the survey to come back at a later time. The PIN was intended to prevent unauthorized viewing of a respondent’s survey data (Stokes, 2010). On subsequent logins, respondents would need to provide their 2012 NCT ID as well as their PIN²³. As mentioned in Section 3.2.2, this instrument also included a verification question feature. At the time the PIN was assigned, respondents could also select and provide a response to a verification question. Respondents could use their verification question response to access the survey at a later date if they had forgotten or lost their PIN.

²² The sample for the 2012 NCT was 80,000 household but this was reduced to 79,098 after removing poorly formatted addresses from our sample file. This number was further reduced to 71,223 after removing households for which materials came back as UAA.

²³ Only respondents who had been given a PIN would need to use it for a re-entry. If a respondent left the survey before viewing the page that provided them with a PIN, they would be allowed to re-enter using only their 2012 NCT ID.

As seen in Table 10, a total of 2,411 respondents logged in to the 2012 NCT instrument multiple times. Of these, nearly 93 percent were able to re-enter on the first try. The remaining seven percent required multiple login attempts before either entering a correct PIN or providing their verification question response. Table 10 shows the frequency and percent of login attempts.

Table 10. Frequency and Percent of Login Attempts

	Frequency	Percent
Logged in correctly at first attempt	2,238	92.8
Failed Logins	173	7.2
Failed Login 1 time	127	5.3
Failed Login 2 times	30	1.2
Failed Login 3+ times	16	0.7
Total	2,411	100.0

Source: 2012 NCT paradata.

As shown in Table 10, the majority of respondents who logged into the survey multiple times were able to do so at the first attempt. Of the 173 respondents that required multiple attempts, most (127 respondents) only had one failed login. Note that this analysis only includes the respondents who were eventually able to access the instrument. Not included are the respondents who attempted to log in multiple times but were unable to successfully do so. We cannot collect paradata until a respondent successfully enters the instrument, so those that struggle and eventually give up are not included in any analysis.

5.5.4 Review Screen

Once all survey questions were complete, respondents were provided with an opportunity to submit their survey without a review or go to a review screen to review/edit their answers before submitting. Respondents who opted to review their data were taken to the review screen (see Figure 10). The review screen displayed respondent answers to the demographic “Person Information” items. Respondents could click the hyperlinked response to go back to that screen and revise the information. If a respondent did not provide a response to a particular item, the review screen displayed [NO ANSWER], which was also a hyperlink to provide the respondent with the ability to add a response.

Of the 25,596 submitted surveys, only 3.1 percent (794 respondents) chose to review their answers before submitting. Of those that chose to review, 19.0 percent (148 respondents) clicked an item link, indicating a desire to review and/or edit a previous response. However, only half (74 respondents, less than one percent of all submitted surveys) of those who clicked on an item link actually changed a previous response.

Of the items that could be changed from the review screen, relationship (to householder) and sex were changed least often. The more complicated concepts like race and age were changed more often. Table 11 shows the number of times a response was changed, by item, from the review screen. The table represents the number of items changed (149) as opposed to the number of

respondents who changed items (74) because a single respondent could change responses to multiple items.

Table 11. Frequency and Percent of Item Changes from the Review Screen

Item	Frequency	Percent
Relationship	7	4.7
Sex	2	1.3
Date of Birth/Age	56	37.6
Race and Origin*	84	56.4
Total	149	100.0

Source: 2012 NCT paradata.

*The instrument contained two versions of the race and origin question; each respondent received one version.

In order to fully understand the nature of response changes, the analysis would need to include changes made from the review screen as well as changes made throughout the instrument. This detailed analysis is planned for a separate memorandum.

5.5.5 Logouts

Once respondents were provided with a PIN, a "Logout" button appeared on the menu bar (see Figure 14). This was meant to inform respondents that they were allowed to leave the survey.

Figure 14. Logout Button on the Internet Instrument Menu Bar



Clicking the Logout button on the menu bar would take respondents to a screen that would verify whether or not the respondent really intended to leave the survey. This screen also reminded respondents that their PIN would be needed for re-entry. At this point, respondents could log out and leave the survey or choose to continue and be brought back to the screen they were on at the time of the attempted logout.

Of the 26,791 respondents who logged into the system, the main Logout button on the toolbar, was used 964 times by 734 respondents. This means that some respondents used the Logout button multiple times, both over multiple sessions and within the same session by ultimately opting to continue with the survey instead of logging out. Of the 734 respondents who had used the Logout button from the main menu bar, 12.3 percent (90 respondents) chose to continue completing the survey instead of logging out. A total of 644 respondents (87.7 percent) finalized the logout process and left the survey. Of those who actually left the survey, about 72.8 percent (469 respondents) eventually came back and completed the survey. The remaining respondents never completed a survey and are considered "break-offs," which are examined in Section 5.5.6. It should be noted that these 734 respondents are respondents who used the actual Logout button

to leave the survey. Some respondents left the survey via other means, such as closing their browser or being timed out of the survey because they were idle for too long. These other ways of exiting the survey are discussed in Section 5.5.6.

5.5.6 Break-offs

A break-off is defined as anyone who begins a survey but does not complete it. A ‘completed survey’ is one in which a respondent has viewed all of the survey content, but might not necessarily use the ‘Submit’ button to submit the survey. For the 2012 NCT, there were 1,017 respondents who logged in but did not complete a survey, for a break-off rate of 3.8 percent²⁴.

One of the interesting things we can examine is what section respondents were completing when they left the survey. The 2012 NCT instrument comprises three sections:

1. Household-Level: Determined if the address for which the respondent was answering matched the sampled address, determined whether or not anyone currently living at the address also lived there on the reference date, collected information on whether the residence was owned or rented, collected names of all the people in the household as of the reference date, and prompted for any missing household members not initially listed on the roster.
2. Person-Level Demographic: Contained demographic questions for each person in the household. These questions included relationship to the householder, sex, age and date of birth, and one of two versions of race and origin. All questions were asked as of the reference date.
3. Person-Level Residence: Asked if any of the household members lived somewhere else around the reference date. For those who lived elsewhere, this section attempted to find out the reason for the additional residence, the address or description of the additional residence, where the person was living most of the time around the reference date, and where they were living on the exact reference date.

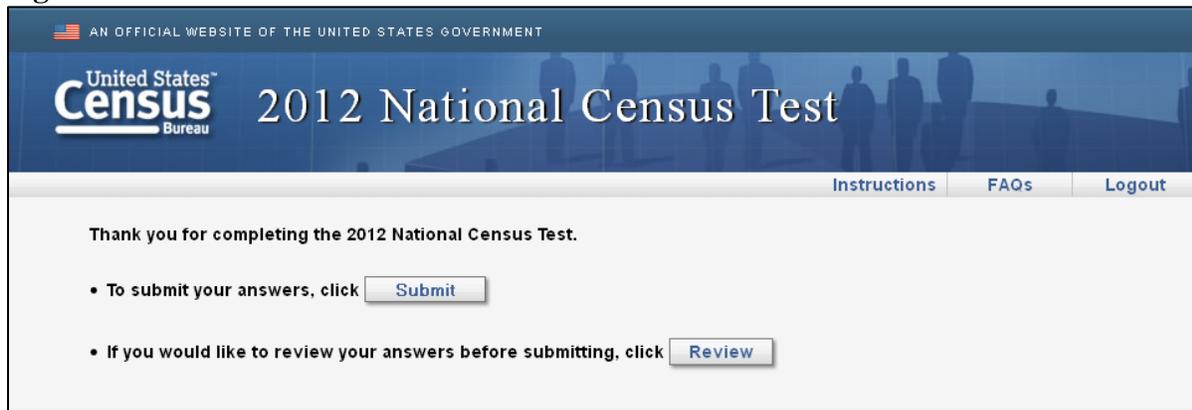
As mentioned previously, there were two different ways in which a respondent could have left the survey. The survey was designed to enable respondents to leave the survey by using the Logout button found in the upper right of each screen. Other ways respondents could leave the survey were by closing their browser or by timing out and being automatically logged out. Regardless of how respondents left the survey, the Household-Level section saw more break-offs than any other section. This makes sense as people who are reluctant to complete the survey are likely to leave before going too far and thus, becoming too invested. Additionally, the first few questions are used to confirm whether or not the respondent should be completing the 2012 NCT. It asks them to verify the address, asks them if they lived at the address, asks who else lived at the address, etc.

²⁴ We calculated the break-off rate by subtracting 25,774 completed surveys from 26,791 respondents that had a paradata record (reported in Section 5.5.2).

It is possible that respondents who answered “No” to most of these questions felt that the survey did not pertain to them and they left. This section of the survey was designed to figure out respondents’ eligibility and, if necessary, inform them that they did not need to complete the 2012 NCT. However, there was no way for respondents to know this and they might have decided to leave prematurely. It is also important to note that we cannot determine if respondents left the survey because they were angry or upset because of a particular question, because they did not know the answer to a particular question, or for some other reason.

In looking at the “Other” break-offs, those that did not utilize the Logout button, we saw 225 respondents break-off on the Review/Submit screen (see Figure 15). It is possible that these respondents saw the phrase “Thank you for completing the 2012 National Census Test” statement and assumed they were finished. In the future, we will revisit this design component by determining the optimal placement of a ‘Thank You’ message.

Figure 15. Review/Submit Screen



5.5.7 Completion Time

To analyze completion time, we defined the “start time” as the time at which respondents logged into the system with a valid ID. The “end time” is the time at which the server processed their submitted survey. Defined this way, completion time includes the entire duration for which respondents were answering questions and, if applicable, reviewing/editing their responses. Completion time does not account for time spent locating the user ID, entering the survey URL, or reading the introductory text on the welcome screen.

For this analysis, we subset the data to include only respondents who completed the entire survey during a single session. This allows us to examine the time it took for respondents to go through the entire instrument, without having to correct for break-offs or piece together survey completion times over multiple sessions. The universe for the completion time analysis includes 23,044 respondents. Since larger households are asked more person-level questions and therefore have longer survey times, Table 12 presents completion times overall and by household size.

Table 12. Completion Time by Household Size

	Household Size									
	1		2		3		4+		Total	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
10 Min or Less	3,716	85.2	5,619	70.5	2,553	59.3	2,722	42.5	14,610	63.4
11 Min – 30 Min	606	13.9	2,230	28.0	1,635	38.0	3,382	52.8	7,853	34.1
31 Min – 60 Min	22	0.5	70	0.9	88	2.0	238	3.7	418	1.8
61 Min or More	18	0.4	48	0.6	28	0.7	69	1.1	163	0.7
Total	4,362		7,967		4,304		6,411		23,044	

Source: 2012 NCT paradata.

The majority (63.4 percent) of respondents completed the survey in ten minutes or less. Even in households with four or more people, under half (42.5 percent) completed the survey in ten minutes or less. The required OMB burden statement, displayed on the login screen, stated that we estimated the survey would take approximately ten minutes to complete, including time for reviewing the instructions and answers. Given that the majority of respondents completed within ten minutes and the median completion time was 8.4 minutes, this estimate held true.

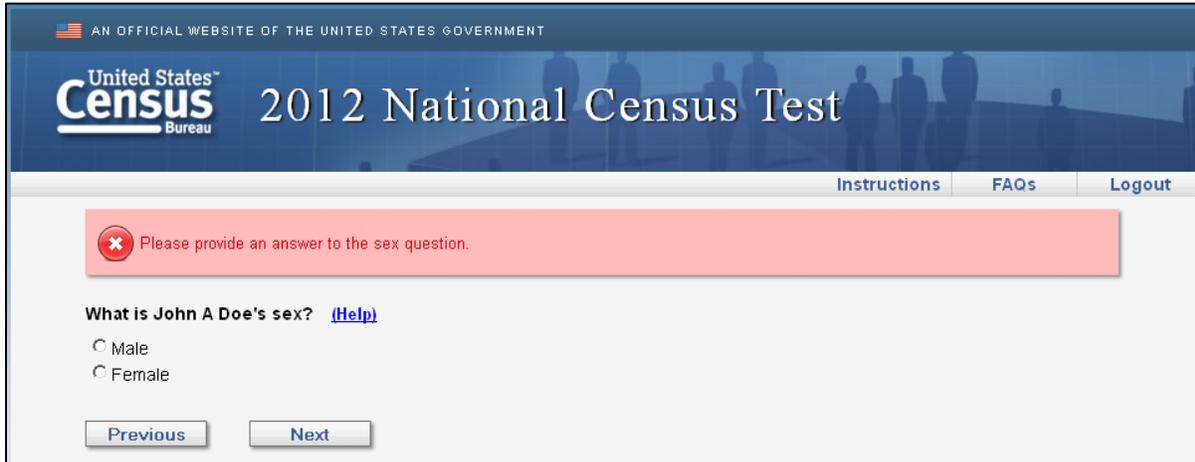
Completion times of an hour or more are considered abnormally high for the amount of data required by the 2012 NCT and are likely due to an error in paradata collection. There are some instances in which respondents left the survey and re-entered but this re-entry was not flagged in the paradata. Therefore, an unknown proportion of the respondents in the completion time analysis actually completed their survey over several sessions. We know this because the survey “times out” if a respondent is idle for more than 15 minutes. At this timeout, the respondent is logged out and must log back in to continue the survey. Clearly high completion times, such as those that took several hours or more, would have been idle at some point and should show a re-entry login. Additionally, several of the high completion times showed long periods of time during which the survey was attempting to log the person into the server and when the survey was transmitting the final submitted data back to the server. It is possible that the respondent was not actually present for this entire time, but this is how long the server said it took to receive the data. It is impossible to know how many respondents were affected by these anomalies, but given that approximately 97 percent of all respondents completed the survey within 30 minutes, the frequency of these types of anomalies appears to be relatively low.

5.5.8 Item Edit Messages

Recall that all data items were subject to soft edits. When an error was made (e.g., an item was left blank or the response was invalid), a message with *red* text appeared at the top of the screen, above the main question, indicating that there was a problem with the information entered (See Figure 16). The respondent was given the opportunity to change the information and continue. However, if nothing was changed and the respondent again pressed the “Next” button, they were allowed to bypass the error and continue entering data for the next question. Note that respondents were not aware that they could bypass an error unless they attempted to do so and thereby discovered that they could move on. Two exceptions were the respondent name collection screen and the roster screen, which required answers before the respondent was

allowed to complete the survey, since the person-level demographic section of the instrument was dependent upon roster names.

Figure 16. Red Edit Message Indicating Item Nonresponse



The screenshot displays the top portion of the 2012 National Census Test website. At the top, it reads "AN OFFICIAL WEBSITE OF THE UNITED STATES GOVERNMENT" and features the "United States Census Bureau" logo. The main heading is "2012 National Census Test". Navigation links for "Instructions", "FAQs", and "Logout" are visible. A prominent red message box with a red 'x' icon contains the text: "Please provide an answer to the sex question." Below this message, the question "What is John A Doe's sex?" is displayed with a "(Help)" link. Two radio button options are provided: "Male" and "Female". At the bottom of the form area, there are "Previous" and "Next" buttons.

As noted in Section 3.2.2, this survey also implemented *green* edit messages on the age/date of birth and race and origin screens (see Figure 17). These green edit messages were implemented when the survey requested information that the respondent did not provide. For example, the respondent may not have known the exact date of birth for a household member but could provide the age. The green messages were also used when the survey requested detailed race and origin information that the respondent did not initially provide. For example, the respondent may have marked the box indicating that he/she was Hispanic but did not choose to provide any response in the write-in field since he/she does not typically identify with a specific origin such as Mexican. In these instances, the respondent was shown a green edit message with an “i” icon (for information) that explained the request for additional information and explicitly told the respondent they could press the “Next” button to continue if they did not know the requested information.

Figure 17. Green Edit Message Indicating a Request for More Information

AN OFFICIAL WEBSITE OF THE UNITED STATES GOVERNMENT

United States[™]
Census
Bureau

2012 National Census Test

[Instructions](#) [FAQs](#) [Logout](#)

i If you would like to provide more detail, please enter the specific origin(s) in the space(s) below the checked box(es).
If not, use the "Next" button to continue.

What is John A Doe's race or origin? Select one or more boxes **AND** enter the specific race(s) or origin(s). [\(Help\)](#)

White — Enter origin(s), for example, German, Irish, Lebanese, Egyptian, and so on.
 Black or African Am. — Enter origin(s), for example, African American, Haitian, Nigerian, and so on.
 Hispanic, Latino, or Spanish origin — Enter origin(s), for example Mexican, Mexican Am., Puerto Rican, Cuban, Argentinean, Colombian, Dominican, Nicaraguan, Salvadoran, Spaniard, and so on.

Of the 26,791 respondents who logged into in the instrument, 73.2 percent received at least one edit message. Since respondents were likely to receive multiple edit messages throughout the course of the survey, it is more informative to look at a topic-based analysis of edit messages rather than a respondent-based analysis. Table 13 shows the frequency and percentage of edit messages for each report section, as outlined in Section 5.5.6.

Table 13. Distribution of Edit Messages by Instrument Section

Item	Frequency	Percent
Household-Level	3,159	6.6
Person-Level Demographic	42,143	88.2
Relationship	141	0.3
Sex	389	0.8
Date of Birth / Age	2,866	6.0
Race / Origin*	38,747	81.1
Person-Level Residence	2,473	5.2
Total	47,775	100.0

Source: 2012 NCT paradata.

Note: See Section 5.5.6 for a description of the items within each section.

*The instrument contained two versions of the race and origin question; each respondent received one version.

A total of 47,775 edit messages were displayed. This number represents the total number of edit messages across all respondents since a single respondent could have received multiple edit messages during their session. The majority of errors (88.2 percent) occurred within the demographic section, primarily for the race and origin item.

Of the 38,747 messages rendered on the race and origin screens, only 2.1 percent were red edit messages that were displayed for item nonresponse. The overwhelming majority of race and origin errors (97.9 percent) were green messages due to respondents selecting a major race category and not providing detailed origin information. Messages due to a lack of detailed origin information accounted for 79.4 percent of all edit messages throughout the instrument. It is important to note that a respondent's choice to leave the race and origin write-in space(s) blank is not an "error" if the respondent does not identify with one of the detailed race or origin groups but rather fully self-identifies by marking a check-box only. It is likely that the race and origin screens had such a high rate of edit messages because, unlike most other survey items, these screens had multiple reasons that an edit might be rendered. In most screens, a lack of response indicates that the respondent either does not know the information or does not want to provide the information. However, the race and edit screens also had to account for the fact that a household member might not identify with a specific race or origin beyond the OMB category. This is the reason for the green edit message, which increases the potential number of edits that can be received on this screen.

We see a similar pattern on the age and date of birth screen. The red item nonresponse errors (1.2 percent) were far less common than the green messages, which asked for more detail (97.5 percent). Respondents particularly seemed to have trouble providing a complete date of birth as the edit message rate for this specific type of error was 96.3 percent (2,759 errors) of all age and date of birth edit messages.

As previously mentioned, there were two versions of the race and origin question. One version provided seven checkboxes for race or origin identification, as well as a write-in for each checkbox that asked for detailed origin information. An example of this race and origin question, referred to as X3, is seen in Figure 6.

The second race and origin version, referred to as X4, provided the checkboxes separately from the write-ins. The same seven checkboxes were provided first, followed by a request for detailed origin responses in the form of three write-in boxes. An example of this race and origin question is seen in Figure 7.

As seen in Table 13, there were 38,747 edit messages displayed across both race and origin versions. Since the two versions were disproportionately assigned across the panels²⁵, the X3 item was seen more times than the X4 item (72,453 page views compared to 47,316 page views). Taking the number of page views into account, X3 had an overall edit message rate of 33.7 percent, while X4 had an overall edit message rate of 30.2 percent.

In terms of the red (nonresponse) errors, the X3 race and origin question had an error rate of 0.4 percent and the X4 race and origin question had an error rate of 1.1 percent). In order for the red nonresponse error to be displayed on the X4 race and origin question, the respondent had to leave both parts of the question blank; that is, response to just one part would not be considered item nonresponse.

²⁵ A full-factorial design was not possible due to sample size and instrument design resources.

The green (detailed information) messages had an overall edit message rate of 31.7 percent, with X3 having a green edit message rate of 33.3 percent and X4 having a green edit message rate of 29.1 percent.

5.5.9 Help Links, Instructions, and FAQs

Respondents could get information on the specific questions within the 2012 NCT, as well as general information about the purpose of the 2012 NCT and data collection techniques. For item-specific help, respondents could click on a blue help link that appeared after almost every question. (An example of this can be seen in Figure 18.)

Figure 18. Example of the "Help" Link for the Sex Item

The screenshot shows the top of the 2012 National Census Test interface. At the top, it says "AN OFFICIAL WEBSITE OF THE UNITED STATES GOVERNMENT" and "United States Census Bureau". The main heading is "2012 National Census Test". There are navigation links for "Instructions", "FAQs", and "Logout". The question displayed is "What is JOHN A DOE's sex?" with a blue "(Help)" link. Below the question are two radio button options: "Male" and "Female". At the bottom of the question area are "Previous" and "Next" buttons.

A respondent could click on the "Help" link and a new window would open on top of the current survey window. This help window included explanatory text on how to fill out the item. Overall, 16.5 percent of respondents accessed a help link. However, many respondents accessed help multiple times for a total of 6,327 help link clicks across all 26,791 respondents. Table 14 shows the frequency and percentage of time that each help link was clicked.

Table 14. Distribution of Help Link Usage by Instrument Section

Item	Frequency	Percent
Household-Level	2,101	33.2
Person-Level Demographic	3,043	48.1
Relationship	297	4.7
Sex	78	1.2
Date of Birth / Age	408	6.5
Race / Origin*	2,260	35.7
Person-Level Residence	1,183	18.7
Total	6,327	100.0

Source: 2012 NCT paradata.

Note: See Section 5.5.6 for a description of the items within each section.

*The instrument had two versions of the race and origin question; each respondent received one version.

As seen in Table 14, 48.1 percent of help link clicks were in the person-level demographic section. Within this section, the race and origin item help link was accessed most frequently. The race and origin item accounted for 35.7 percent of all help link clicks and 74.3 of all demographic item help link clicks.

For help with more general 2012 NCT information, respondents could use the menu bar at the top of every screen. This menu bar, seen in Figure 14, had buttons labeled "Instructions" and "FAQs" which would provide respondents with some basic instructions for completing the 2012 NCT or a list of answers to Frequently Asked Questions (FAQs), respectively. The Instructions link was utilized most frequently on the relationship question (19.3 percent) and the review screen (14.4 percent). The FAQs link was utilized most frequently on the respondent name collection screen (15.5 percent) and the age and date of birth screen (14.8 percent).

5.5.10 User Environment

As part of the paradata, we were able to collect information on the user's environment. The information collected included the device on which the instrument was completed, the operating system, and the browser name, as reported by the respondents' browser user agent string. The user environment was collected each time a respondent with the right software logged into the system, so some respondents were counted multiple times. However, if a respondent logged in from different computers, their metrics would most likely be different. For this reason, user environment data are provided for all 30,192 instances captured and includes duplicates in cases of multiple logins by the same respondent.

The operating systems used during all sessions fell into three main categories. The most prevalent was a Windows operating system, used in about 80 percent of all sessions. The Mac operating system was used in about 13 percent of all sessions. Finally, iOS and Android, used mostly on smartphones and tablets, were used in about seven percent of all sessions. Tables 15, 16, and 17 provide further details on the device and browser used to access the 2012 NCT online instrument.

Table 15. Device Used to Access the 2012 NCT Instrument

	Frequency	Percent
Computer	28,052	92.9
Smartphone	730	2.4
Android	397	1.3
iPhone	321	1.1
Other	12	<0.1
Tablet	1,409	4.7
Android	99	0.3
iPad	1,301	4.3
Other	9	<0.1
Total	30,192	100.0

Source: 2012 NCT paradata.

The data clearly show a strong preference for respondents' using a computer to access the 2012 NCT online survey (92.9 percent).²⁶ Of the non-computer devices used, tablet usage was at 4.7 percent and smartphone usage was at 2.4 percent, with the iPad being most prevalent among tablet users. Looking at smartphones, we see similar proportions for both Android phones (1.3 percent) and iPhones (1.1 percent).

Additional analysis was conducted on the percentage of break-off occurrences and median completion time by which device the respondent used to access the instrument (Table 16).

Table 16. Median Completion Time and Break-off Rate by Device

	Break-off Rate	Median Minutes to Complete
Computer	4.5%	8.2
Smartphone	12.3%	13.9
Tablet	7.8%	8.9

Source: 2012 NCT paradata.

Those respondents who accessed the instrument using a smartphone showed a relatively large break-off rate at 12.3 percent and a relatively long median completion time at 13.9 minutes. The respondents using a tablet to access the instrument showed a break-off rate of 7.8 percent and a median completion time at 8.9 minutes. Respondents accessing the instrument via desktop or laptop computers had a break-off rate of 4.5 percent and a median completion time of 8.2 minutes. It is possible that the lack of an optimized instrument for smartphones with the smaller screen size played a part in the high break-off rate and completion time.

Table 17. Browser Used to Access the 2012 NCT Instrument

	Frequency	Percent
Internet Explorer	15,730	52.1
Mozilla Firefox	4,757	15.8
Google Chrome	4,302	14.3
Safari	2,780	9.2
Mobile Safari	1,622	5.4
Android Webkit	487	1.6
AOL Browser	458	1.5
Other	56	0.2
Total	30,192	100.0

Source: 2012 NCT paradata.

Approximately half of the sessions (52.1 percent) were accessed using Internet Explorer. Firefox (15.8 percent) and Chrome (14.3 percent) were also frequently used to access the survey. When this same analysis was conducted in 2010 (as part of the 2010 CQS), Internet Explorer comprised 69.5 percent of sessions, Firefox comprised 17.7 percent of sessions, and Chrome comprised 4.2 percent of sessions (Bentley, et al., 2011).

²⁶ The design of the 2012 NCT did not include an instrument optimized for smartphones and other mobile devices due to resource and timing constraints. This may have discouraged the use of the mobile devices to complete the survey.

It is important to note that these three measures (operating system, device, and browser) are all related. If a respondent uses an Apple device, it will default to a Macintosh or iOS operating system, and Apple's web browser, Safari. While people have the option of installing and using other products, there is likely to be a correlation between products made by the same company.

6. Related Evaluations, Experiments, and/or Assessments

2010 Census Race and Hispanic Origin Alternative Questionnaire Experiment

2010 Census Quality Survey

2011 American Community Survey Internet Tests: Results from First Test in April 2011

2011 American Community Survey Internet Tests: Results from Second Test in November 2011

Use of Paradata to Assess the Quality and Functionality of the American Community Survey Internet Instrument

Using Paradata to Identify Potential Issues and Trends in the American Community Survey Internet Instrument

2013 National Census Contact Test

7. Dependencies

The Optimizing Self-Response project is dependent on the iterative testing process for the R&T phase: results from the 2012 National Census Test fed the requirements for the 2014 Census Test, which resulted in a particular design for the 2015 testing activities, which will support the ultimate design decisions for the 2020 Census.

8. Conclusions and Recommendations

8.1 Conclusions

Self-response rates

Both overall self-response rates and Internet self-response rates varied across the six contact strategy panels. Across multiple treatments, the strategy of sending a second reminder to nonrespondents performed well. In particular, sending a second reminder prior to mailing a paper questionnaire resulted in significant gains in both overall self-response and Internet response. Despite the increase in telephone responses, a more costly response option, we recommend moving forward with this strategy for future testing.

Although the strategy of including the TQA telephone number in the initial mailing did not realize gains in overall self-response, results show that doing so did no harm. Because the TQA telephone number was not provided to all sample households from the beginning, respondents were unsure whom to contact if they had questions. This led to respondents calling various telephone numbers throughout the Census Bureau, which resulted in a multitude of calls forwarded to the Headquarters staff to handle. This was operationally inefficient, and in the future, we recommend including the TQA telephone number on all contact materials.

Results also indicated that the treatment that implemented a targeted reminder with content tailored to nonrespondents did not yield gains in overall self-response. However, since this strategy can be implemented at no additional cost, and the results showed no harm to self-response rates, we recommend continued research. We hypothesize that this treatment may appeal to a specific demographic, and are eager to see how it performs in conjunction with mailing a second reminder prior to the paper questionnaire.

Note that the recommendations related to contact strategies are based on rough feasibility/cost assumptions. For example, including the telephone number on all mailing materials is expected to increase the TQA workload due to a higher proportion of people calling in to respond via telephone who could not (or would not) respond via Internet. However, the additional cost of agent involvement compared to self-response is presumably offset by the corresponding decrease in the NRFU enumerator workload since a personal visit is historically more expensive than inbound telephone data collection. That said, an important next step is to conduct a comprehensive cost/benefit analysis using the 2012 NCT results as input into modeling parameters (e.g., TQA workload metrics and Internet response rates). This cost/benefit analysis will be critical in determining specific resource implications of the recommended contact strategies, and would guide the strategies that move forward in the testing cycle.

Item nonresponse rates

No statistically significant differences were found for item nonresponse rates across the six contact strategy panels when controlling for multiple comparisons. In general, we consider the observed item nonresponse rates to be low, with all census data items having less than three percent item nonresponse.

In terms of collecting email addresses, a vast majority of respondents provided an email address that was formatted correctly. While this is promising, we have no way of knowing if these email addresses were accurate, in terms of whether it was an address at which the respondent could actually be contacted. We look forward to future research on how we can best use respondent-provided email addresses to encourage self-response.

Race and origin

Results showed that the distributions between the two race and origin question versions were similar overall, with the exception of a higher proportion who reported Asian alone and a lower proportion of Hispanics who also reported a race category in the two-part question version. We are currently conducting more extensive research into specific reporting patterns to identify the source of the differences. In addition, the two-part version had significantly lower item nonresponse than the one-part version. It is possible that this is due to a less cluttered appearance of the two-part question version.

In terms of detailed reporting of race and ethnic groups, Asian respondents tended to provide the most detail, of the major groups. Results were mixed in detailed reporting across the two question versions. In general, there was noticeably less detailed reporting in the 2012 NCT

Internet response data, compared to what was seen in the 2010 Census Race and Hispanic Origin AQE, where these same question versions were tested on paper.

The 2012 NCT results did not indicate the expected benefit of enhanced reporting of detailed race and origin groups. Additional research is needed to appropriately investigate this result. We recommend a robust, probing reinterview designed to quantitatively assess the relative accuracy of detailed race and origin reporting among experimental versions; further analysis of the Internet paradata to closely examine the raw race and origin responses; a study of detailed race and origin response data pre- and post-implementation of the Internet response option; and testing of revised Internet questions and edit messages in an attempt to elicit more detail from respondents.

Contrary to our initial hypothesis, the use of predictive text does not appear to reduce the need for clerical race and origin coding, but we cannot attribute any causal meaning without further study. Since the unexpected detailed reporting results may be somehow related to the increase in the responses requiring residual coding, more research is needed to determine the source of these unexpected outcomes.

Telephone Questionnaire Assistance

Completed telephone interview rates varied across contact strategy panel. The panel in which a second reminder was sent prior to a mail questionnaire and the panel that contained the telephone number on the initial mailing achieved the highest rates of telephone completes. Supplemental analysis is currently underway to examine the demographic differences of those who responded by Internet versus those who completed a telephone interview due to the implicit choice of mode on the Internet invitation in Panel 5.

In addition to completing telephone interviews, TQA agents were asked to address respondent concerns. The majority of the concerns were related to computer or Internet access issues as well as difficulty with the Internet instrument.

Paradata

Paradata were collected in order to gain a better understanding of respondents' experiences while filling out the online questionnaire. Paradata results indicate that an overwhelming majority of Internet respondents logged into the instrument only once. For those who logged into the instrument multiple times, most had only two logins. The median completion time for the survey was 8.4 minutes, which is in accordance with the estimated average of 10 minutes listed in the OMB burden statement.

The break-off rate for the Internet questionnaire was 3.8 percent. That is, 3.8 percent of respondents entered the survey but did not complete it. A 'completed survey' is one in which a respondent viewed all of the survey content. Some break-offs even occurred on the Review/Submit screen, possibly because of the 'Thank You' statement that appeared prior to the Review and Submit buttons.

We studied edit messages and found that a vast majority of the edit messages occurred in the demographic section of the instrument, and most edit messages were rendered on the race and origin screens. Likewise, among the demographic items, help link usage was highest for the race and origin items. Supplemental analysis is planned to study answer changes that occurred after an edit message was rendered. This will be done primarily to further examine whether respondents added detailed race and origin responses after receiving an error prompt on that screen. It is likely that the race and origin screens had such a high rate of edit messages because, unlike most other survey items, these screens had additional reasons that an edit might be rendered. In most screens, a lack of response indicates that the respondent either does not know the information or does not want to provide the information. However, the race and edit screens also have to account for the fact that a household member might not identify with a specific race or origin beyond the OMB category. This is the reason for the green edit message, which increases the potential number of edits that can be received on this screen.

Data collected on the user's environment indicated that nearly 93 percent of users accessed the survey by computer, 2.4 percent by smartphone, and 4.7 percent by tablet. In terms of browser usage, over half of the sessions were accessed in Internet Explorer, while respondents also used Mozilla Firefox (15.8 percent) and Google Chrome (14.3 percent). Break-off rates and completion times were higher for responses by smartphones and tablets compared to responses by computer.

8.2 Program-Level Recommendations

Based on the results of the 2012 NCT we have several recommendations for future research:

- The 2020 Census research objectives include optimizing Internet data collection for mobile devices, which would likely affect the display and formatting of items with more complex response categories (e.g., race/origin and relationship). Changes in content resulting from the optimization would need to be evaluated to prevent unanticipated negative impacts on data quality. The 2012 NCT results showed that completion time and break-offs were higher on average for questionnaires completed on smartphones (with smaller screens), which may affect customer satisfaction and data quality. We recommend conducting comprehensive testing of optimized content in the usability lab and in a field test.
- Further study involving the collection of detailed race and origin groups via Internet is recommended to develop question presentation with edit messaging that encourages accurate detailed reporting, but does not promote satisficing response behavior that results in artificial detailed reporting (i.e., detail that does not reflect how the respondent typically identifies). Cognitive and usability testing of revised question presentation, edit messaging, and presence of predictive text would be beneficial in providing insight into respondent reaction to alternative solicitation of detail. These qualitative results would provide input into a field test composed of a self-response Internet component with a robust, probing reinterview designed to quantitatively assess the relative accuracy of detailed race and origin reporting among experimental versions. Meanwhile, a deeper analysis of the 2012 NCT paradata will be conducted to provide more intelligence on the

complex interaction between Internet data collection technology and respondent behavior.

- We recommend conducting a national test, including mail and Internet response modes, that builds on the successful 2012 NCT treatments and furthers our knowledge of strategies designed to lower costs while maintaining (or increasing) unit response and quality. This national test would be designed to study the effects of relatively lower cost contact methods, such as an email reminder in place of the first of two reminders after the Internet invitation, with the inclusion of the telephone number on mailing materials and the bolded, tailored statement on all nonresponse mailings. This recommendation is based on rough feasibility/cost assumptions corresponding to the successful contact strategy treatments. A comprehensive cost/benefits analysis will be critical in determining specific resource implications of the recommended contact strategies, and would guide the strategies that move forward in the testing cycle.
- We recommend conducting a study of the utility of respondent-provided email addresses to enhance the use of Internet as a response option. We recommend an investigation of how we might use email addresses as part of a contact strategy or as a followup (specifically, to follow up with households who broke off from the Internet instrument.)

8.3 Project-Level Recommendations

The 2012 NCT was limited to English only materials, therefore we recommend a test of the Internet response mode and materials in other languages since reporting patterns may differ by population groups. In addition, we will further analyze 2012 NCT results by the eight segmentation clusters developed for the 2010 Census Integrated Communication Program in an effort to identify differing subpopulation response patterns.

8.4 Lessons Learned

This section highlights some of the major lessons learned from the 2012 NCT (reference forthcoming).

Instrument Development

- Instrument input/output testing went well. All development team members were asked to participate and this was a good approach. In the future, it would be beneficial for team members to have the ability to test the instrument on smartphones and tablets since some respondents will be utilizing these devices for survey response.
- Input/output testing was managed by the Census Experiments Branch (CExB) in DSSD. This was a time-consuming effort and is not their area of expertise. In the future, it would be beneficial to seek help from other areas that are more experienced in input/output testing.

- The same web instrument was used for TQA and self-respondents (with a slightly different entry screen). Some of the question screens were not easy to transition from a self-response mode to an interviewer-administered mode, and interviewers had to make these alterations on the fly, using handouts presented during training. Ideally, question wording in the TQA instrument should be optimized for an interviewer-administered instrument.

Respondent Issues

- As evidenced by phone calls and other correspondence, some respondents had trouble entering the URL in the correct place in their browser (i.e., they entered the URL in a search box instead of the address bar). We may want to consider making the address searchable and/or linking the survey through the main Census Bureau website.
- The CExB handled many calls and emails from respondents who had various technical difficulties with the instrument. Staff at regional offices and the Customer Liaison and Marketing Services Office (CLMSO), where many of these calls were originally received, were not familiar enough with the instrument to provide technical support. Dedicated technical support (optimally implemented as part of TQA) is necessary for future Internet tests.

Other Considerations

- By design, the TQA telephone number was not provided to all sampled households from the beginning, which proved to be problematic. Respondents called various telephone numbers throughout the Census Bureau to try to get their questions answered. This resulted in a multitude of calls forwarded to the CExB staff to handle. In the future, we recommend including the TQA telephone number on all contact materials.
- One Regional Office recommended that we set up a database that would allow them to confirm that a specific address was in sample for this survey. Other surveys, such as the ACS, currently have this capability. Since respondents do not always know the correct name of the survey they are calling about, this capability allows Regional Office staff to provide answers to survey-specific questions, should they receive any survey-related calls.
- We learned that we could leverage NPC DocuTech Services to print addresses on advance letters and reminder postcards with reduced-size barcodes and various styles, boldness, and sizes of font. This was helpful to know during the design phase, as well as when we had to manipulate the printing of addresses to pass the United States Postal Service Reflectance Test²⁷.

²⁷ This test determines the readability of the addresses on the mailing materials.

9. Knowledge Management Resolutions

No Knowledge Management Recommendations.

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12. Appendices

Appendix A. 2012 NCT Letters, Envelopes, and Postcards

Advance Letter (Panel 1 Only)

	UNITED STATES DEPARTMENT OF COMMERCE Economics and Statistics Administration U.S. Census Bureau Washington, DC 20233-0001
August 23, 2012	
A message from the Director, U.S. Census Bureau . . .	
About one week from now, you will receive instructions in the mail on how to complete the 2012 National Census Test, which is a brief but important survey. When you receive it, please respond by September 15.	
Your response is important. We ask for your help in our effort to develop new methods that will make the next census easier, more convenient, and less costly for taxpayers. Results from the next census will be used to help each community get its fair share of federal funding for highways, schools, health facilities, and many other programs you and your neighbors need.	
Thank you in advance for your help.	
DA-5(L) (5-2012)	census.gov

Initial Cover Letter for Panels 1-4 and 6



UNITED STATES DEPARTMENT OF COMMERCE
Economics and Statistics Administration
U.S. Census Bureau
Washington, DC 20233-0001

August 30, 2012

A message from the Director, U.S. Census Bureau . . .

To prepare for the next census, the U.S. Census Bureau is conducting the 2012 National Census Test. The goal of this survey is to develop new methods that will make the next census easier, more convenient, and less costly for taxpayers.

Using the enclosed instruction card, please complete the survey online **by September 15** at:

<https://respond.census.gov/nct>

Responding on time saves money, and you can avoid a personal visit from an interviewer.

Help us conserve natural resources, process data more efficiently, and save taxpayer money by responding online. If you are unable to complete the survey online, we will mail a paper form to you in a few weeks.

The Census Bureau chose your address, not you personally, as part of a randomly selected sample. You are required by U.S. law to respond to this survey. The Census Bureau is required by U.S. law to keep your answers confidential. This means that the Census Bureau cannot give out information that identifies you or your household. Your answers will only be used for statistical purposes, and no other purpose. The back of this letter contains more information about protecting your data.

census.gov

Initial Cover Letter for Panel 5



UNITED STATES DEPARTMENT OF COMMERCE
Economics and Statistics Administration
U.S. Census Bureau
Washington, DC 20233-0001

August 30, 2012

A message from the Director, U.S. Census Bureau . . .

To prepare for the next census, the U.S. Census Bureau is conducting the 2012 National Census Test. The goal of this survey is to develop new methods that will make the next census easier, more convenient, and less costly for taxpayers.

Using the enclosed instruction card, please complete the survey online **by September 15** at:

<https://respond.census.gov/nct>

Responding on time saves money, and you can avoid a personal visit from an interviewer.

Help us conserve natural resources, process data more efficiently, and save taxpayer money by responding online. If you are unable to complete the survey online, you may call 1-800-972-5650 to provide your census information over the phone.

The Census Bureau chose your address, not you personally, as part of a randomly selected sample. You are required by U.S. law to respond to this survey. The Census Bureau is required by U.S. law to keep your answers confidential. This means that the Census Bureau cannot give out information that identifies you or your household. Your answers will only be used for statistical purposes, and no other purpose. The back of this letter contains more information about protecting your data.

census.gov

Replacement Cover Letter for Panels 1-3



UNITED STATES DEPARTMENT OF COMMERCE
Economics and Statistics Administration
U.S. Census Bureau
 Washington, DC 20233-0001

September 20, 2012

A message from the Director, U.S. Census Bureau . . .

A few weeks ago, the U.S. Census Bureau sent instructions for completing the 2012 National Census Test. We asked you to help us with this very important survey by completing it online. But we have not received your response yet.

If you have already completed the survey, thank you very much.

If you have not yet responded, please complete the survey using ONE of the following options:

- Option 1** Go to <https://respond.census.gov/nct> to complete the survey online. You will need to provide your 10-digit access code, which is printed just below the bar code on the back of the enclosed form.
- Option 2** Complete and mail back the enclosed form in the postage-paid envelope provided.

Respond today and you can avoid a personal visit from an interviewer.

The Census Bureau chose your address, not you personally, as part of a randomly selected sample. You are required by U.S. law to respond to this survey. The Census Bureau is required by U.S. law to keep your answers confidential. This means that the Census Bureau cannot give out information that identifies you or your household. Your answers will only be used for statistical purposes, and no other purpose. The back of this letter contains more information about protecting your data.

census.gov

Replacement Cover Letter for Panels 4-5



UNITED STATES DEPARTMENT OF COMMERCE
Economics and Statistics Administration
U.S. Census Bureau
 Washington, DC 20233-0001

September 13, 2012

A message from the Director, U.S. Census Bureau . . .

A few weeks ago, the U.S. Census Bureau sent instructions for completing the 2012 National Census Test. We asked you to help us with this very important survey by completing it online. But we have not received your response yet.

If you have already completed the survey, thank you very much.

If you have not yet responded, please complete the survey using ONE of the following options:

- Option 1** Go to <https://respond.census.gov/nct> to complete the survey online. You will need to provide your 10-digit access code, which is printed just below the bar code on the back of the enclosed form.
- Option 2** Complete and mail back the enclosed form in the postage-paid envelope provided.

Respond today and you can avoid a personal visit from an interviewer.

The Census Bureau chose your address, not you personally, as part of a randomly selected sample. You are required by U.S. law to respond to this survey. The Census Bureau is required by U.S. law to keep your answers confidential. This means that the Census Bureau cannot give out information that identifies you or your household. Your answers will only be used for statistical purposes, and no other purpose. The back of this letter contains more information about protecting your data.

census.gov

Replacement Cover Letter for Panels 6

	<p>UNITED STATES DEPARTMENT OF COMMERCE Economics and Statistics Administration U.S. Census Bureau Washington, DC 20233-0001</p>
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Important Note: This survey is required by law. You are receiving this notice because we did not receive your response by September 10, 2012.

September 20, 2012

A message from the Director, U.S. Census Bureau . . .

A few weeks ago, the U.S. Census Bureau sent instructions for completing the 2012 National Census Test. We asked you to help us with this very important survey by completing it online. But we have not received your response yet.

If you have already completed the survey, thank you very much.

If you have not yet responded, please complete the survey using ONE of the following options:

- Option 1** Go to <https://respond.census.gov/nct> to complete the survey online. You will need to provide your 10-digit access code, which is printed just below the bar code on the back of the enclosed form.
- Option 2** Complete and mail back the enclosed form in the postage-paid envelope provided.

Respond today and you can avoid a personal visit from an interviewer.

The Census Bureau chose your address, not you personally, as part of a randomly selected sample. You are required by U.S. law to respond to this survey. The Census Bureau is required by U.S. law to keep your answers confidential. This means that the Census Bureau cannot give out information that identifies you or your household. Your answers will only be used for statistical purposes, and no other purpose. The back of this letter contains more information about protecting your data.

census.gov

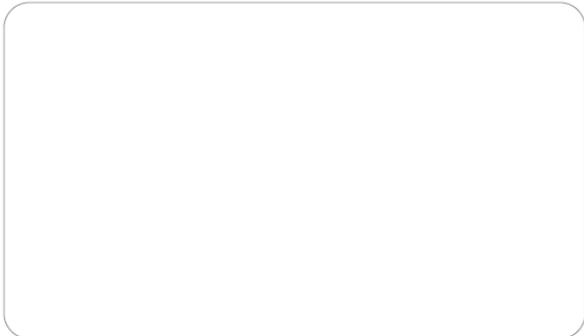
Back of Initial and Replacement Cover Letters for All Panels

Your Answers Are Confidential

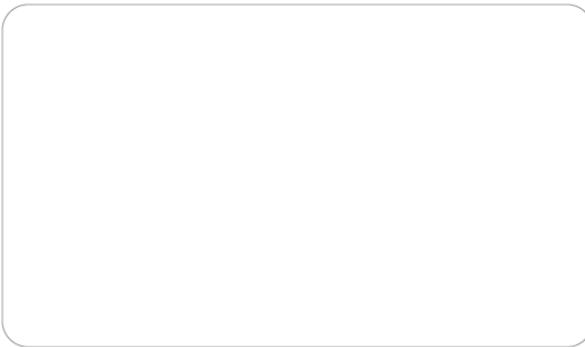
We are conducting this survey under the authority of Title 13, United States Code, Section 193. Federal law protects your privacy and keeps your answers confidential (Title 13, United States Code, Sections 9 and 214).

Please visit our website at <www.census.gov> and click on "Data Protection & Privacy Policy" to learn more about how we protect your information.

Outgoing Envelope for Panels 1-5

<p>U.S. Department of Commerce Economics and Statistics Administration U.S. Census Bureau 1201 E 10th Street Jeffersonville IN 47199-1111</p> <p>OFFICIAL BUSINESS Penalty for Private Use \$300</p> <p>DA-6A(IN) (4-2012)</p> <p>AN EQUAL OPPORTUNITY EMPLOYER</p>		<p>PRESORTED FIRST-CLASS MAIL POSTAGE & FEES PAID U.S. CENSUS BUREAU PERMIT NO. G-58</p>
<p>YOUR RESPONSE IS REQUIRED BY LAW</p>		

Outgoing Envelope for Panel 6

<p>U.S. Department of Commerce Economics and Statistics Administration U.S. Census Bureau 1201 E 10th Street Jeffersonville IN 47199-1111</p> <p>OFFICIAL BUSINESS Penalty for Private Use \$300</p> <p>DA-6A(1)(IN) (6-2012)</p> <p>AN EQUAL OPPORTUNITY EMPLOYER</p>		<p>PRESORTED FIRST-CLASS MAIL POSTAGE & FEES PAID U.S. CENSUS BUREAU PERMIT NO. G-58</p>
<p>YOUR RESPONSE IS REQUIRED BY LAW We have not yet received your response</p>		

Reminder Postcard for All Panels

U.S. Department of Commerce
Economics and Statistics Administration
U.S. Census Bureau
 1201 E 10th Street
 Jeffersonville IN 47199-1111

OFFICIAL BUSINESS
 Penalty for Private Use \$300

DA-9 (6-2012)

PRESORTED
 FIRST-CLASS MAIL
 POSTAGE & FEES PAID
 U.S. CENSUS BUREAU
 PERMIT NO. G-58

**Your response to the U.S. Census Bureau
 is required by law.**

September 4, 2012



UNITED STATES DEPARTMENT OF COMMERCE
Economics and Statistics Administration
U.S. Census Bureau
 Washington, DC 20233-0001

A message from the Director, U.S. Census Bureau . . .

A few days ago, you should have received instructions for completing the 2012 National Census Test online. It is important that you respond. If you have already provided your information, thank you.

If you have not yet responded, please complete the survey online at **<https://respond.census.gov/nct>** by September 15. Responding on time saves money, and you can avoid a personal visit from an interviewer.

If you need help completing your survey, please call 1-800-972-5650.

2nd Reminder Postcard for Panel 3

<p>U.S. Department of Commerce Economics and Statistics Administration U.S. Census Bureau 1201 E 10th Street Jeffersonville IN 47199-1111 OFFICIAL BUSINESS Penalty for Private Use \$300 DA-9(2A) (6-2-012)</p>	<p>PRESORTED FIRST-CLASS MAIL POSTAGE & FEES PAID U.S. CENSUS BUREAU PERMIT NO. G-58</p>
<p>Your response to the U.S. Census Bureau is required by law.</p>	

September 13, 2012		<p>UNITED STATES DEPARTMENT OF COMMERCE Economics and Statistics Administration U.S. Census Bureau Washington, DC 20233-0001</p>
<p>A message from the Director, U.S. Census Bureau . . .</p>		
<p>Within the last few weeks, the U.S. Census Bureau sent two requests for your participation in the 2012 National Census Test. Your response is important. If you have not yet responded, please do so immediately.</p>		
<p>Please go to https://respond.census.gov/nct to complete the survey online.</p>		
<p>You are required by U.S. law to respond to this survey. If you do not respond, a Census Bureau interviewer may visit you to complete the survey.</p>		
<p>If you would like to complete the survey by telephone, or need assistance, please call our toll-free number 1-800-972-5650.</p>		

2nd Reminder Postcard for Panels 4-5

<p>U.S. Department of Commerce Economics and Statistics Administration U.S. Census Bureau 1201 E 10th Street Jeffersonville IN 47199-1111</p> <p>OFFICIAL BUSINESS Penalty for Private Use \$300</p> <p>DA-9(2B) (6-2012)</p>	<p>PRESORTED FIRST-CLASS MAIL POSTAGE & FEES PAID U.S. CENSUS BUREAU PERMIT NO. G-58</p>
<p>Your response to the U.S. Census Bureau is required by law.</p>	

September 20, 2012		<p>UNITED STATES DEPARTMENT OF COMMERCE Economics and Statistics Administration U.S. Census Bureau Washington, DC 20233-0001</p>
<p>A message from the Director, U.S. Census Bureau . . .</p>		
<p>Within the last few weeks, the U.S. Census Bureau sent several requests for your participation in the 2012 National Census Test. Now is the time to complete the survey if you have not already done so.</p>		
<p>Please go to https://respond.census.gov/nct to respond to the survey online OR complete and return the paper questionnaire that we sent you earlier.</p>		
<p>You are required by U.S. law to respond to this survey. If you do not respond, a Census Bureau interviewer may visit you to complete the survey.</p>		
<p>If you would like to complete the survey by telephone, or need assistance, please call our toll-free number 1-800-972-5650.</p>		

2nd Reminder Postcard for Panel 6

<p>U.S. Department of Commerce Economics and Statistics Administration U.S. Census Bureau 1201 E 10th Street Jeffersonville IN 47199-1111</p> <p>OFFICIAL BUSINESS Penalty for Private Use \$300</p> <p>DA-9(2C) (6-2012)</p>	<p>PRESORTED FIRST-CLASS MAIL POSTAGE & FEES PAID U.S. CENSUS BUREAU PERMIT NO. G-58</p>
<p>Your response to the U.S. Census Bureau is required by law. We have not yet received your response.</p>	

September 20, 2012		<p>UNITED STATES DEPARTMENT OF COMMERCE Economics and Statistics Administration U.S. Census Bureau Washington, DC 20233-0001</p>
<p>Important Note: This survey is required by law. You are receiving this notice because we did not receive your response by September 17, 2012.</p>		
<p>A message from the Director, U.S. Census Bureau . . .</p>		
<p>Within the last few weeks, the U.S. Census Bureau sent several requests for your participation in the 2012 National Census Test. Now is the time to complete the survey if you have not already done so.</p>		
<p>Please go to https://respond.census.gov/nct to respond to the survey online OR complete and return the paper questionnaire that we sent you earlier.</p>		
<p>You are required by U.S. law to respond to this survey. If you do not respond, a Census Bureau interviewer may visit you to complete the survey.</p>		
<p>If you would like to complete the survey by telephone, or need assistance, please call our toll-free number 1-800-972-5650.</p>		

Appendix B. 2012 NCT Paper Questionnaire



2012 National Census Test
<https://respond.census.gov/nct>

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

Use a blue or black pen.
Start here

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 September 5, 2012.
- 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.

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

- If someone who has no permanent place to stay is staying here on September 5, 2012, count that person.

1. How many people were living or staying in this house, apartment, or mobile home on September 5, 2012?

Number of people =

2. Were there any additional people staying here September 5, 2012 that you did not include in Question 1? Mark 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 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. 0607-0970: Approval Expires 03/31/2013
Form **DA-1** (6-15-2012)

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 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 September 5, 2012 Month Day Year of birth

8. What is Person 1's race or origin? Mark one or more boxes AND write in the specific race(s) or origin(s).

White — *Print origin(s), for example, German, Irish, Lebanese, Egyptian, and so on.* ↴

Black or African Am. — *Print origin(s), for example, African American, Haitian, Nigerian, and so on.* ↴

Hispanic, Latino, or Spanish origin — *Print origin(s), for example, Mexican, Mexican Am., Puerto Rican, Cuban, Argentinean, Colombian, Dominican, Nicaraguan, Salvadoran, Spaniard, and so on.* ↴

American Indian or Alaska Native — *Print name of enrolled or principal tribe(s), for example, Navajo, Mayan, Tlingit, and so on.* ↴

Asian — *Print origin(s), for example, Asian Indian, Chinese, Filipino, Japanese, Korean, Vietnamese, Hmong, Laotian, Thai, Pakistani, Cambodian, and so on.* ↴

Native Hawaiian or Other Pacific Islander — *Print origin(s), for example, Native Hawaiian, Guamanian or Chamorro, Samoan, Fijian, Tongan, and so on.* ↴

Some other race or origin — *Print race(s) or origin(s).* ↴

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

<p>1. Print name of Person 2</p> <p>Last Name <input style="width: 100%;" type="text"/></p> <p>First Name <input style="width: 100%;" type="text"/> MI <input style="width: 20px;" type="text"/></p> <p>2. How is this person related to Person 1? Mark <input checked="" type="checkbox"/> ONE box.</p> <table style="width: 100%; border: none;"> <tr> <td><input type="checkbox"/> Husband or wife</td> <td><input type="checkbox"/> Parent-in-law</td> </tr> <tr> <td><input type="checkbox"/> Biological son or daughter</td> <td><input type="checkbox"/> Son-in-law or daughter-in-law</td> </tr> <tr> <td><input type="checkbox"/> Adopted son or daughter</td> <td><input type="checkbox"/> Other relative</td> </tr> <tr> <td><input type="checkbox"/> Stepson or stepdaughter</td> <td><input type="checkbox"/> Roomer or boarder</td> </tr> <tr> <td><input type="checkbox"/> Brother or sister</td> <td><input type="checkbox"/> Housemate or roommate</td> </tr> <tr> <td><input type="checkbox"/> Father or mother</td> <td><input type="checkbox"/> Unmarried partner</td> </tr> <tr> <td><input type="checkbox"/> Grandchild</td> <td><input type="checkbox"/> Other nonrelative</td> </tr> </table> <p>3. What is this person's sex? Mark <input checked="" type="checkbox"/> ONE box.</p> <p><input type="checkbox"/> Male <input type="checkbox"/> Female</p> <p>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.</p> <p>Age on September 5, 2012 Month Day Year of birth</p> <p><input style="width: 30px;" type="text"/> <input style="width: 20px;" type="text"/> <input style="width: 20px;" type="text"/> <input style="width: 20px;" type="text"/> <input style="width: 20px;" type="text"/> <input style="width: 20px;" type="text"/> <input style="width: 20px;" type="text"/></p> <p>5. What is this person's race or origin? Mark <input checked="" type="checkbox"/> one or more boxes AND write in the specific race(s) or origin(s).</p> <p><input type="checkbox"/> White — Print origin(s), for example, German, Irish, Lebanese, Egyptian, and so on. ↴</p> <p><input style="width: 100%;" type="text"/></p> <p><input type="checkbox"/> Black or African Am. — Print origin(s), for example, African American, Haitian, Nigerian, and so on. ↴</p> <p><input style="width: 100%;" type="text"/></p> <p><input type="checkbox"/> Hispanic, Latino, or Spanish origin — Print origin(s), for example, Mexican, Mexican Am., Puerto Rican, Cuban, Argentinean, Colombian, Dominican, Nicaraguan, Salvadoran, Spaniard, and so on. ↴</p> <p><input style="width: 100%;" type="text"/></p> <p><input type="checkbox"/> American Indian or Alaska Native — Print name of enrolled or principal tribe(s), for example, Navajo, Mayan, Tlingit, and so on. ↴</p> <p><input style="width: 100%;" type="text"/></p> <p><input type="checkbox"/> Asian — Print origin(s), for example, Asian Indian, Chinese, Filipino, Japanese, Korean, Vietnamese, Hmong, Laotian, Thai, Pakistani, Cambodian, and so on. ↴</p> <p><input style="width: 100%;" type="text"/></p> <p><input type="checkbox"/> Native Hawaiian or Other Pacific Islander — Print origin(s), for example, Native Hawaiian, Guamanian or Chamorro, Samoan, Fijian, Tongan, and so on. ↴</p> <p><input style="width: 100%;" type="text"/></p> <p><input type="checkbox"/> Some other race or origin — Print race(s) or origin(s). ↴</p> <p><input style="width: 100%;" type="text"/></p> <p>→ If more people were counted in Question 1 on the front page, continue with Person 3.</p>	<input type="checkbox"/> Husband or wife	<input type="checkbox"/> Parent-in-law	<input type="checkbox"/> Biological son or daughter	<input type="checkbox"/> Son-in-law or daughter-in-law	<input type="checkbox"/> Adopted son or daughter	<input type="checkbox"/> Other relative	<input type="checkbox"/> Stepson or stepdaughter	<input type="checkbox"/> Roomer or boarder	<input type="checkbox"/> Brother or sister	<input type="checkbox"/> Housemate or roommate	<input type="checkbox"/> Father or mother	<input type="checkbox"/> Unmarried partner	<input type="checkbox"/> Grandchild	<input type="checkbox"/> Other nonrelative	<p>1. Print name of Person 3</p> <p>Last Name <input style="width: 100%;" type="text"/></p> <p>First Name <input style="width: 100%;" type="text"/> MI <input style="width: 20px;" type="text"/></p> <p>2. How is this person related to Person 1? Mark <input checked="" type="checkbox"/> ONE box.</p> <table style="width: 100%; border: none;"> <tr> <td><input type="checkbox"/> Husband or wife</td> <td><input type="checkbox"/> Parent-in-law</td> </tr> <tr> <td><input type="checkbox"/> Biological son or daughter</td> <td><input type="checkbox"/> Son-in-law or daughter-in-law</td> </tr> <tr> <td><input type="checkbox"/> Adopted son or daughter</td> <td><input type="checkbox"/> Other relative</td> </tr> <tr> <td><input type="checkbox"/> Stepson or stepdaughter</td> <td><input type="checkbox"/> Roomer or boarder</td> </tr> <tr> <td><input type="checkbox"/> Brother or sister</td> <td><input type="checkbox"/> Housemate or roommate</td> </tr> <tr> <td><input type="checkbox"/> Father or mother</td> <td><input type="checkbox"/> Unmarried partner</td> </tr> <tr> <td><input type="checkbox"/> Grandchild</td> <td><input type="checkbox"/> Other nonrelative</td> </tr> </table> <p>3. What is this person's sex? Mark <input checked="" type="checkbox"/> ONE box.</p> <p><input type="checkbox"/> Male <input type="checkbox"/> Female</p> <p>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.</p> <p>Age on September 5, 2012 Month Day Year of birth</p> <p><input style="width: 30px;" type="text"/> <input style="width: 20px;" type="text"/> <input style="width: 20px;" type="text"/> <input style="width: 20px;" type="text"/> <input style="width: 20px;" type="text"/> <input style="width: 20px;" type="text"/> <input style="width: 20px;" type="text"/></p> <p>5. What is this person's race or origin? Mark <input checked="" type="checkbox"/> one or more boxes AND write in the specific race(s) or origin(s).</p> <p><input type="checkbox"/> White — Print origin(s), for example, German, Irish, Lebanese, Egyptian, and so on. ↴</p> <p><input style="width: 100%;" type="text"/></p> <p><input type="checkbox"/> Black or African Am. — Print origin(s), for example, African American, Haitian, Nigerian, and so on. ↴</p> <p><input style="width: 100%;" type="text"/></p> <p><input type="checkbox"/> Hispanic, Latino, or Spanish origin — Print origin(s), for example, Mexican, Mexican Am., Puerto Rican, Cuban, Argentinean, Colombian, Dominican, Nicaraguan, Salvadoran, Spaniard, and so on. ↴</p> <p><input style="width: 100%;" type="text"/></p> <p><input type="checkbox"/> American Indian or Alaska Native — Print name of enrolled or principal tribe(s), for example, Navajo, Mayan, Tlingit, and so on. ↴</p> <p><input style="width: 100%;" type="text"/></p> <p><input type="checkbox"/> Asian — Print origin(s), for example, Asian Indian, Chinese, Filipino, Japanese, Korean, Vietnamese, Hmong, Laotian, Thai, Pakistani, Cambodian, and so on. ↴</p> <p><input style="width: 100%;" type="text"/></p> <p><input type="checkbox"/> Native Hawaiian or Other Pacific Islander — Print origin(s), for example, Native Hawaiian, Guamanian or Chamorro, Samoan, Fijian, Tongan, and so on. ↴</p> <p><input style="width: 100%;" type="text"/></p> <p><input type="checkbox"/> Some other race or origin — Print race(s) or origin(s). ↴</p> <p><input style="width: 100%;" type="text"/></p> <p>→ If more people were counted in Question 1 on the front page, continue with Person 4.</p>	<input type="checkbox"/> Husband or wife	<input type="checkbox"/> Parent-in-law	<input type="checkbox"/> Biological son or daughter	<input type="checkbox"/> Son-in-law or daughter-in-law	<input type="checkbox"/> Adopted son or daughter	<input type="checkbox"/> Other relative	<input type="checkbox"/> Stepson or stepdaughter	<input type="checkbox"/> Roomer or boarder	<input type="checkbox"/> Brother or sister	<input type="checkbox"/> Housemate or roommate	<input type="checkbox"/> Father or mother	<input type="checkbox"/> Unmarried partner	<input type="checkbox"/> Grandchild	<input type="checkbox"/> Other nonrelative
<input type="checkbox"/> Husband or wife	<input type="checkbox"/> Parent-in-law																												
<input type="checkbox"/> Biological son or daughter	<input type="checkbox"/> Son-in-law or daughter-in-law																												
<input type="checkbox"/> Adopted son or daughter	<input type="checkbox"/> Other relative																												
<input type="checkbox"/> Stepson or stepdaughter	<input type="checkbox"/> Roomer or boarder																												
<input type="checkbox"/> Brother or sister	<input type="checkbox"/> Housemate or roommate																												
<input type="checkbox"/> Father or mother	<input type="checkbox"/> Unmarried partner																												
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<input type="checkbox"/> Biological son or daughter	<input type="checkbox"/> Son-in-law or daughter-in-law																												
<input type="checkbox"/> Adopted son or daughter	<input type="checkbox"/> Other relative																												
<input type="checkbox"/> Stepson or stepdaughter	<input type="checkbox"/> Roomer or boarder																												
<input type="checkbox"/> Brother or sister	<input type="checkbox"/> Housemate or roommate																												
<input type="checkbox"/> Father or mother	<input type="checkbox"/> Unmarried partner																												
<input type="checkbox"/> Grandchild	<input type="checkbox"/> Other nonrelative																												

1. Print name of Person 4

Last Name

First Name MI

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

<input type="checkbox"/> Husband or wife	<input type="checkbox"/> Parent-in-law
<input type="checkbox"/> Biological son or daughter	<input type="checkbox"/> Son-in-law or daughter-in-law
<input type="checkbox"/> Adopted son or daughter	<input type="checkbox"/> Other relative
<input type="checkbox"/> Stepson or stepdaughter	<input type="checkbox"/> Roomer or boarder
<input type="checkbox"/> Brother or sister	<input type="checkbox"/> Housemate or roommate
<input type="checkbox"/> Father or mother	<input type="checkbox"/> Unmarried partner
<input type="checkbox"/> Grandchild	<input type="checkbox"/> 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 September 5, 2012 Month Day Year of birth

5. What is this person's race or origin? Mark one or more boxes AND write in the specific race(s) or origin(s).

White — *Print origin(s), for example, German, Irish, Lebanese, Egyptian, and so on.* ↴

Black or African Am. — *Print origin(s), for example, African American, Haitian, Nigerian, and so on.* ↴

Hispanic, Latino, or Spanish origin — *Print origin(s), for example, Mexican, Mexican Am., Puerto Rican, Cuban, Argentinean, Colombian, Dominican, Nicaraguan, Salvadoran, Spaniard, and so on.* ↴

American Indian or Alaska Native — *Print name of enrolled or principal tribe(s), for example, Navajo, Mayan, Tlingit, and so on.* ↴

Asian — *Print origin(s), for example, Asian Indian, Chinese, Filipino, Japanese, Korean, Vietnamese, Hmong, Laotian, Thai, Pakistani, Cambodian, and so on.* ↴

Native Hawaiian or Other Pacific Islander — *Print origin(s), for example, Native Hawaiian, Guamanian or Chamorro, Samoan, Fijian, Tongan, and so on.* ↴

Some other race or origin — *Print race(s) or origin(s).* ↴

→ If more people were counted in Question 1 on the front page, continue with Person 5.

1. Print name of Person 5

Last Name

First Name MI

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

<input type="checkbox"/> Husband or wife	<input type="checkbox"/> Parent-in-law
<input type="checkbox"/> Biological son or daughter	<input type="checkbox"/> Son-in-law or daughter-in-law
<input type="checkbox"/> Adopted son or daughter	<input type="checkbox"/> Other relative
<input type="checkbox"/> Stepson or stepdaughter	<input type="checkbox"/> Roomer or boarder
<input type="checkbox"/> Brother or sister	<input type="checkbox"/> Housemate or roommate
<input type="checkbox"/> Father or mother	<input type="checkbox"/> Unmarried partner
<input type="checkbox"/> Grandchild	<input type="checkbox"/> 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 September 5, 2012 Month Day Year of birth

5. What is this person's race or origin? Mark one or more boxes AND write in the specific race(s) or origin(s).

White — *Print origin(s), for example, German, Irish, Lebanese, Egyptian, and so on.* ↴

Black or African Am. — *Print origin(s), for example, African American, Haitian, Nigerian, and so on.* ↴

Hispanic, Latino, or Spanish origin — *Print origin(s), for example, Mexican, Mexican Am., Puerto Rican, Cuban, Argentinean, Colombian, Dominican, Nicaraguan, Salvadoran, Spaniard, and so on.* ↴

American Indian or Alaska Native — *Print name of enrolled or principal tribe(s), for example, Navajo, Mayan, Tlingit, and so on.* ↴

Asian — *Print origin(s), for example, Asian Indian, Chinese, Filipino, Japanese, Korean, Vietnamese, Hmong, Laotian, Thai, Pakistani, Cambodian, and so on.* ↴

Native Hawaiian or Other Pacific Islander — *Print origin(s), for example, Native Hawaiian, Guamanian or Chamorro, Samoan, Fijian, Tongan, and so on.* ↴

Some other race or origin — *Print race(s) or origin(s).* ↴

→ If more people were counted in Question 1 on the front page, continue with Person 6.

1. Print name of Person 6

Last Name

First Name MI

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

- | | |
|---|--|
| <input type="checkbox"/> Husband or wife | <input type="checkbox"/> Parent-in-law |
| <input type="checkbox"/> Biological son or daughter | <input type="checkbox"/> Son-in-law or daughter-in-law |
| <input type="checkbox"/> Adopted son or daughter | <input type="checkbox"/> Other relative |
| <input type="checkbox"/> Stepson or stepdaughter | <input type="checkbox"/> Roomer or boarder |
| <input type="checkbox"/> Brother or sister | <input type="checkbox"/> Housemate or roommate |
| <input type="checkbox"/> Father or mother | <input type="checkbox"/> Unmarried partner |
| <input type="checkbox"/> Grandchild | <input type="checkbox"/> 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 September 5, 2012 Month Day Year of birth

5. What is this person's race or origin? Mark one or more boxes AND write in the specific race(s) or origin(s).

- White — *Print origin(s), for example, German, Irish, Lebanese, Egyptian, and so on.* ↴

- Black or African Am. — *Print origin(s), for example, African American, Haitian, Nigerian, and so on.* ↴

- Hispanic, Latino, or Spanish origin — *Print origin(s), for example, Mexican, Mexican Am., Puerto Rican, Cuban, Argentinean, Colombian, Dominican, Nicaraguan, Salvadoran, Spaniard, and so on.* ↴

- American Indian or Alaska Native — *Print name of enrolled or principal tribe(s), for example, Navajo, Mayan, Tlingit, and so on.* ↴

- Asian — *Print origin(s), for example, Asian Indian, Chinese, Filipino, Japanese, Korean, Vietnamese, Hmong, Laotian, Thai, Pakistani, Cambodian, and so on.* ↴

- Native Hawaiian or Other Pacific Islander — *Print origin(s), for example, Native Hawaiian, Guamanian or Chamorro, Samoan, Fijian, Tongan, and so on.* ↴

- Some other race or origin — *Print race(s) or origin(s).* ↴

→ If more than six people were counted in Question 1 on the front page, turn the page and continue.

→ If more people live here, turn the page and continue.

If your enclosed postage-paid envelope is missing, please mail your completed form to:

**U.S. Census Bureau
National Processing Center
1201 E 10th Street
Jeffersonville, IN 47132-0001**

If you need help completing this form, call 1-800-972-5650 between 8:00 a.m. and 9:00 p.m., 7 days a week. The telephone call is free.

TDD — Telephone display device for the hearing impaired. Call 1-800-582-8330 between 8:00 a.m. and 9:00 p.m., 7 days a week. The telephone call is free.

The U.S. Census Bureau estimates that, for the average household, this form will take about 10 minutes to complete, including the time for reviewing the instructions and answers. Send comments regarding this burden estimate or any other aspect of this burden to: Paperwork Reduction Project 0607-0970, U.S. Census Bureau, AMSD-3K138, 4600 Silver Hill Road, Washington, DC 20233. You may e-mail comments to <Paperwork@census.gov>; use "Paperwork Project 0607-0970" as the subject.

Respondents are not required to respond to any information collection unless it displays a valid approval number from the Office of Management and Budget.

Appendix C. Reason for Call Sheet

Complete this form for every interaction you have with a 2012 NCT respondent during the TQA portion of the test. (You do not have to use this form when doing the CFU reinterviews.)

- Fill out as much information on the front of this sheet as possible.
- You must provide at least one reason for the call on the back of the sheet.

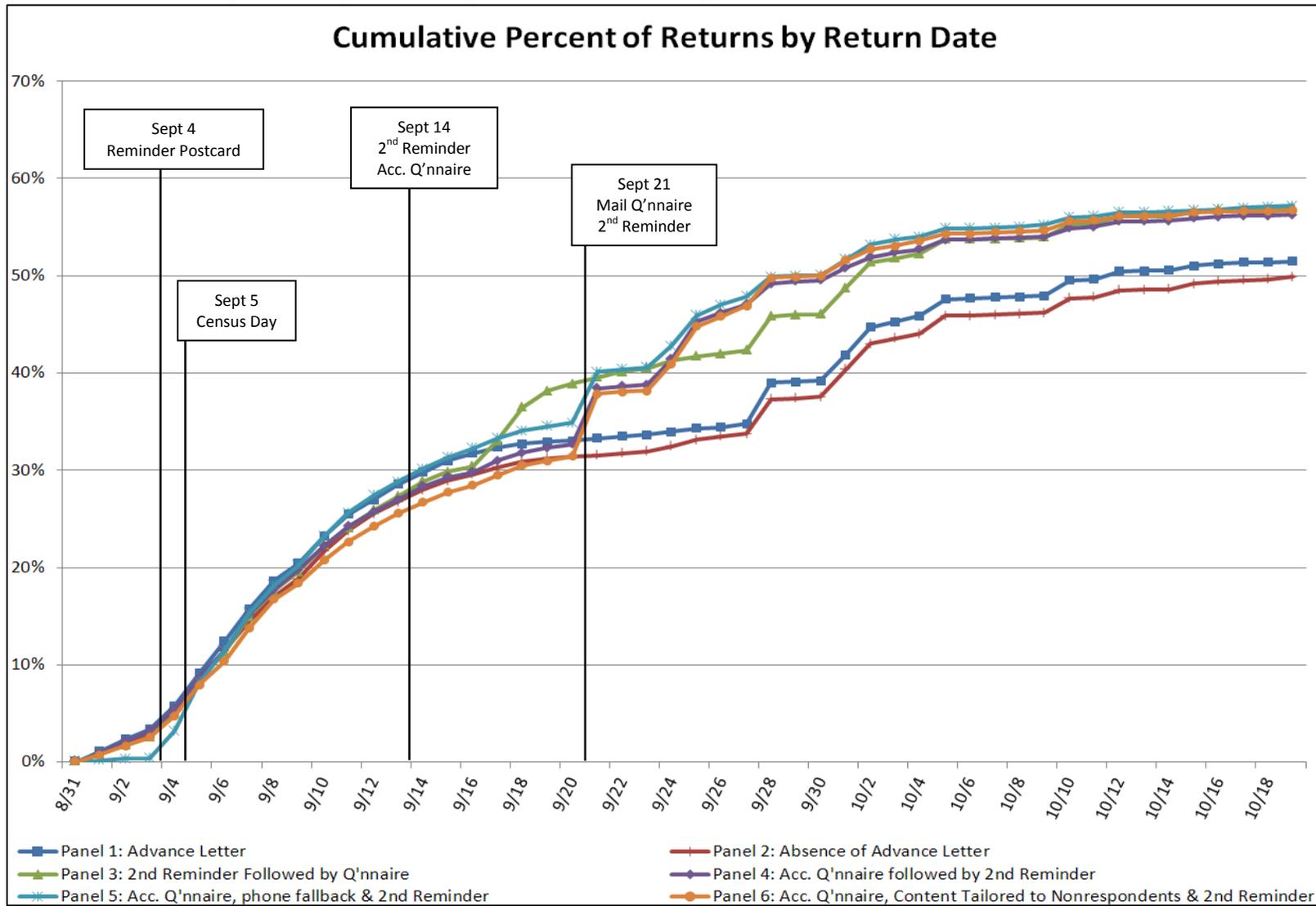
1a. Interviewer Name	2. Date/Time of call
1b. James Bond ID	__ __ - __ __ Month Day <input type="checkbox"/> a.m. <input type="checkbox"/> p.m.
3. NCT Access Code: __ __ __ __ - __ __ __ __	
4. Final call outcome <input type="checkbox"/> Interview completed during this phone call. <input type="checkbox"/> Interview already completed (online or via phone) prior to this call. <input type="checkbox"/> Respondent said they will complete the survey (online or via mail). <input type="checkbox"/> You do not know if the respondent has completed or will complete the survey.	

If you are unable to get the respondent's Access Code, provide their name. Otherwise, the following information is optional.

5a. Respondent Name	5b. Respondent Telephone Number
5c. Respondent Address (include City, State, and Zip)	
6. Notes	

7. Reasons for TQA Call (Mark all that apply)	
<input type="checkbox"/> Difficulty with questionnaire	<input type="checkbox"/> Internet <input type="checkbox"/> Paper
<input type="checkbox"/> Question on specific questionnaire item(s) *	<input type="checkbox"/> Thinks NCT is Census; says they completed
<input type="checkbox"/> Language problem	<input type="checkbox"/> Requested general information on survey
<input type="checkbox"/> Computer/Internet access issues	<input type="checkbox"/> Question on participant selection
<input type="checkbox"/> Paper questionnaire requested	<input type="checkbox"/> Address wrong
<input type="checkbox"/> Requested personal visit	<input type="checkbox"/> Address vacant
<input type="checkbox"/> Did not receive questionnaire	<input type="checkbox"/> Address may be group quarters
<input type="checkbox"/> Lost questionnaire or envelope	<input type="checkbox"/> No living quarters - commercial only
<input type="checkbox"/> Confidentiality concerns	<input type="checkbox"/> Temporarily Occupied
<input type="checkbox"/> Question on mandatory / voluntary / Title 13	<input type="checkbox"/> Old age, illness or death
<input type="checkbox"/> Privacy issues related to Internet completion	<input type="checkbox"/> Asked if they had to use pen or pencil
<input type="checkbox"/> Privacy issues related to survey in general	<input type="checkbox"/> Said the survey unnecessary
<input type="checkbox"/> Refuse to answer certain questions *	<input type="checkbox"/> Congressman mentioned
<input type="checkbox"/> Refuses to participate	<input type="checkbox"/> Call from Congressman
<input type="checkbox"/> Says they completed the 2012 NCT	<input type="checkbox"/> Checking if this is a legitimate Gov't survey
	<input type="checkbox"/> Other **
* List Question(s) / Item(s) –	
** Specify Other reason –	

Appendix D. Timing of Responses by Contact Strategy



Note that this figure shows cumulative daily response rates, which do not reflect the removal of UAAs from the denominator. Therefore, they do not match the self-response rates shown in Table 2.

Appendix E. Response Distributions by Contact Strategy and Mode

Table E-1. Demographics by Contact Strategy for NCT Households Responding by Internet

Variable	Response	Contact Strategy					
		1	2	3	4	5	6
Sex	Male	46.9 (0.5)	48.1 (0.5)	48.8 (0.5)	48.4 (0.4)	47.8 (0.5)	48.3 (0.5)
	Female	51.9 (0.5)	50.8 (0.5)	50.3 (0.5)	50.9 (0.4)	50.8 (0.5)	50.9 (0.5)
	Blank	1.2 (0.2)	1.1 (0.2)	0.9 (0.2)	0.7 (0.1)	1.4 (0.3)	0.9 (0.2)
Race	White Alone	71.4 (1.1)	71.8 (1.0)	69.2 (1.0)	69.8 (1.1)	70.6 (1.0)	69.9 (1.0)
	Black Alone	6.0 (0.5)	5.3 (0.5)	6.3 (0.5)	5.8 (0.5)	5.7 (0.6)	5.7 (0.5)
	American Indian or Alaska Native Alone	0.2 (<0.1)	0.3 (0.1)	0.1 (<0.1)	0.4 (0.1)	0.3 (0.1)	0.1 (0.1)
	Asian Alone	6.0 (0.6)	6.4 (0.6)	6.4 (0.6)	5.7 (0.6)	5.5 (0.5)	7.1 (0.7)
	Native Hawaiian or Other Pacific Islander Alone	0.1 (<0.1)	0.1 (0.1)	0.1 (0.1)	<0.1 (<0.1)	<0.1 (<0.1)	<0.1 (<0.1)
	Some Other Race Alone	0.6 (0.2)	0.4 (0.1)	0.5 (0.2)	0.6 (0.2)	0.2 (0.1)	0.9 (0.2)
	Hispanic Alone or in Combination	9.0 (0.7)	9.5 (0.8)	11.2 (0.7)	10.3 (0.8)	10.2 (0.7)	9.8 (0.7)
	Non-Hispanic Two or More	4.4 (0.4)	4.5 (0.4)	4.3 (0.4)	5.2 (0.4)	4.6 (0.4)	4.5 (0.4)
	Blank or Invalid	2.4 (0.4)	1.8 (0.3)	1.9 (0.3)	2.3 (0.3)	2.9 (0.4)	2.0 (0.3)
	Tenure	Owned With Mortgage	53.8 (1.1)	57.1 (1.1)	53.7 (1.0)	53.9 (1.1)	53.5 (1.1)
Owned Without Mortgage		18.3 (0.8)	18.9 (0.8)	19.2 (0.8)	19.5 (0.8)	18.2 (0.8)	19.0 (0.8)
Rented		24.6 (1.0)	21.3 (0.9)	23.7 (0.9)	23.8 (1.0)	24.7 (1.0)	25.9 (1.0)
Occupied Without Payment		1.2 (0.2)	1.1 (0.2)	1.3 (0.2)	1.3 (0.2)	1.2 (0.2)	1.1 (0.2)
Blank		2.1 (0.3)	1.7 (0.3)	2.0 (0.3)	1.6 (0.3)	2.4 (0.3)	2.0 (0.3)
Age	0-4	5.5 (0.4)	5.6 (0.3)	5.1 (0.3)	5.7 (0.4)	5.8 (0.4)	5.6 (0.3)
	5-9	5.7 (0.3)	5.8 (0.3)	6.2 (0.3)	5.9 (0.3)	5.6 (0.3)	6.3 (0.4)
	10-14	5.8 (0.3)	6.3 (0.3)	6.6 (0.3)	6.4 (0.3)	6.7 (0.4)	5.7 (0.3)
	15-19	6.2 (0.3)	6.1 (0.3)	6.5 (0.4)	6.4 (0.3)	6.4 (0.3)	6.3 (0.4)
	20-24	6.4 (0.4)	6.3 (0.4)	6.0 (0.3)	5.9 (0.4)	6.2 (0.4)	6.5 (0.4)
	25-29	7.3 (0.4)	6.5 (0.4)	5.9 (0.3)	6.2 (0.3)	6.2 (0.4)	6.5 (0.4)
	30-34	6.5 (0.4)	6.2 (0.4)	6.5 (0.4)	6.5 (0.4)	6.4 (0.4)	6.0 (0.4)
	35-39	5.3 (0.3)	6.2 (0.4)	6.4 (0.3)	5.8 (0.3)	5.7 (0.3)	6.8 (0.4)
	40-44	6.2 (0.4)	6.9 (0.4)	7.0 (0.4)	7.1 (0.4)	7.7 (0.4)	6.1 (0.3)
	45-49	6.4 (0.4)	6.8 (0.4)	7.1 (0.3)	7.8 (0.4)	7.3 (0.4)	7.2 (0.3)
	50-54	8.8 (0.4)	8.5 (0.4)	7.8 (0.4)	7.6 (0.4)	7.8 (0.4)	8.4 (0.4)
	55-59	7.8 (0.4)	7.7 (0.4)	7.7 (0.4)	7.7 (0.4)	7.5 (0.4)	7.6 (0.4)
	60-64	7.3 (0.4)	6.9 (0.4)	6.8 (0.4)	6.6 (0.4)	6.9 (0.4)	6.5 (0.4)
	65+	13.1 (0.6)	12.5 (0.6)	12.2 (0.5)	12.5 (0.6)	11.2 (0.5)	12.2 (0.6)
Blank or Invalid	1.9 (0.3)	1.8 (0.3)	2.1 (0.3)	2.0 (0.3)	2.5 (0.4)	2.2 (0.4)	
Average HH Size		2.5 (0.03)	2.6 (0.03)	2.6 (0.03)	2.6 (0.03)	2.6 (0.03)	2.6 (0.03)

Table E-2. Demographics by Contact Strategy for NCT Households Responding by Telephone

Variable	Response	Contact Strategy					
		1	2	3	4	5	6
Sex	Male	44.6 (1.7)	45.0 (1.6)	43.1 (1.3)	45.3 (1.5)	44.1 (1.3)	43.7 (1.4)
	Female	54.8 (1.6)	53.7 (1.6)	55.8 (1.3)	53.8 (1.5)	55.2 (1.3)	54.4 (1.5)
	Blank	0.6 (0.3)	1.4 (0.7)	1.2 (0.5)	0.9 (0.5)	0.7 (0.3)	1.9 (0.8)
Race	White Alone	78.2 (2.9)	73.1 (3.2)	72.4 (2.1)	75.1 (2.9)	70.2 (2.3)	70.1 (3.5)
	Black Alone	7.0 (1.6)	7.7 (2.2)	12.3 (1.8)	6.8 (1.6)	10.3 (1.4)	9.8 (1.8)
	American Indian or Alaska Native Alone	0.5 (0.3)	0.8 (0.6)	0.3 (0.2)	0.9 (0.4)	0.1 (<0.1)	0.4 (0.2)
	Asian Alone	3.5 (1.5)	2.9 (1.0)	2.2 (0.6)	1.5 (0.7)	1.5 (0.7)	3.0 (1.6)
	Native Hawaiian or Other Pacific Islander Alone	0.1 (0.1)	0.0 (N/A)	0.2 (0.1)	0.0 (N/A)	0.3 (0.2)	0.2 (0.2)
	Some Other Race Alone	0.5 (0.5)	0.3 (0.3)	<0.1 (<0.1)	0.4 (0.4)	0.2 (0.1)	<0.1 (<0.1)
	Hispanic Alone or in Combination	5.3 (1.6)	6.8 (1.9)	7.1 (1.2)	9.0 (2.0)	10.1 (1.6)	8.7 (2.8)
	Non-Hispanic Two or More	4.0 (0.9)	5.6 (1.5)	3.8 (0.8)	2.8 (0.9)	5.8 (1.1)	5.1 (1.5)
	Blank or Invalid	0.9 (0.4)	2.8 (1.1)	1.8 (0.6)	3.5 (1.5)	1.5 (0.4)	2.7 (1.0)
	Tenure	Owned With Mortgage	22.0 (2.5)	24.8 (2.8)	22.4 (2.0)	24.9 (2.4)	23.9 (1.9)
Owned Without Mortgage		48.6 (2.9)	47.1 (3.4)	41.1 (2.3)	39.9 (2.8)	42.5 (2.0)	40.0 (2.8)
Rented		18.2 (2.2)	17.7 (2.5)	26.6 (2.0)	24.0 (2.5)	25.6 (1.9)	20.6 (2.4)
Occupied Without Payment		2.1 (0.8)	1.4 (0.8)	1.7 (0.6)	2.4 (0.9)	2.0 (0.6)	0.5 (0.4)
Blank		9.1 (1.9)	9.0 (1.9)	8.1 (1.3)	8.8 (1.5)	6.0 (0.9)	13.0 (2.0)
Age	0-4	1.6 (0.5)	1.5 (0.7)	2.2 (0.5)	1.8 (0.6)	2.8 (0.7)	2.6 (0.9)
	5-9	1.6 (0.6)	1.1 (0.4)	2.9 (0.6)	2.4 (0.7)	2.4 (0.5)	2.3 (0.8)
	10-14	1.0 (0.3)	1.7 (0.5)	2.5 (0.6)	2.0 (0.6)	2.3 (0.4)	2.5 (1.0)
	15-19	1.2 (0.6)	3.8 (0.9)	1.1 (0.3)	3.1 (0.8)	3.4 (0.7)	2.3 (0.7)
	20-24	3.3 (0.9)	2.5 (0.6)	1.7 (0.4)	1.8 (0.5)	2.1 (0.4)	2.9 (0.7)
	25-29	2.4 (0.8)	1.9 (0.6)	2.3 (0.5)	1.9 (0.6)	2.3 (0.5)	3.6 (0.9)
	30-34	2.3 (0.9)	1.7 (0.5)	2.9 (0.6)	2.6 (0.8)	2.9 (0.6)	1.6 (0.5)
	35-39	2.6 (0.7)	1.0 (0.4)	2.5 (0.6)	2.0 (0.6)	3.0 (0.6)	2.4 (0.7)
	40-44	3.0 (0.9)	1.9 (0.6)	3.3 (0.6)	4.4 (1.0)	2.6 (0.6)	4.0 (1.0)
	45-49	4.6 (0.9)	4.5 (1.1)	4.7 (0.8)	7.3 (1.2)	5.1 (0.7)	3.6 (0.9)
	50-54	5.6 (1.2)	6.4 (1.2)	7.1 (0.9)	5.1 (1.0)	7.3 (0.9)	6.6 (1.2)
	55-59	6.7 (1.2)	8.5 (1.6)	6.2 (0.9)	7.1 (1.3)	8.8 (1.0)	9.2 (1.4)
	60-64	9.7 (1.4)	11.0 (1.6)	7.2 (1.0)	8.0 (1.3)	10.8 (1.1)	8.6 (1.2)
	65+	52.8 (2.8)	50.2 (3.3)	51.1 (2.3)	48.1 (2.7)	41.8 (2.0)	44.9 (3.2)
Blank or Invalid	1.7 (0.7)	2.3 (1.1)	2.4 (0.7)	2.6 (1.2)	2.2 (0.6)	3.1 (1.1)	
Average HH Size		2.5 (0.03)	1.8 (0.06)	1.8 (0.06)	1.7 (0.04)	1.8 (0.06)	1.8 (0.05)

Note: 'Blank' responses for Tenure include cases where contact was made with the household, but the tenure question was never asked. The number of these cases was disproportionately greater for TQA than for Internet.

Table E-3. Demographics by Contact Strategy for NCT Households Responding by Paper

Variable	Response	Contact Strategy					
		1	2	3	4	5	6
Sex	Male	N/A	N/A	N/A	N/A	N/A	N/A
	Female	N/A	N/A	N/A	N/A	N/A	N/A
	Blank	N/A	N/A	N/A	N/A	N/A	N/A
Race	White Alone	67.3 (3.7)	69.9 (3.7)	69.6 (3.3)	64.6 (3.3)	65.3 (3.4)	62.5 (3.4)
	Black Alone	13.2 (2.7)	11.9 (2.4)	11.7 (2.9)	9.3 (1.8)	8.6 (1.9)	14.0 (0.2)
	American Indian or Alaska Native Alone	<0.1 (<0.1)	0.0 (N/A)	0.1 (0.1)	0.0 (N/A)	0.7 (0.6)	0.3 (0.2)
	Asian Alone	2.2 (0.9)	1.9 (0.9)	4.1 (1.4)	4.7 (1.7)	6.2 (1.7)	4.1 (1.1)
	Native Hawaiian or Other Pacific Islander Alone	0.0 (N/A)	0.3 (0.2)	0.0 (N/A)	0.1 (<0.1)	0.4 (0.2)	0.2 (0.2)
	Some Other Race Alone	0.5 (0.5)	0.0 (N/A)	0.2 (0.1)	0.9 (0.6)	0.7 (0.6)	0.6 (0.3)
	Hispanic Alone or in Combination	11.5 (2.9)	11.5 (2.8)	9.6 (2.2)	16.6 (2.7)	12.4 (2.3)	14.7 (2.9)
	Non-Hispanic Two or More	3.8 (1.6)	2.7 (1.2)	2.0 (1.2)	2.0 (0.5)	3.2 (1.0)	2.2 (0.7)
	Blank or Invalid	1.3 (0.5)	1.8 (0.6)	2.7 (0.9)	2.0 (0.5)	2.5 (0.8)	1.4 (0.5)
Tenure	Owned With Mortgage	N/A	N/A	N/A	N/A	N/A	N/A
	Owned Without Mortgage	N/A	N/A	N/A	N/A	N/A	N/A
	Rented	N/A	N/A	N/A	N/A	N/A	N/A
	Occupied Without Payment	N/A	N/A	N/A	N/A	N/A	N/A
	Blank	N/A	N/A	N/A	N/A	N/A	N/A
Age	0-4	3.8 (0.9)	3.2 (1.2)	3.7 (0.9)	5.2 (1.2)	2.7 (0.7)	3.9 (0.8)
	5-9	4.3 (0.9)	4.2 (0.9)	3.3 (0.9)	5.1 (1.0)	3.3 (0.7)	3.8 (0.8)
	10-14	7.4 (2.0)	5.4 (1.1)	3.4 (0.8)	4.9 (0.9)	7.9 (1.2)	5.4 (0.9)
	15-19	5.5 (1.2)	4.3 (1.0)	5.5 (1.1)	4.6 (1.0)	6.5 (1.1)	5.4 (0.9)
	20-24	5.4 (1.1)	3.7 (0.9)	4.1 (0.9)	5.7 (1.0)	5.2 (1.1)	6.4 (1.2)
	25-29	6.0 (1.4)	5.2 (1.2)	6.3 (1.5)	6.5 (1.1)	4.0 (0.8)	5.0 (0.9)
	30-34	4.6 (1.2)	4.6 (1.0)	3.4 (1.0)	6.2 (1.1)	5.7 (1.1)	3.4 (0.8)
	35-39	6.2 (1.3)	5.1 (1.1)	3.8 (1.0)	1.6 (0.5)	4.8 (1.0)	5.6 (0.9)
	40-44	5.8 (1.3)	5.3 (1.1)	5.9 (1.3)	5.0 (0.9)	5.4 (1.0)	4.5 (0.8)
	45-49	6.0 (1.2)	6.7 (1.3)	6.4 (1.4)	7.2 (1.1)	7.4 (1.2)	6.8 (1.0)
	50-54	7.3 (1.4)	7.1 (1.3)	8.8 (1.5)	8.7 (1.2)	8.4 (1.2)	9.7 (1.2)
	55-59	7.8 (1.5)	8.1 (1.4)	7.5 (1.4)	10.9 (1.5)	8.7 (1.3)	8.2 (1.3)
	60-64	6.6 (1.4)	7.9 (1.3)	8.9 (1.8)	5.6 (1.0)	8.7 (1.3)	6.4 (1.1)
	65+	22.4 (2.7)	25.6 (2.7)	25.9 (2.9)	21.2 (2.2)	20.4 (2.0)	23.2 (2.3)
Blank or Invalid	1.1 (0.5)	3.6 (1.7)	3.2 (1.5)	1.5 (0.5)	1.1 (0.4)	2.2 (0.7)	
Average HH Size		2.5 (0.03)	N/A	N/A	N/A	N/A	N/A

Appendix F. Reason for Call Distribution

Table F-1. Reason for Call Distribution

Reason	Total	Percent
1. Difficulty with questionnaire – Internet	615	14.7
2. Difficulty with questionnaire – Paper	53	1.3
3. Question on specific questionnaire item(s)	112	2.7
4. Language problem	53	1.3
5. Computer/Internet access issues	3178	76.0
6. Paper questionnaire requested	237	5.7
7. Requested personal visit	10	0.2
8. Did not receive questionnaire	25	0.6
9. Lost questionnaire or envelope	35	0.8
10. Confidentiality concerns	102	2.4
11. Question on mandatory / voluntary / Title 13	79	1.9
12. Privacy issues related to Internet completion	83	2.0
13. Privacy issues related to survey in general	72	1.7
14. Refuse to answer certain questions	69	1.7
15. Refuses to participate	63	1.5
16. Says they completed the 2012 NCT	281	6.7
17. Thinks NCT is Census; says they completed	56	1.3
18. Requested general information on survey	176	4.2
19. Question on participant selection	86	2.1
20. Address wrong	84	2.0
21. Address vacant	74	1.8
22. Address may be group quarters	27	0.6
23. No living quarters - commercial only	30	0.7
24. Temporarily Occupied	31	0.7
25. Old age, illness or death	206	4.9
26. Asked if they had to use pen or pencil	26	0.6
27. Said the survey unnecessary	42	1.0
28. Congressman mentioned	30	0.7
29. Call from Congressman	30	0.7
30. Checking if this is a legitimate Gov't survey	119	2.8
31. Other	616	14.7

Note: Since respondents could call for multiple reasons, the total will not equal 100 percent.