

RESEARCH REPORT SERIES
(*Survey Methodology* #2017-02)

**Encouraging Respondents to Participate in the Census by Describing
Benefits to their Community, City, and State:
Results from an Experiment**

Elizabeth M. Nichols
Rachel Horwitz
Michael Bentley
Mary C. Davis
Casey M. Eggleston
Jessica L. Holzberg

Center for Survey Measurement
Research and Methodology Directorate
U.S. Census Bureau
Washington, D.C. 20233

Report issued: February 23, 2017

Disclaimer: This report is released to inform interested parties of research and to encourage discussion of work in progress. Any views expressed on the methodological issues are those of the authors and not necessarily those of the U.S. Census Bureau.

Abstract

Research has suggested that communicating data uses and how response to a data collection benefits local communities resonates with the public (Walker, 2015; Bates et al., 2009; Conrey et al., 2012; Newburger, July 2009; Newburger, August 2009; Nichols, 2012). In this study, the benefits message in the survey notification materials was customized by mentioning state or the city and state where the respondent lives. Two different messages were tested in addition to a control message that did not have any geographic customization but used a vague message about benefits to the “community”. Using a nationally representative sample of 6,000 housing units to test the three separate treatments, we did not find a difference in response rates to an online survey when we made these modifications to the mailing materials. We did find some indication that benefits at a state level do not appear to motivate respondents as well as benefits at a lower level of geography, even a vaguely defined geography such as “community” based on responses to a question within the online survey.

Additionally, in this study, the online survey varied the field-format design for telephone number. Within each of the benefit message treatment panels, half of the sample received an online survey with the current telephone field format that includes three separate fields (one for the area code, one for the prefix, and one for the line number), while the other half of the sample received the same survey with “masking” in the single telephone field. Masking is where a field format appears as the user types into a fixed-formatted field. For example, when entering the telephone number, after three digits are entered a dash or parenthesis automatically appears on the screen to cue respondents to continue entering the next digit of the phone number. We found no difference in the item nonresponse to the telephone field or in the percent of apparently valid telephone numbers (i.e., 10-digit phone numbers) submitted by treatment. We also did not find a difference in the amount of time respondents spent on the web page with the telephone number field when we compared the designs. However, based on the telephone output data, we suspect that the dashes in the telephone number design with the masking might not have always displayed correctly. Thus, we do not have evidence that the single masked-field telephone number, as programmed, is better than the current three-field telephone field format, but further study is needed as the functioning of the masking was problematic.

Keywords: survey notifications, customization, benefits message, online survey design, masking

Suggested Citation: Elizabeth M. Nichols, Rachel Horwitz, Michael Bentley, Mary C. Davis, Casey M. Eggleston, Jessica L. Holzberg (2017). **Encouraging Respondents to Participate in the Census by Describing Benefits to their Community, City, and State: Results from an Experiment.** *Research and Methodology Directorate, Center for Survey Measurement Study Series (Survey Methodology #2017-02)*. U.S. Census Bureau. Available online at <<http://www.census.gov/srd/papers/pdf/rsm2017-02.pdf>>.

Executive Summary

To prepare for the decennial census, the Census Bureau conducts a series of large tests throughout each decade. Although there is differing methodology for every test, generally tens of thousands of households are sent notifications asking them to complete a survey. Response rates to the surveys are often a key outcome measured. To supplement these large tests, smaller tests of survey notifications for online surveys have also occurred. Originally, these tests were conducted by email with a nonprobability panel, but since 2015 we have also conducted probability-based address frame tests using postal mail and an online questionnaire. This report documents the findings from the first of these smaller address-based tests that occurred in October 2015.

The October 2015 Test investigated whether customized messages that highlight the benefits of responding to the census for a particular geographic region would increase the response rate to an online Census Bureau survey. Two different messages were tested in addition to a control message that did not have any customization.

- Control: “Results from the next census will be used to help each community get its fair share of federal funding for many programs you and your neighbors need.”
- Customized with the state where the respondent lives: “Results from the next census will be used to help [STATE] get its fair share of federal funding for many programs you and your neighbors need.”
- Customized with the city and state where the respondent lives: “Results from the next census will be used to help [CITY, STATE] get its fair share of federal funding for many programs you and your neighbors need.”

Research has suggested that communicating how response to a data collection benefits local communities resonates with the public. For example, allocation of federal funding to a local community may result in the building of new schools. Emphasizing these benefits might motivate people to answer Census Bureau surveys (Walker, 2015). Operational complexities with mass customization and the potential to highlight the wrong or unpopular benefits unintentionally led us to test something more feasible; that is, whether specifying the name of the geography in which the respondent lives and which would benefit from the census, improves response rates. We tested these messages with a nationally representative sample of 6,000 housing units that were sent three sequential mailings over a three-week field period. We did not find a difference in response rates to an online survey when we made these modifications to the mailing materials.

We did find some indication that benefits at a state level do not appear to motivate respondents as well as benefits at a lower level of geography, even a vaguely defined geography such as “community.” One of the final questions within the online questionnaire asked respondents what factors motivated their response. Significantly fewer respondents who received the treatment with the “state” customization selected the reason, “Benefits for my community, city, or state,” compared to those who received the control treatment.

In addition to testing the survey notification messaging, this field test gave us the opportunity to test an online form input design feature called “masking” or “mask input.” Masking “allows a user to more easily enter fixed width input where you would like them to enter the data in a certain

format (dates, phone numbers, etc.)” (Drupal, 2010). For example, as users are typing their telephone numbers in a masked field, the “()” or the “-“ appear automatically so that the users are provided the correct format without having to type it themselves.

Many modern online forms, even federal government forms such as the U.S. Postal Service’s Hold Mail online form, use masking. Thus far, the Census Bureau has not adopted masking as a design element in its online questionnaires. One reason is that the current three-field design for telephone numbers has not been identified as a problem. However, the widespread use of masking and the potential to improve the respondent’s experience are two reasons to investigate masking further. To test masking of the telephone field format, we tested two different online survey treatments in the October 2015 test. One treatment included the Census Bureau’s standard telephone format—three separate fields, one for the area code, one for the prefix, and one for the line number. The other treatment used masking in the telephone number field. This was a single telephone field where dashes would appear between the telephone parts as the user typed. We found no difference in the item nonresponse to the telephone field or in the percent of apparently valid telephone numbers (i.e., 10-digit phone numbers) submitted by treatment. We also did not find a difference in the amount of time respondents spent on the web page with the telephone number field when we compared the designs. However, based on the telephone output data, we suspect that the dashes in the telephone number design with the masking might not have always displayed correctly. Thus, we do not have evidence that the single masked-field telephone number, as programmed, is better than the current three-field telephone field format, but further study is needed as the functioning of the masking was problematic.

Introduction

Increasing survey response, especially where the respondent answers the survey without assistance from an interviewer, is of interest to the U.S. Census Bureau as self-response decreases costs associated with data collection. Notifications sent in the 2010 Census inviting respondents to complete their census form included the message that Census Bureau data are used to benefit “communities” by helping allocate resources for roads in addition to services for children and the elderly. Recent research suggests respondents may be more inclined to respond to the request to complete their census form if specific benefits to the local community are mentioned (Walker, 2015). This report documents the methodology and findings of a Census Bureau split-ballot survey experiment with a probability sample of U.S. addresses. The primary objective of the test was to investigate alternative benefit messages in the survey that are customized by using the respondents’ state or city and state. Because the data collection experiment used an online form, the Census Bureau also tested the input design feature called “masking” or “mask input” as part of this test. Masking is a relatively new online form design feature where a field format appears as the user types into a fixed-formatted field. For example, when entering a phone number, after three digits are entered a dash or parenthesis automatically appears on the screen to cue respondents to continue entering the next digit of the phone number. Thus far, the Census Bureau has not used masking within its online forms, but masking allows the user to enter these types of data more easily than without the masked format (Drupal, 2010).

Background on Census Bureau survey methodology research

To prepare for each decennial census, the Census Bureau conducts several large tests, contacting tens of thousands of addresses, to optimize the data collection procedures. In these larger tests between 2010 and 2020, the primary objectives have focused on maximizing self-response rates while minimizing costs. Objectives of these larger tests include testing (1) methods of encouraging people to use an online questionnaire to report for their household; (2) the frequency and mode of survey notifications such as by postal mail, email, and phone messaging; (3) multilingual mailing materials; and (4) optimal timing for mailing a paper questionnaire, among others (Bentley et al., 2014; Bentley et al., 2015; Phelan, forthcoming). The current plan for the 2020 Census is to use postal mailings to notify most residential addresses in the U.S. when it is time to complete the census. All mailings will include a URL for the online census questionnaire with the goal of maximizing self-response using the online form. There will be other response modes available, such as telephone and paper, and there will be in-person interview options for occupied addresses that do not complete the census using one of the other modes.

To supplement these large tests, the Census Bureau created the Small-Scale Mailout Testing Program (SMarT) in spring 2015 (Bentley, 2015). The goal of this program is to test changes to the mailing materials and methodology separate from the other larger census mid-decade tests. The materials and methodology tested in SMarT include new, feasible ideas or ideas that do not warrant an extra panel in a larger test. SMarT tests mimic production tests in the creation of mailing materials and the online questionnaire, but they use a much smaller sample size than the mid-decade tests, occur more often (e.g., three to four times per year), are iterative in nature, are online only, use a shorter field period, and are flexible in timing, which allows modifications to

the testing objectives. Changes that show promise in increasing response could potentially be used or tested again with larger sample sizes in another test. This report documents the first SMarT test conducted in October 2015.

Motivation for the Current Experiment

Benefits Messaging

Research has shown that messages about benefits to communities and data uses appeal to the public and may increase survey response rates (see Bates et al., 2009; Conrey et al., 2012; Newburger, July 2009; Newburger, August 2009; Nichols, 2012). Qualitative research for another major Census Bureau survey, the American Community Survey (ACS), found that messages about specific neighborhood benefits resonated with their participants, even more than benefits to the nation, state, or city. Messages about how “state and local leaders could use ACS data to build roads, schools, and hospitals were the most likely to increase respondents’ reported likelihood to respond” (Walker, 2015, p.15). This more recent work has been preceded by a long line of research dating back to the 1970s on whether communicating social benefits of survey participation improves survey response. However, with the exception of a motivational insert experiment in 1986, little to no empirical evidence has supported that theory (Moore, 2010; Dillman, Singer, Clark, Treat, 1994; Treat, 1994; Childers, Pride, and Ferrell, 1980; Dillman, 1978; Houston and Nevin, 1977; Linsky, 1975).

While these prior experiments did not necessarily show a response improvement due to motivational or benefit messaging, they also did not show a decrease. Therefore, benefit messages have been included in notification materials mailed to households for the past few censuses. For example, in the 2010 Census letter, an entire paragraph was devoted to the benefits of responding to the census and census data:

Your answers are important. Census results are used to decide the number of representatives each state has in the U.S. Congress. The amount of government money your neighborhood receives also depends on these answers. That money is used for services for children and the elderly, roads, and many other local needs.

The current message used in decennial tests in preparation for the 2020 Census refers to a generic “community” as the beneficiary of the census results:

Results from the next census will be used to help each community get its fair share of federal funding for many programs you and your neighbors need.

Because of advantages in the “mail merge” features of today’s printing where mailings can be customized, it is theoretically possible to customize each letter to the local community. However, there are operational complexities with mass customization and the potential to highlight unpopular benefits unintentionally. The most recent ACS research concluded that while customizing letters to highlight such benefits would be ideal, it is not operationally feasible for each neighborhood, and therefore not one of the main recommendations coming forward from this

research (Walker, 2015). A feasible alternative to customizing each letter with specific neighborhood benefits is to instead personalize the message with a location relevant to the respondent such as the respondent's city or state.

The October 2015 SMarT Test investigated whether personalizing the benefits message in the mailing materials with the respondent's state or city and state improved response to an online survey. There was one control panel and two test panels. The basic text of the mailing material messaging was the same across panels, with the exception of the panel-specific text shown as follows:

- Control message: "Results from the next census will be used to help each community get its fair share of federal funding for many programs you and your neighbors need."
- State message: "Results from the next census will be used to help [STATE] get its fair share of federal funding for many programs you and your neighbors need."
- City, state message: "Results from the next census will be used to help [CITY, STATE] get its fair share of federal funding for many programs you and your neighbors need."

The mailed invitations included a URL to access an online survey.

Telephone Number Masking Formatting

In addition to the test of customized benefit messages, the October 2015 Test also tested two different telephone number collection field formats in the online survey. One panel tested the Census Bureau's current telephone field format that includes three separate fields, one for the area code, one for the prefix, and one for the line number. The other panel tested a telephone field design very similar to the one used on the hold mail online form from the U.S. Postal Service (<https://holdmail.usps.com/holdmail/>). This design included a single telephone field with masking that included dashes between the telephone area code, prefix, and line number. That is, as the respondent typed the telephone number, dashes appeared after the first three digits, then the next three digits. We wanted to determine the data quality and usability of one field with masking compared to the three fields the Census Bureau currently uses.

Research Questions

The October 2015 Test addressed the following research questions:

1. Did the modification to the mailing materials with "State" or "City and State" improve the response rate over the current "each community" message?
2. How did the two telephone field formats tested affect the quality of the data entered and usability? (Three fields compared to one field with masking.)

Methods

Sample selection and population

The October 2015 Test included three benefit message panels crossed by two telephone format panels. The Decennial Statistical Studies Division (DSSD) used an extract of the Master Address

File (MAF) taken for the 2015 National Content Test to select the sample. The MAF is the list of U.S. addresses for residential housing. The MAF is updated by U.S. Postal Service records and in-person visits by Census Bureau enumerators and interviewers through the current household survey and decennial census programs (U.S. Census Bureau, 2009). The extract excluded group quarter residences. DSSD staff selected 6,000 Master Address File Identifiers (MAFIDs) using a systematic sample (i.e., take every nth unit). A MAFID refers to a housing unit identification number on the Census Bureau's MAF.¹

During the systematic sample, each MAFID was assigned to one of three benefit message panels, so that there were 2,000 households in each. Within each benefit message panel, half of the MAFIDs were assigned to one phone number format and the other half were assigned to the other. The study design was a fully factorial 3 x 2 between-subject design.

Panel Design and Schedule

The survey was open for response over a three-week period, from Friday, October 9, 2015, through Saturday, October 31, 2015. During this time, three mailings were sent to each sampled address: an initial letter, a reminder postcard, and a final letter² mailed roughly one week apart (October 9, October 16, and October 23, respectively). The customization of the benefits messaging was included in both the initial and final letters. Each address received the same level of customization for both the initial and final letter. The reminder postcard was the same for all sampled addresses regardless of treatment. Appendix A contains the schedule and panel design and Appendix B contains examples of the mailing materials.

Operational Details

Tailored methods were needed to produce the mailing materials customized using state and city/state. More details on how the production of these materials was operationalized can be found in Appendix C. We used a mandatory response requirement for this test. This is important because it means that any effect of the messaging found should also be found in a production environment since the mandatory requirement is usually a major driver of response (Barth et al., 2016; Nichols, 2012). We also kept most of the messages in the letters and postcard identical to what was tested in the 2015 Census Test, including a reference to a possible personal visit, even though this study did not contact nonresponders after the third mailing.

The online survey was titled the National Census Bureau Survey. This study did not offer a paper form, and respondents could not report their data over the telephone with an interviewer. However,

¹ To minimize respondent burden, the 6,000 MAFIDs did not include addresses that had been recently sampled for previous surveys including the 2015 Census Test and 2015 Census Test Influencer Calls, the 2015 American Community Survey, and the 2015 National Content Test.

² The design partially mimicked the protocol for decennial production mailings as of 2015. Because the OMB field clearance under which we conducted this research was expiring at the end of October, we did not include a fourth mailing. Additionally, the typical mailing schedule is letter, postcard, postcard, and then letter. Because the messages we modified were only in the letters, we changed the third mailing from a postcard to a letter.

the mailing materials included a telephone number to call in case someone did not have Internet access. If they dialed the number, callers would hear this recorded message:

“Thank you for calling the United States Census Bureau. Recently, you may have received a letter or postcard from us about the National Census Bureau Survey. We are trying new ways to make the next census easier, more convenient, and less costly for taxpayers. This survey is only available online. If you cannot complete the survey online, we may contact you if we determine we need your information. Thank you for participating in the National Census Bureau Survey.”

This study only sent three mailings and had a three-week response window. Most census mid-decade tests send up to four mailings and are in the field from one to three months. Also, most census mid-decade tests do not send the third and fourth mailing to addresses that have already responded, which this study did.³ Thus, although differences between the treatment conditions should generalize to larger tests, the response rates for this survey may not be comparable. This study did not gather information on undeliverable addresses, while most census tests do. Additionally, this study did not offer non-English translations for either the mailing pieces or the survey, and the name of the survey and the URL were both slightly different from those used in other larger census tests.

The online survey (see Appendix D) for this study had previously been used in other testing conducted by the Center for Survey Measurement. It displayed optimally on a laptop or desktop computer. Although it did not display optimally if accessed on a smaller mobile device, users could still respond with a mobile device. The survey gathered the respondent’s demographic information and answers to a few opinion questions. Respondents could only enter the survey once. If they left the survey before submitting, they could not get back in to complete the survey. If they tried to access the survey again, they were redirected to a screen that said the survey link was closed. This differs from larger census tests that allow reaccess, but we were mainly interested in how many logins or accesses to the survey there were in each benefit message panel, not in the number of survey completes. Thus, our “response rate” formula in the next section uses logins and not survey completes in the numerator.

Measures and Analysis

Benefit message treatment:

We used quantitative and qualitative data to determine the effect of the different benefits messages. To measure the effectiveness of the messages on motivating an online response, we calculated the response rate by benefit message panel using the following formula:

³ We did not have adequate funding to pull the third mailing for addresses that responded.

$$\text{Response rate} = \frac{\text{\# MAFIDs that logged into the survey in that panel}}{\text{\# MAFIDs in that panel}} * 100$$

We then performed a Chi-Square test of independence and a logistic regression analysis predicting logging into the survey to see whether there were any response rate differences across the benefit message panels.

The survey also contained two questions where we gathered qualitative data on the benefits messaging. One question asked the respondent to select which message(s) motivated his or her response. There were nine predefined response choices that were presented in a randomized order for each respondent (see Appendix D, Figure I). Respondents could mark all that apply. We calculated the percent of respondents who selected the response option “Benefits for my community, city, or state” for each panel. We then performed a Chi-Square test of independence and a logistic regression analysis predicting selecting that response option to see whether there was a difference by treatment. On the same page of the survey, another question offered space to write in comments about the mailing materials. We explored the open-ended comments to see if there were any about the specific geographic references.

Telephone format treatment:

We measured whether one telephone format was more effective in collecting telephone numbers by comparing the percent of nonempty entries into the telephone field by the telephone format treatment. We measured the accuracy of the telephone numbers by comparing the percent of 10-digit telephone entries by survey treatment. We measured the usability of the screen by computing the mean time spent on the screen with the telephone field by treatment and then performing a t-test to determine if there was a difference. We also examined the write-in comments (see Appendix D, Figure I) for any comments on the telephone fields.

Results

Benefit message treatment

With a three-week data collection period, the response rates for the three benefit message treatments ranged between 31.7 and 34.2 percent, as shown in Table 2. Estimates and odds ratios from a logistic regression predicting accessing the survey after controlling for the benefit message treatment are also in Table 2. The model results indicate that the geographically specific benefit message treatments were not significantly different from one another or from the control with a Wald Chi-Square=2.83 ($p=0.24$). Therefore, adding the respondent’s state or city and state to the benefits message did not improve response over the control “community” message.

Table 2: Benefit message treatment data and analysis results

Benefit message treatment	Sample size	#Logins	Response rate	Logistic regression estimate predicting logging into the survey (Standard Error)	Odds Ratio
Control	2000	683	34.2%	----	
State	2000	633	31.7%	-0.058 (0.04)	0.893
City, State	2000	659	33.0%	0.002 (0.04)	0.948

Source: Small-Scale Mailing Testing Program: October 2015 Test

Overall, 27.2 percent of respondents who reported at least one motivating message in the mailing materials (see Figure I in Appendix D) selected the message “Benefits for my community, city, or state.” This response choice was selected the second most often, following the message informing the respondents about the mandatory nature of the survey. However, the mandatory reason was selected almost three times as often as the benefits reason.

The percent of respondents who selected the “benefits” response option differed by the message treatment. The logistic regression results predicting selection of that option controlling for the benefit message treatment are in Table 3. There was a significant difference in the percent of respondents who selected the "benefits" response option by benefits message treatment (Wald Chi-Square=5.29 ($p=0.07$)). Logistic regression results show that respondents who received the State treatment chose “Benefits for my community, city, or state” as a response motivator less often than respondents who received the Control.

Table 3: Self-reported benefits message motivation for completing the survey

Benefit message treatment	Percent who selected the response choice “Benefits my community, city, or state”	Logistic regression estimate predicting selecting “Benefits my community, city, or state.” (Standard error)	Odds Ratio
Control	26.1	---	--
State	20.9	-0.17 (0.08)*	0.75
City, State	24.9	0.06 (0.07)	0.94

Source: Small-Scale Mailing Testing Program: October 2015 Test
n=1744 respondents who selected at least one response to this question

* $p<0.05$

Of the 237 comments, only three respondents entered a comment about the mailing materials that referred to something related to the benefit message treatments, as shown in Table 4.⁴ The comment in the State treatment about receiving the wrong letter is especially troublesome. This study used a clerical operation to make sure the correct letter went in the envelope with the correct

⁴ To protect respondents’ confidentiality, the geography has been removed from the comments for this report.

address. Based on the respondent comment, it seems that in at least once instance the letter was not assembled with the correct mailing address.

Table 4: Open-ended survey comments that pertained to the benefit message treatment

State treatment	“The letter refers to helping STATE1 get its fair share of federal funding, but I live in STATE2.”
City, State treatment	“No additional comments. I am not sure of the benefits for my community, city or state because it was not mention[ed] on the letter that I received.”
	“How do these questions 'help CITY, STATE get its fair share of federal funding'? This is a waste of money, time and resources.”

Source: Small-Scale Mailing Testing Program: October 2015 Test

Telephone format treatment

Of the 1,975 people who accessed or logged into the instrument, 985 accessed the survey treatment with the three-field telephone format and 990 accessed the survey treatment with the single-field telephone format. Overall, 87.8 percent of the 1,975 people entered data into the telephone field. In the three-field design, 88.4 percent entered telephone data, and in the single-field design, 87.1 percent entered telephone data as shown in Table 5. Using a Chi-Square test of independence, there was no significant difference in the percent of respondents who entered something into the telephone field between the two survey treatments (Chi-Square=0.84, $p=0.36$). This means that item nonresponse for the telephone number was not dependent on the format of the telephone field.

We also analyzed the accuracy of entering 10-digit phone numbers. In the three-field design, all but one respondent entered 10-digits. That one respondent entered 9-digits. In the single-field design, 853 entered 10-digits, six respondents entered fewer than 10-digits and three entered 11 digits. There was no significant difference in the percent of respondents who entered an “accurate” telephone number between treatments (Chi-Square=2.07, $p=0.15$).

Table 5: Telephone field format response data results

Telephone format treatment	Number accessing survey (% of total accesses)	Number who entered some data into the telephone field (% of those who accessed survey)	Number who entered 10-digits into the telephone field (% of those who accessed survey)
Control (Three-field format)	985 (49.9%)	871 (88.4%)	870 (88.3%)
Single-field format with masking	990 (50.1%)	862 (87.1%)	853 (86.2%)

Source: Small-Scale Mailing Testing Program: October 2015 Test

When typing in the single-field format, dashes (e.g., “-”) should have appeared after typing the first three digits for the area code and then after the next three digits for the prefix. We noticed that 8 percent (n=69) of the telephone numbers with the single-field format did not contain any dashes. We have no way to confirm whether the dashes appeared while the respondent was typing in the field for these cases. We suspect that they most likely did not appear because they are not in the resulting output.

We are not sure why the dashes did not appear. We examined the useragent strings to examine whether the embedded format did not work with particular devices, operating systems, or browsers and could not find a clear pattern. For every device, operating system, and browser for which there was a dash missing, there was another case with the same hardware and software where it appeared.

The telephone numbers with 11 digits did not include dashes. Before launching the study, the instrument was tested using Internet Explorer on a Windows operating system on a desktop computer. The single-format telephone field would not accept more than 10-digits. Perhaps if the dashes did not appear, the respondent could type more digits.

As there was no consistency in when the dashes appeared, we suspect that there might have been some functionality glitches with how the single-field design displayed. One respondent who received the single-field design and entered 10-digits commented on the telephone field,

“I do not like the computer. I can barely see the screen nor the keyboard and must use a magnifying glass. The phone number block is not large enough, it cuts off the first digit. My phone number is xxx-xxx-xxxx. Some questions did not accept my r (sic)”

This person used a Mac with a Mac OS X operating system and the Safari browser. Dashes appeared in this person’s telephone data output. Although we had performed user-acceptance testing before releasing the instrument, we had not tested it with a Mac. It is clear that more testing using different system combinations is necessary to catch these usability glitches.

The glitches, however, did not appear to significantly affect how long respondents spent on the screen with the single-field telephone format design. The t-test results in Table 6 show no difference in time taken on the demographic data screen (Appendix C, Figures B through G) between survey treatments, where the only difference in the screens was the telephone field format.

Table 6: Time spent on the screen with telephone field by treatment

Telephone format treatment	Number of respondents who spent more than 0 seconds and less than 3000 seconds on the telephone screen*	Mean time spent on screen in seconds (Standard error)	t value Equal variances
Control (Three-field format)	960	242.2 (6.16)	-0.2 (p=0.8)
Single-field format with masking	963	243.9(6.27)	

Source: Small-Scale Mailing Testing Program: October 2015 Test

* We removed six cases (three had negative times because they started on the screen before midnight and finished after midnight and three cases had extreme values over 3,000 seconds)

Limitations

We discovered through the respondents’ comments that there were likely some clerical errors in the assembly of the mailing materials, but we do not know how prolific these errors were. If it was more than a handful of cases, these errors could have affected the response rates and resulting conclusions. We also suspect respondents might have experienced some usability issues with the single-field telephone format that might have affected user performance and data quality. We could not pinpoint the actual time taken to enter the telephone number alone because that field was on a screen with other questions. It could be that one format took longer to use than the other, but the respondent was able to “make up time” on the other questions on the screen.

Conclusions

We found no improvement in response rates when we personalized the benefits message in the initial and final letters with the respondent’s state or city and state compared to the current reference to “each community.” According to self-reported data, the benefits message motivated a little over a quarter of the respondents to answer this survey, but that message is not nearly as important to respondents as the fact that participation in the survey is mandatory. Mentioning the respondent’s state or city and state did not make the benefits message more important to respondents. In fact, mentioning the state actually decreased the importance of the message compared to mentioning only the community. Based on a respondent’s comment, we know that there was at least one clerical error with the wrong letter being delivered in the state treatment. If the clerical error was more pervasive in the state treatment, it might have affected the importance of the message.

The research that informed this study suggested that respondents are most interested in local community benefits (Walker, 2015). And indeed in the present study, respondents were

significantly less likely to choose community benefits as a response motivator when the target "community" was their state of residence as opposed to a more local or less specific "community." Although this difference in response motivation was not associated with a significant difference in response rates across conditions, it does suggest that personalization of mail materials at the level of state of residence is not an effective way to motivate response. It may be the case that the state treatment made respondents feel less engaged with the survey as opposed to more engaged as intended. Perhaps the vague benefit message using the word "community" allowed respondents to imagine the benefits applying to whatever community they care about while the more specific state message was at too high a level for the respondent to feel personally connected.

This study demonstrated once again the far greater effect of the mandatory message on response behavior as indicated by the self-reported motivation answers. Other studies have also found the mandatory message is far more salient than any other message and is a significant factor in raising response rates (Nichols, 2012; Reingold, 2014; Barth et al. 2016). Although we cannot say whether there would have been a response rate difference by benefit message treatments had the mandatory messages not been present, the self-reported motivation answers suggest that could have been a legitimate result.

We found no improvement in the quality of the telephone data or in the amount of time respondents needed to complete the survey when we used a single-field telephone format compared to the current three-field format. We found hints of possible display errors with the single-field format that would require more testing to resolve. If the single field format is tested again, we recommend conducting more user acceptance testing with different operating systems and testing it on its own screen to get more precise task completion time data.

Acknowledgement

We thank Sarah Dietz and Glenn Eanes who created and managed the survey; Ryan King and Matthew Virgile for SAS support; Kuopei White and Belkines Arenas Germosen for forms design and contract printing management; Joanne Pascale and Julia Coombs for editorial assistance; and NPC staff for printing and mailing.

References

- Barth, D., Zelenak, M. F., Asiala, M., Castro, E., Roberts, A. 2016. "2015 Envelope Mandatory Messaging Test." American Community Survey Research and Evaluation Program, #ACS16-RER-04.
- Bates, N., Conrey, F., Zuwallack, R., Billia, D., Harris, V., Jacobsen, L., and White, T. 2009. "Messaging to America: Census Barriers, Attitudes, and Motivators Survey Research (CBAMS)." American Association of Public Opinion Researchers (AAPOR) Conference Paper. Hollywood, Florida.
- Bentley, M., 2015. 2020 Census Program Detailed Business Plan for Projects with Marginal IT Investment Small-Scale Mailout Testing Program (SMarT) U.S. Census Bureau March 31, 2015.
- Bentley, M., Reiser, C., Barron, S., Hill, J.M., Meier, A., Pape, T. 2014. "2020 Research & Testing Program Research Results Report: 2012 Census Test Contact Strategy Results; Optimizing Self Response (4.103). U.S. Census Bureau: Decennial Statistical Studies Division 2020 Decennial Census R&T Memorandum Series #E-04. November 4, 2014.
- Bentley, M. and Rothhaas, C. 2015. "2020 Research & Testing Program Research Results Report: 2014 Census Test Results; Optimizing Self Response (4.103)." U.S. Census Bureau (DRAFT).
- Childers, T. L., Pride, W.M., and Ferrell, O.C. 1980. "A Reassessment of the Effects of Appeals on Response to Mail Surveys." *Journal of Marketing Research*, 17:365-70.
- Conrey, F., ZuWallack, R., Locke, R. 2012. "Census Barriers, Attitudes, and Motivators Survey II: Final Report". ICF Macro.
- Dillman, D. A. 1978. *Mail and Telephone Surveys: The Total Design Method*. New York: Wiley-Interscience.
- Dillman, D.A., Singer, E., Clark, J.R., Treat, J.B. 1994. "Effects of benefits appeals, mandatory appeals and variations in statements of confidentiality on completion rates for census questionnaires." *Proceedings of the Joint Statistical Meetings 1994*. Last accessed 9/12/2016 at https://www.amstat.org/sections/srms/proceedings/papers/1994_234.pdf
- Drupal, (2010). "Masked Input." Posted by twooten. Last accessed 8/11/2016 at https://www.drupal.org/project/masked_input
- Houston, M. J., and Nevin, J.R. 1977. "The Effects of Source and Appeal on Mail Survey Response Patterns." *Journal of Marketing Research*, 14:374-378.
- Linsky, A. S. 1975. "Stimulating Response to Mailed Questionnaires: A Review." *Public Opinion Quarterly* 39:82-101.

Moore, Jeffrey C. 2010. "Effects of the 1986 Motivational Insert on Census Form Mail Response." *Statistical Research Division Research Report Series (Survey Methodology #2010-18)*. U.S. Census Bureau. Last accessed 8/11/2016 at <https://www.census.gov/srd/papers/pdf/rsm2010-18.pdf>.

Newburger, E. July 2009. "2010 Census Communications Campaign Creative Copy Testing (Phase 1) Final Summary Report". C2PO Census Integrated Communications Research Memoranda Series, No. 13.

Newburger, E. Nov. 2009. "2010 Census Communications Campaign Creative Copy Testing (Phase 2) Final Summary Report". C2PO Census Integrated Communications Research Memoranda Series, No. 16.

Nichols, E. 2012. "The April 2011 American Community Survey Internet Test: Attitudes and Behavior Study Follow Up." American Community Survey Research and Evaluation Program, #2012-03.

Phelan, J., (forthcoming) "2020 Research and Testing: 2015 National Content Test Optimizing Self-Response Report" U.S. Census Bureau: Decennial Statistical Studies Division 2020 Decennial Census R&T Memorandum Series.

Reingold, Penn Schoen Berland, Decision Partners, (2014). "American Community Survey Messaging and Mail Package Assessment Research: Cumulative Findings," Washington, DC: U.S. Census Bureau. Retrieved from http://www.census.gov/library/working-papers/2014/acs/2014_Walker_02.html

Treat, J., 1994. "The influence of motivational appeals on mailback response." *Proceedings of the Joint Statistical Meetings 1994*. Last accessed 9/12/2016 at https://www.amstat.org/sections/srms/Proceedings/papers/1994_095.pdf

Walker, S. 2015. "American Community Survey Messaging and Mail Package Assessment Research: Cumulative Findings." U.S. Census Bureau: #ACS 14-RER-30 Last accessed 9/12/2016 at https://www.census.gov/content/dam/Census/library/working-papers/2014/acs/2014_Walker_02.pdf

U.S. Census Bureau, "Prepared Statement of Robert M. Groves, Director U.S. Census Bureau. 2010 Census: Master Address File, Issues and Concerns," U.S. Department of Commerce, U.S. Census Bureau, Washington, DC. (2009).

Table 1: Experimental design, mailing schedule, and reference to the mailing pieces

Benefit message Treatment	Telephone Format Treatment	Friday, October 9, 2015	Friday, October 16, 2015	Friday, October 23, 2015
		Mailout of Initial Letter	Mailout of Reminder Postcard	Mailout of Final Letter
Control: “community” benefits message N=2,000	Control: 3 fields for telephone number N=1,000 (Appendix B, Figure 8)	Appendix B, Figure 1	Appendix B, Figure 4	Appendix B, Figure 5
	Single-field for telephone number N=1,000 (Appendix B, Figures 9 and 10)	Appendix B, Figure 1	Appendix B, Figure 4	Appendix B, Figure 5
State in the “community” benefits message N=2,000	Control: 3 fields for telephone number N=1,000 (Appendix B, Figure 8)	Appendix B, Figure 2	Appendix B, Figure 4	Appendix B, Figure 6
	Single-field for telephone number N=1,000 (Appendix B, Figures 9 and 10)	Appendix B, Figure 2	Appendix B, Figure 4	Appendix B, Figure 6
City and State in the “community” benefits message N=2,000	Control: 3 fields for telephone number N=1,000 (Appendix B, Figure 8)	Appendix B, Figure 3	Appendix B, Figure 4	Appendix B, Figure 7
	Single-field for telephone number N=1,000 (Appendix B, Figures 9 and 10)	Appendix B, Figure 3	Appendix B, Figure 4	Appendix B, Figure 7

Appendix B: Mailing materials and the telephone format images

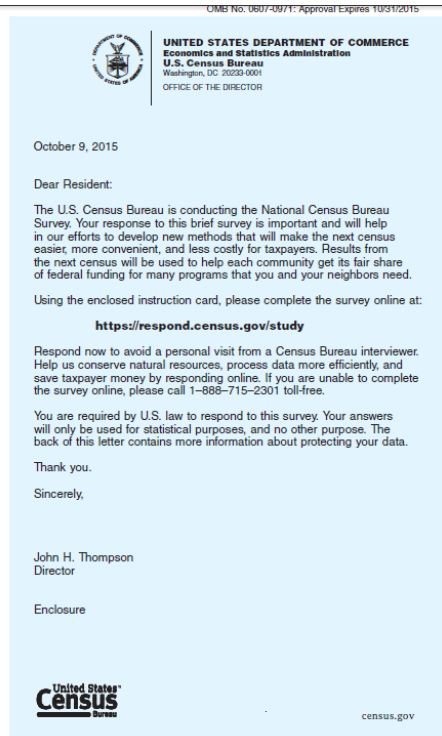


Figure 1: Control initial letter using "each community" in the benefits message

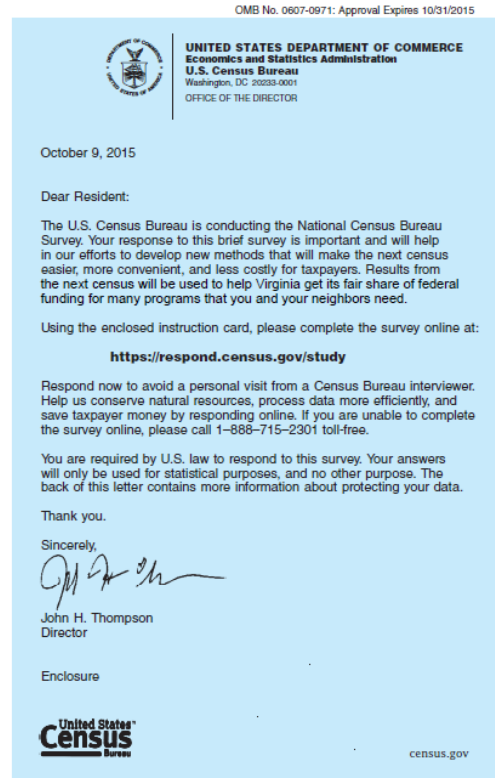


Figure 2: State treatment in the initial letter: "each community" is replaced by "Virginia" in this example

Appendix B: Mailing materials and the telephone format images

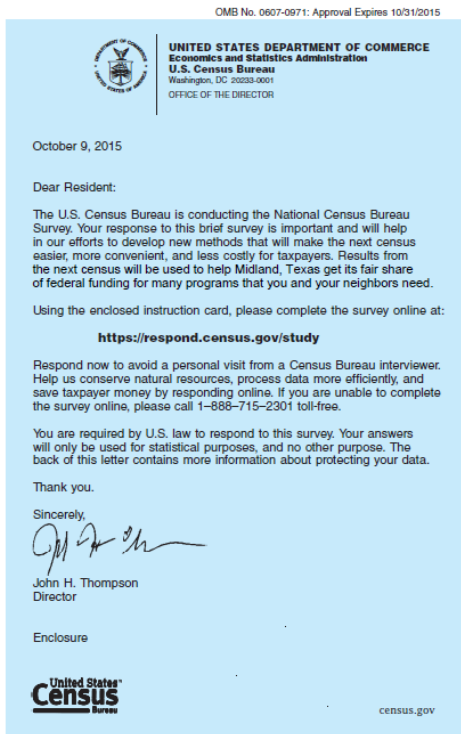


Figure 3: City and State treatment in the initial letter: “each community” is replaced by “Midland, Texas” in this example

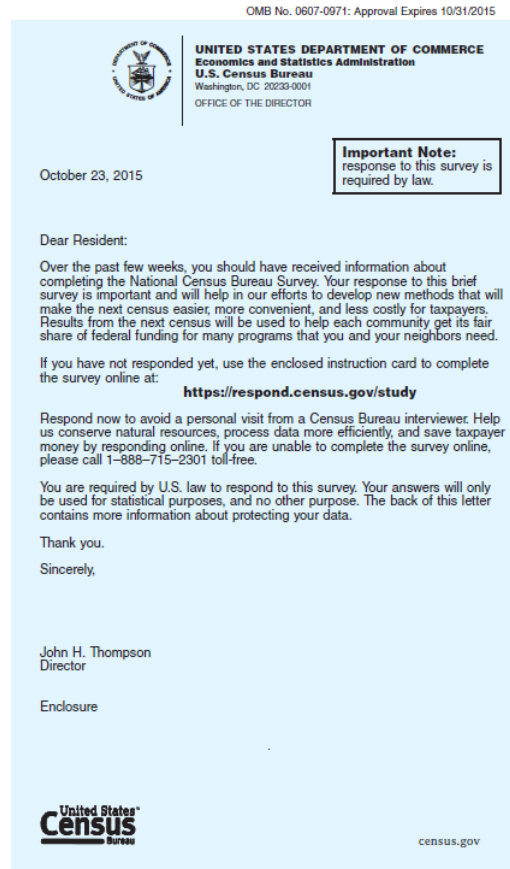


Figure 5: Control reminder letter using "each community" in the benefits message

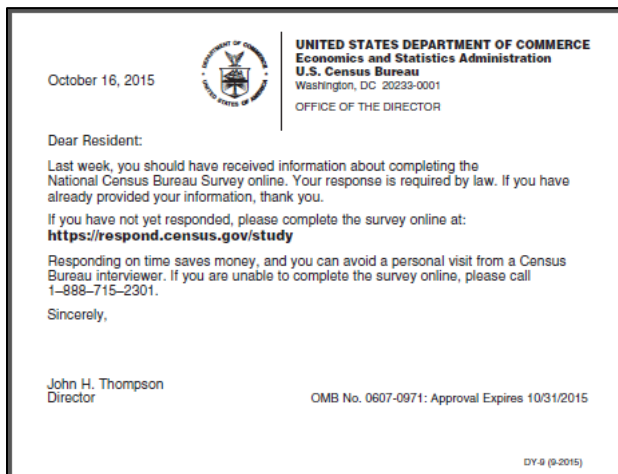


Figure 4: All treatments: Reminder postcard

Appendix B: Mailing materials and the telephone format images

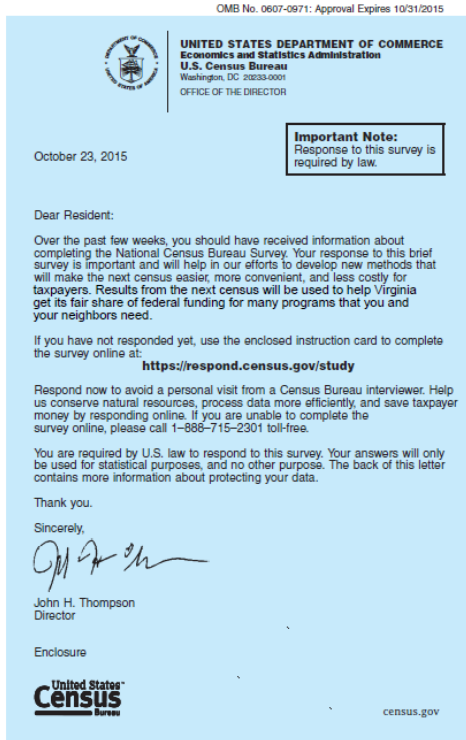


Figure 6: State treatment in the reminder letter: “each community” is replaced by “Virginia” in this example

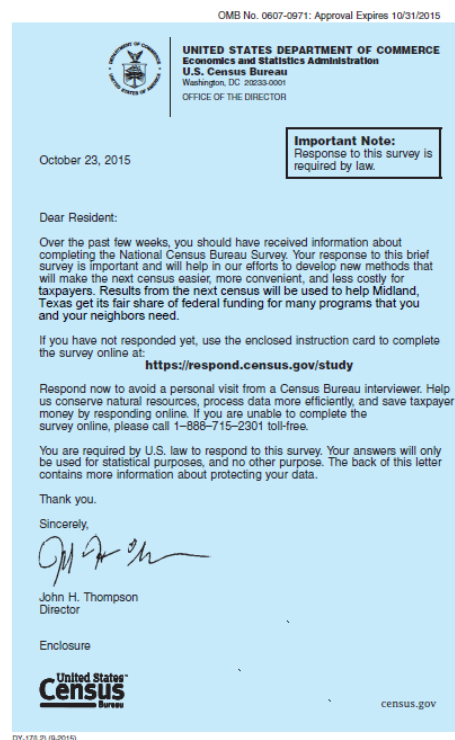


Figure 7: City and State treatment in the reminder letter: “each community” is replaced by “Midland, Texas” in this example



Figure 8: Control Telephone Format Treatment

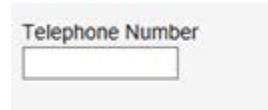


Figure 9: Single-field Telephone Format Treatment (without any data entered)



Figure 10: Single-field Telephone Format Treatment (with fictitious data entered to show the imbedded dashes)

All the mailing materials, with the exception of the envelopes, were created at the Census Bureau's National Processing Center (NPC). The envelopes have an open window where the address shows through. Docuprint was used to customize the initial and final letters. The city and state or state printed in the initial and final letters were identical to the city and state or state in the mailing address for the sampled address. The mailing address for the initial and final letters was Docuprinted on one side of a large heavy stock card. The card is called the "Internet card" because it also contains the URL for the online form and the access code or "User ID" needed to get into the survey. For this test, the letters had to be clerically assembled with the Internet card to make sure that the address on the card received the assigned treatment letter with the customization. For example, the letter in Figure 2 in Appendix B referencing Virginia would have been matched with an Internet card with a Virginia address. Both were then placed into the envelope so that the address on the Internet card showed through the envelope window.

Appendix D (Survey questions and answers)

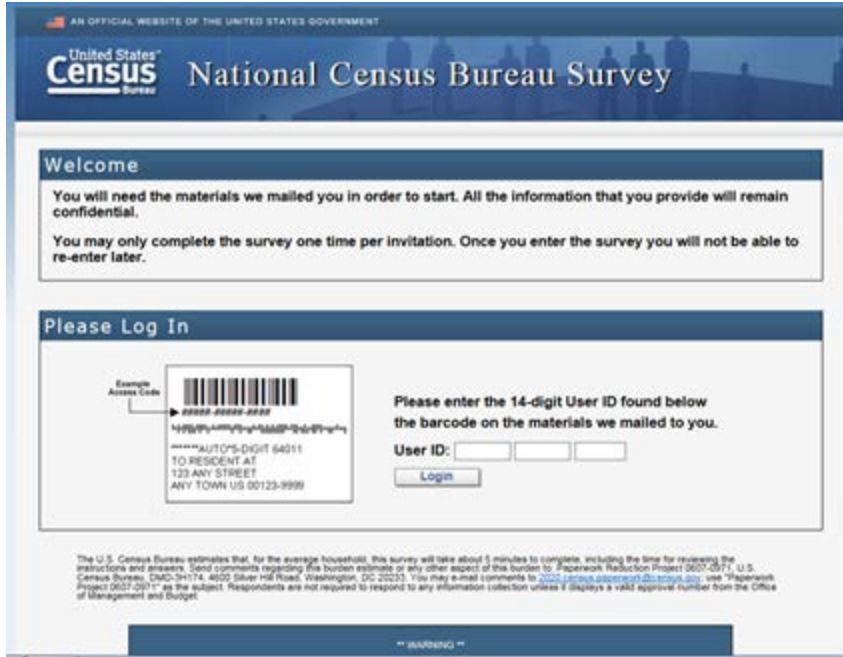


Figure A: Survey login page

Results:

Accessed survey	1975
Completed cases with submit	1794
No data	123 (9% complete break off)
Data analyzed – everyone who gave a response to at least one question.	

Appendix D (Survey questions and answers)

AN OFFICIAL WEBSITE OF THE UNITED STATES GOVERNMENT

United States Census Bureau National Census Bureau Survey

Instructions FAQs

1. What is your name and your telephone number? We may contact you if there is a question. [Help](#)

First Name Middle Name Last Name

Telephone Number

2. Please provide your email address. [Help](#)

Enter email address:

3. What information do you think the census typically collects every 10 years?
Select all that apply

- Names of all adults living at your address
- Names of all children living at your address
- Social security number
- Age
- Date of birth
- Race
- Ancestry
- Income
- Relationship
- Citizenship

Figure B: Survey Treatment 1, Questions 1 – 3 (There is an autotab between the three telephone fields)

AN OFFICIAL WEBSITE OF THE UNITED STATES GOVERNMENT

United States Census Bureau National Census Bureau Survey

Instructions FAQs

1. What is your name and your telephone number? We may contact you if there is a question. [Help](#)

First Name Middle Name Last Name

Telephone Number

2. Please provide your email address. [Help](#)

Enter email address:

3. What information do you think the census typically collects every 10 years?
Select all that apply

- Names of all adults living at your address
- Names of all children living at your address
- Social security number
- Age
- Date of birth
- Race
- Ancestry
- Income
- Relationship
- Citizenship

Figure C: Survey Treatment 2, Questions 1 - 3

AN OFFICIAL WEBSITE OF THE UNITED STATES GOVERNMENT

United States Census Bureau National Census Bureau Survey

Instructions FAQs

1. What is your name and your telephone number? We may contact you if there is a question. [Help](#)

First Name Middle Name Last Name

Telephone Number
301-555-5555

2. Please provide your email address. [Help](#)

Enter email address:

3. What information do you think the census typically collects every 10 years?
Select all that apply

- Names of all adults living at your address
- Names of all children living at your address
- Social security number
- Age
- Date of birth
- Race
- Ancestry
- Income
- Relationship
- Citizenship

Figure D: Survey Treatment 2 again, demonstrating how the dashes automatically fill in the telephone field

Provided an entry:

1. Name (n=1975)

- 91.9% First name
- 76.0% Middle name
- 91.7% Last name

Telephone (n=1975)

- 88.4% Survey Treatment 1: 3 fields (n=985)
- 87.1% Survey Treatment 2: 1 field with embedded format (n=990)

2. Email (n=1975)

- 83.0%

3. What information do you think the census typically collects every 10 years? *Select all that apply*

(n=1796 – selected at least one choice)

- 86.2% Names of all adults living at your address
- 74.6% Names of all children living at your address
- 19.7% Social security number
- 77.8% Age
- 48.0% Date of birth
- 78.9% Race
- 23.8% Ancestry
- 52.1% Income
- 42.7% Relationship
- 65.0% Citizenship

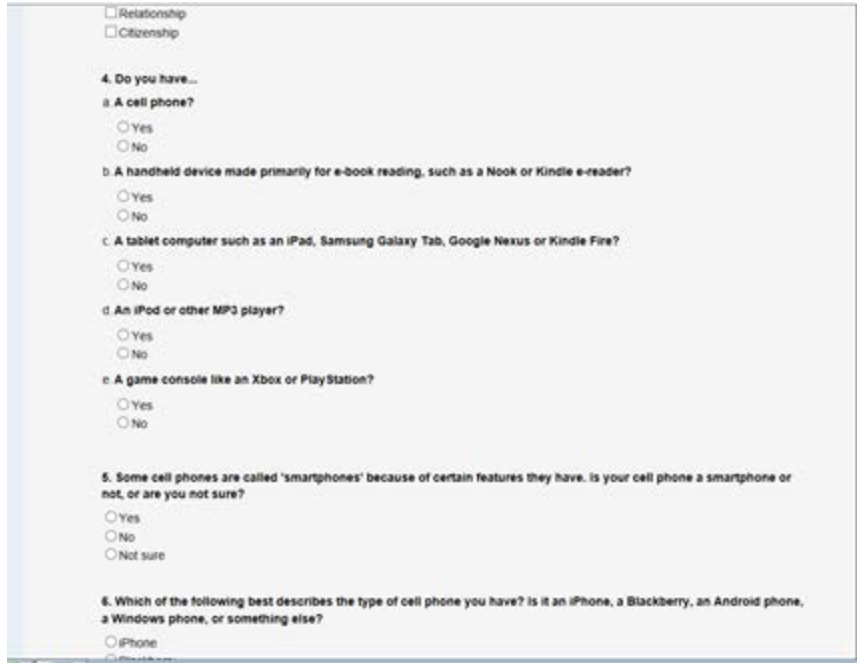


Figure E: First page of both survey treatments, Questions 4 – 5

4. Do you have...

a. A cell phone? (N=1832)

92.9% Yes

7.1% No

b. A handheld device made primarily for e-book reading, such as a Nook or Kindle e-reader? (N=1809)

70.3% Yes

29.61% No

c. A tablet computer such as an iPad, Samsung Galaxy Tab, Google Nexus or Kindle Fire? (N=1805)

59.8% Yes

40.2% No

d. An iPod or other MP3 player? (N=1805)

38.4% Yes

61.6% No

e. A game console like an Xbox or PlayStation? (N=1805)

35.0% Yes

65.0% No

5. (if yes to 4a) Some cell phones are called 'smartphones' because of certain features they have. Is your cell phone a smartphone or not, or are you not sure? (N=1679)

77.3% Yes

18.0% No

4.8% Not sure



Figure F: First page of both survey treatments, Questions 6 – 10

6. (if yes to 5) Which of the following best describes the type of cell phone you have? Is it an iPhone, a Blackberry, an Android phone, a Windows phone, or something else? (N=1385)

- 55.3% iPhone
- 0.5% Blackberry
- 38.5% Android
- 1.0% Windows
- 4.7% Other

7. Are you male or female? (N=1816)

- 48.2% Male
- 51.8% Female

8. What is your age? (N=1822)

- 0% Less than 18 years old
- 2.5% 18-24
- 13.2% 25-34
- 16.4% 35-44
- 19.9% 45-54
- 21.6% 55-64
- 26.2% 65 or older

9. Are you of Hispanic, Latino or Spanish origin? (N=1808)

- 7.1% Yes
- 92.9% No

10. What is your race? You may choose one or more. (N=1771)

(30 people chose more than one more race – only first race chosen is reported)

- 88.4% White
- 6.5% Black or African American
- 0.5% American Indian or Alaska Native
- 4.2% Asian
- 0.4% Native Hawaiian or other Pacific Islander

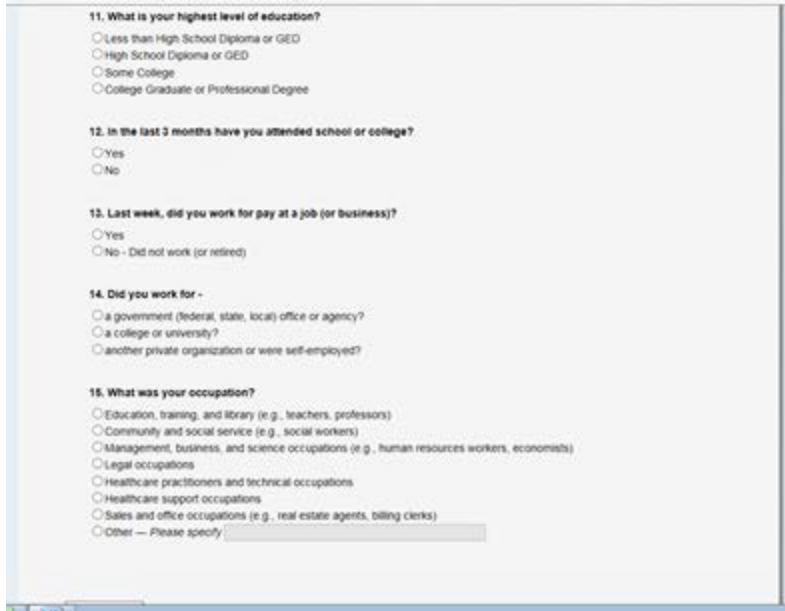


Figure G: First page of both survey treatments, Questions 11-15

11. What is your highest level of education? (N=1823)

- 3.0% Less than High School Diploma or GED
- 18.1% High School Diploma or GED
- 25.1% Some College
- 53.8% College Graduate or Professional Degree

12. In the last 3 months have you attended school or college? (N=1800)

- 3.2% Yes
- 93.8% No

13. Last week, did you work for pay at a job (or business)? (N=1809)

- 65.0% Yes
- 35.0% No - Did not work (or retired)

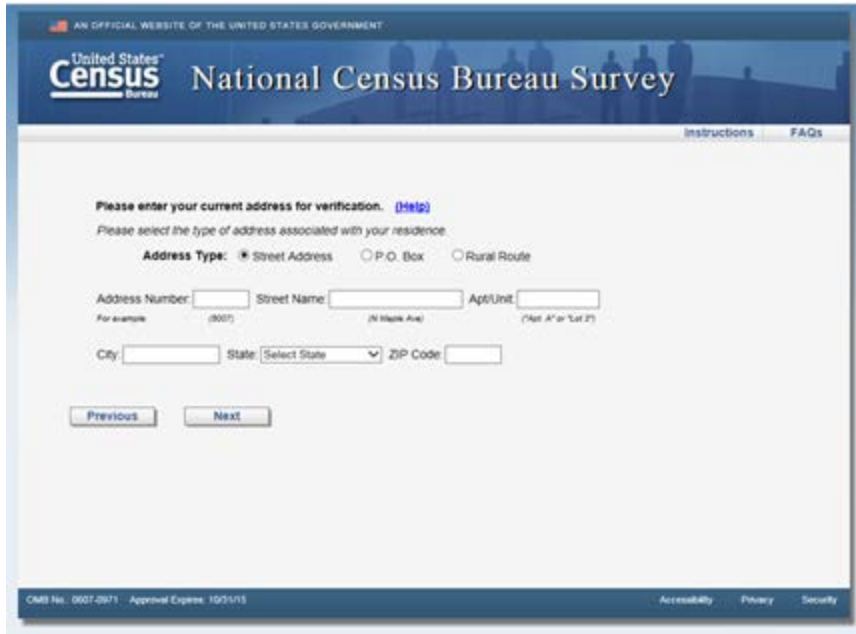
14. (if yes to 13) Did you work for – (N=1135)

- 19.0% a government (federal, state, local) office or agency?
- 4.5% a college or university?

76.5% another private organization or were self-employed?

15. (if yes to 13) What was your occupation? (N=1184)

- 11.7% Education, training, and library (e.g., teachers, professors)
- 2.7% Community and social service (e.g., social workers)
- 18.4% Management, business, and science occupations (e.g., human resources workers, economists)
- 2.5% Legal occupations
- 8.1% Healthcare practitioners and technical occupations
- 4.9% Healthcare support occupations
- 10.8% Sales and office occupations (e.g., real estate agents, billing clerks)
- 40.8% Other



**Figure H: Address fields for both survey treatments
Provided an entry**

City-Style Address

N=1778		Address number
N=1760		Street
N=259	Unit	
N=1793		City
N=1778	State	
N=1791		ZIP

P.O. Box Address

N=10	P.O. Box
N=9	City
N=8	State
N=8	ZIP

Rural Route Address

N=5	Route Descriptor, Route and/or Box
N=5	City
N=5	State
N=5	ZIP

AN OFFICIAL WEBSITE OF THE UNITED STATES GOVERNMENT

United States
Census
Bureau

National Census Bureau Survey

Instructions | FAQs

1. What message(s) in the mailing materials motivated you to complete this online survey?
Select all that apply.

- Addresses are randomly selected
- Responses are required by law
- Answers are kept confidential
- An interviewer might come to my door
- Signed by the Director of the U.S. Census Bureau
- Conserving natural resources
- Saving taxpayer money
- Benefits for my community, city or state
- Uses of the data collected

2. Do you have any additional comments on the mailing materials you received for this survey?

250 characters left

Previous Submit

OMB No. 1607-2071 Approval Expires: 10/31/15

Accessibility Privacy Security

Figure I: Last page of survey for both treatments

What message(s) in the mailing materials motivated you to complete this online survey?
(N=1744)

- 75.8% Responses are required by law
- 27.2% Benefits for my community, city or state
- 26.2% Saving taxpayer money
- 24.7% Answers are kept confidential
- 21.2% An interviewer might come to by door
- 15.5% Uses of the data collected
- 13.9% Conserving natural resources
- 6.9% Signed by the Director of the U.S. Census Bureau
- 4.5% Addresses are randomly selected

Do you have any additional comments on the mailing materials you received for this survey?
(N=1975)

- 76.3% Blank response
- 11.9% No or equivalent
- 11.8% Comment