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MEMORANDUM FOR ACS Research and Evaluation Steering Committee

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

Attached is the final American Community Survey Research and Evaluation report "2011 American Community Survey Internet Tests: Results from First Test in April 2011." The Internet tests focused on evaluating the feasibility of providing an Internet response mode to addresses sampled for the American Community Survey. The main objective of the tests was to determine the best way to present the Internet mode in the ACS mailings to maximize self-response. This report summarizes the results of the first ACS Internet Test conducted in April 2011.

In March 2012, this report was revised to make minor changes to item nonresponse rates for three questions (Age/DOB, Hispanic Origin, and Race) provided in Table 13 on page 21. The item nonresponse rates for these variables were lowered by 0.1 to 0.4 percentage points. The overall conclusions for this table have not changed.

In May 2012, this report was revised to indicate a significant finding that was mistakenly overlooked in the previous version. In Tables 15 and 16, which compare the demographics of Internet and mail respondents, the difference between Internet and mail for Renters is statistically significant in both strata. In the Targeted stratum, Internet respondents were more likely than mail respondents to be renters, while Internet respondents were less likely to be renters in the Not Targeted stratum. The affected conclusions and related text have been updated to reflect this correction. In addition, this report revision includes minor changes to a few of the differences between rates in Tables 7, 9, 15, 16, and 20, and some estimates of demographic characteristics (Multiple Races, Household Size, and Renter) for the Control group in Tables 17 and 18. The differences and estimates were changed by 0.01 to 0.2 percentage points, but the overall conclusions based on these rates and estimates have not changed.

If you have any questions about this report, please contact Jennifer Tancreto at 301-763-4250.

Attachment

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

FINAL REPORT



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Decennial Statistical Studies Division

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## EXECUTIVE SUMMARY

### Test Objective

Currently, the American Community Survey (ACS) collects data using three modes: mailout/mailback of a paper questionnaire, Computer-Assisted Telephone Interview and Computer-Assisted Personal Interview. Sampled addresses receive the mail questionnaire first and are later contacted by Computer-Assisted Telephone Interview and then Computer-Assisted Personal Interview as part of nonresponse follow-up operations. The United States Census Bureau conducted two ACS Internet tests in 2011, one in April and one in November, to evaluate the feasibility of providing a fourth response mode, an Internet mode, to addresses selected for the ACS. The main objective of the tests was to determine the best way to present the Internet mode in the ACS mailings to maximize self-response. This report discusses the results from the first (April) test. The results from the second test will be available in the spring of 2012.

### Methodology

The test studied “Choice” and “Push” strategies for notifying sampled addresses about the Internet mode. Households in the Choice strategy received a survey questionnaire and could choose between mail and Internet to respond. We tested two Choice strategies – a Prominent Choice and a Not Prominent Choice. In the Prominent Choice, the web option was noticeably advertised in all mailings as an alternative to the paper questionnaire. In the Not Prominent Choice, the web option appeared only in an inconspicuous place on the front of the paper questionnaire for those specifically looking for it. The Not Prominent Choice treatment was designed to combat response decreases seen in other studies, including the 2000 ACS Internet test (Griffin *et al.*, 2001), when two response mode options were provided.

The Push strategy directed households to use the Internet first before later providing the paper questionnaire in a nonresponse follow-up mailing. We experimented with the length of time between sending the request to respond online and sending the nonresponse follow-up paper questionnaire—three weeks (Push Regular) versus two weeks (Push Accelerated).

The Control group was the April 2011 ACS production sample. These cases only received a paper questionnaire and did not have the opportunity to respond online.

We stratified the sample for this test so we could compare the effectiveness of the notification strategies among different segments of the population. We stratified tracts into two groups, Targeted and Not Targeted. The Targeted group consisted of tracts containing households that we expected to use the Internet at a higher rate. The remaining tracts were in the Not Targeted group.

### Research Questions and Results

*Does offering an Internet option change the total self-administered response rate?*

As of the end of the first month of data collection (when we normally identify the Computer-Assisted Telephone Interview nonresponse follow-up workload):

- The Push Accelerated treatment produced the highest self-administered response rate among the notification strategies, and achieved a 2.6 percentage point increase over the Control in the Targeted stratum.
- The Prominent Choice treatment obtained the nominally highest response rate, but was not significantly higher than Push Accelerated, Not Prominent Choice, or Control in the Not Targeted stratum.
- These findings remain when we excluded Internet break-offs that provided an insufficient amount of data from the pool of respondents.

*Are the Internet usage rates statistically different by notification strategy?*

- As expected, significantly more households responded by Internet in the Push treatments than the Choice treatments in both strata.
- Also, there were significantly more cases that used the Internet in the Prominent Choice treatment compared to the Not Prominent Choice in both strata, due to differences in the distinction of the Internet offer between treatments.

*Did the rate of accessing the Internet instrument and subsequent break-offs differ among notification strategies?*

- Significantly more households accessed the online survey in the Push treatments than the Choice treatments in both strata. Also, more households accessed the online survey in the Prominent Choice compared to the Not Prominent Choice.
- There were significantly more households that broke-off the online survey in the Push treatments compared to the Choice treatments in both strata.

*How do item nonresponse rates differ between Internet and mail responses as well as notification strategies?*

- Internet break-offs negatively impacted item nonresponse measures for Internet returns, particularly among the questions in the later part of the survey (detailed person section).
- The treatments where item nonresponse (in the detailed person section) was most affected by Internet break-offs were those with the highest concentration of Internet responses, the Push Regular and Push Accelerated treatments.
- The differences we observed in item nonresponse rates due to Internet break-offs have prompted further consideration on how we should handle Internet break-offs, specifically whether we should treat them as respondents or nonrespondents. Removing Internet break-offs that were insufficiently complete helps reduce the item nonresponse rates for the Push treatments, but the rates still suffer for the questions in the detailed person section.

*Are there differences in the demographics of Internet respondents and mail respondents? Across notification strategies?*

- In both strata, Internet respondents were more likely to be younger, Asian, non-Black, “other” race, with higher education and living in larger households than mail respondents. They were also more likely to speak a language other than English at home. In the Targeted stratum, Internet respondents were more likely than mail respondents to be renters, while Internet respondents were less likely to be renters in the Not Targeted stratum.
- The characteristics of responding households in the Prominent and Not Prominent Choice strategies look similar to those in the Control. The characteristics of Push Accelerated households are mostly in line with those in the Choice and Control, except that they tend to be younger and more educated.

*How does the speed of receiving Internet responses compare to mail responses?*

- In both strata, Internet returns by far surpassed mail returns early in the data collection period, giving the Push treatments a response rate advantage for the first two weeks of data collection. Once mail returns started accumulating, the Choice and Control treatments surpassed response in the Push treatments for a short period of time. However, the early mailing of the paper questionnaire in the Push Accelerated treatment allowed response to catch-up to the other treatments (and eventually, it surpassed those rates in the Targeted stratum).

*How many households returned multiple responses?*

- Very few households (1 percent or less) responded more than once across all notification strategies. There were no significant differences across the treatments.

*What were the perceptions of the information contained in the mail materials?*

- We conducted a telephone follow-up interview to measure why respondents chose the mode they used to respond or why some chose not to respond at all. Nichols (forthcoming) found that not all ACS respondents in the notification strategies knew about the mode choice. Not knowing about the other mode option was cited more by mail respondents than Internet respondents.
- Otherwise, there did not seem to be any messages specific to the mailing messages or strategies that motivated respondents to choose one mode over the other. Most choices of mail over web were made based on inability to access Internet, computer issues, or simply preference for the paper questionnaire.

# 1. BACKGROUND

## 1.1 Motivation for the April 2011 American Community Survey Internet Test

There are many Federal mandates and initiatives that promote the use of electronic data collection. The Paperwork Reduction Act of 1995 seeks to minimize the paperwork burden on individuals, businesses, institutions, and governments resulting from information collected by or for the Federal government. The Government Paperwork Reduction Act of 1998 requires Federal agencies to provide individuals or organizations the option to submit information electronically, when feasible. Moreover, the U.S. President's Management Agenda for fiscal year 2002 listed "expanded electronic government" as one of five government-wide initiatives to make it easier for citizens and businesses to interact with the Federal government. In fact, the E-GOV Act of 2002 promotes the use of "web-based Internet applications... to: (1) enhance the access to and delivery of Government information and services; or (2) bring about improvements in Government operations." (<http://www.whitehouse.gov/omb/e-gov/>)

Even in the absence of these mandates and initiatives, using the Internet to collect survey data seems to make good business sense given the promises of efficiency it offers. Other than the one-time development cost, the cost of an Internet survey is low compared to a mail survey where there are printing, postage and data capture costs. Moreover, web survey responses are generally available quicker than responses from a mail survey without the lag time from mailing back the questionnaire and capturing the responses (Brady *et al.*, 2004).

Additionally, the Internet offers technological advantages over mail data collection that may improve data quality, such as real time edit checks, automated navigation through skip patterns, and tailored name fills. Lastly, Internet use has become more common as people use it for shopping, financial transactions, gathering information, and communicating. In fact, Internet penetration in the home reached 71 percent in the United States in 2010 (U.S. Department of Commerce, 2011).

Since Internet access is not universal, and there are known demographic differences between those who do and do not have access (U.S. Department of Commerce, 2010; U.S. Department of Commerce, 2011), Internet data collection is currently better suited as part of a mixed mode design for general population surveys rather than as a sole mode of data collection. Mixed mode data collection is an increasingly popular way to achieve high levels of response in a cost effective manner (de Leeuw, 2005). Previous research has indicated that respondents have mode preferences (Groves *et al.*, 1979), and thus, a mixed mode design would seemingly accommodate those preferences (Dillman *et al.*, 1988). Given this theory, coupled with the movement towards using the web for everyday activities, it seems reasonable to believe that a web option would improve, or at least maintain, survey response rates in a mixed mode design.

## 1.2 Previous Testing

Internet mode experiments have shown mixed results with respect to response rates, even within the Census Bureau alone. Offering a concurrent choice of response modes as part of a test for the decennial census has shown to be promising. In the Census 2000 Response Mode and Incentive Experiment, the offer of Internet as an alternative response mode boosted response by more than two percentage points over households that were not offered a response mode alternative (Schneider *et al.*, 2005).

Also, in the 2003 National Census Test, providing a choice of response modes had no impact on response compared to offering the paper questionnaire alone (Brady *et al.*, 2004). In the presence of a choice, some households that would have typically responded by mail simply shifted their response to either Internet or Interactive Voice Response.

Just months after the Census 2000 Internet experiment, the Census Bureau tested introducing an Internet option for the ACS as an alternative to the mail questionnaire. Unlike the response boost observed in the Census 2000 experiment, the ACS study found that offering the Internet as a response option actually decreased the overall response rate by 5.8 percentage points (Griffin *et al.*, 2001).

Many recent studies outside of the Census Bureau show similar findings to the ACS study: simultaneous response mode choices lead to a decrease in response. Smyth *et al.*, (2010) and Gentry *et al.* (2008) saw a decrease in response rates as a result of offering respondents a choice between responding by mail or Internet in studies of small towns and communities and a radio listening diary, respectively. Lesser (2010) also found lower response rates for a multiple mode option, as compared to mail only, for two surveys covering the population of Oregon as well as a study covering boat owners in Oregon. It appears the level of Internet literacy of the survey population is not a factor, as Millar *et al.* (2011) observed a decrease in response from a mode choice among college undergraduates. Thus, while the web may be cheaper and more attractive to some respondents, introducing a concurrent web option into a mixed mode survey has not generally proved beneficial from a response rate perspective (Couper *et al.*, 2008).

This pattern of decreasing response in the presence of mode choices is puzzling. While we might expect that providing more choices gives respondents the opportunity to choose their preferred mode, the mode choice adds complexity to the response process, which may divert attention away from the task at hand ultimately leading to nonresponse (Dhar, 1997). Additionally, the transition from a mail survey invitation to an Internet response might require people to place the invitation aside until they are online, and ultimately they forget about the task.

Some studies have also examined the possibility of providing an Internet option as the first mode in a sequential multi-mode design. In the 2003 National Census Test, households that were pushed to use electronic modes (Internet or Interactive Voice Response) first were significantly less likely to respond compared to the households that could only respond by paper (Brady *et al.*, 2004). Similarly, in the 2005 National Census Test, households that were pushed to use the Internet at a nonresponse follow-up mailing were significantly less likely to respond (by about 3.7 percentage points) than those that received the paper questionnaire (Bentley *et al.*, 2006). Those studies were implemented several years ago, and we know Internet access and usage is expanding, so it is a methodology still worth considering since it holds a lot of cost savings potential. In fact, Millar *et al.* (2011) found among college undergraduates that pushing to the web in initial mailings resulted in lower response compared to mail only, but once a mail questionnaire was offered response rates were not significantly different from those where mail was the only mode offered.

## 2. METHODOLOGY

Currently, the ACS collects data using three modes across a three-month period: mailout/mailback of a paper questionnaire, Computer-Assisted Telephone Interview (CATI), and Computer-Assisted Personal Interview (CAPI). Sampled addresses receive the mail questionnaire first (month 1) and are later contacted via CATI (month 2) and then CAPI<sup>1</sup> (month 3) as part of nonresponse follow-up to mail.

The April 2011 ACS Internet Test is one of two ACS Internet tests conducted in 2011 that were designed to evaluate the feasibility of providing a fourth response mode, Internet, to addresses sampled for the ACS. The main objective of these two tests was to determine the best way to present the Internet response mode in the ACS mailing pieces to maximize self-response. The results of this first test aided in the design of the second test, the November 2011 ACS Internet Test, and the results from that test will help make the ultimate decision of what method will go into ACS production.

The April 2011 ACS Internet test took place in April and May 2011, and was designed to test introducing a web response option in the mail month of data collection for the April ACS production sample. Thus, most metrics presented in this report are based on responses received by the end of the first month (April), which is the mail data collection month.

### 2.1 Experimental Treatments

We tested different strategies for notifying sampled households about the Internet response mode using combinations of the five ACS mailing pieces (pre-notice letter, initial questionnaire mailing, reminder postcard, and for nonrespondents only, replacement questionnaire mailing and additional reminder postcard). We describe each notification strategy in detail below and Table 1 shows the timing and content of the mailings. Two of the notification strategies involved providing a concurrent choice between a paper questionnaire and Internet survey. Additionally, two strategies pushed households to use the Internet by removing the paper questionnaire in the first mailing. The “Push” strategies could potentially introduce cost savings. If successful in maintaining or increasing response, these strategies could save costs associated with printing the questionnaire, postage, data capture of paper questionnaires, and reduced volume of replacement mailings due to faster and higher levels of response. See Appendix A for examples of the materials for each strategy.

**Prominent Choice** -- Sampled addresses received survey questionnaires and households were given a concurrent choice of completing the ACS on paper or the Internet. The Internet option was prominently displayed in both the cover letter and questionnaire in the initial mailing package, as well as on the reminder postcard, in the replacement questionnaire mailing and on the additional reminder postcard. This strategy also included a new Internet instruction card in both the initial and replacement questionnaire packages that provided the choice of response modes (paper and Internet).

**Not Prominent Choice** -- These sample addresses also received a survey questionnaire but the Internet response option appeared only in a non-prominent place on the front of the questionnaire. No other mail materials mentioned the online option, and the Internet instruction card was not provided. The purpose of testing this strategy was to provide the Internet option to those who were looking for it

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<sup>1</sup> Mail and CATI nonrespondents and cases ineligible for the mail and CATI modes are subsampled prior to inclusion in the CAPI operation.

while attempting to alleviate a respondent's tendency to do nothing when offered response mode choices as seen in previous studies (Millar *et. al.*, 2011; Griffin *et. al.*, 2001).

**Push Internet on Regular Mailing Schedule** -- During the initial questionnaire mailing in the two Choice treatments, sampled addresses received a paper questionnaire. In the Push Internet strategy, sampled addresses only received a letter and instruction card on how to complete the ACS on the Internet. The letter mentioned the benefits of using the Internet to respond, and the instruction card provided all of the information they would need to access the survey. Sampled addresses did not receive a paper questionnaire until the replacement questionnaire mailing (sent to nonrespondents only) about three weeks later. The paper questionnaire included the same prominent display of the Internet option on the form and in the cover letter that was used in the Prominent Choice (described above). The mailing sequence followed the same timing as ACS production.

**Push Internet on Accelerated Mailing Schedule** -- This strategy used the same concept as the previous Push strategy except that the replacement questionnaire was mailed earlier (about two weeks after the initial mailing compared to about three weeks in the regular schedule) to give nonrespondents a mail questionnaire option sooner than the regular schedule.

**Control (Mail only)** -- The Control was the April 2011 ACS production sample panel. They received a paper questionnaire, and there was no Internet option for the Control cases.

Table 1. Timing and Content of ACS Internet Test Mailings

Treatment	Pre-Notice, same across treatments (Mailed 3/24/2011)	Initial Mailing (Mailed 3/28/2011)	Reminder Postcard (Mailed 3/31/2011)	Nonrespondents only	
				Replacement Mailing (Mailed 4/21/2011 except Push Accelerated)	Additional Reminder Postcard (Mailed 5/5/2011 to households for which we had no phone number for CATI follow-up)
Prominent Choice	X	Paper and Internet offer	Reminder for paper and Internet	Paper and Internet offer	Reminder for paper and Internet
Not Prominent Choice	X	Paper and subtle Internet offer	Reminder for paper	Paper and subtle Internet offer	Reminder for paper
Push Regular	X	Internet only	Reminder for Internet	Paper and Internet offer	Reminder for paper and Internet
Push Accelerated	X	Internet only	Reminder for Internet	Paper and Internet offer (Mailed 4/14/2011)	Reminder for paper and Internet
Control (Mail Only)	X	Paper only	Reminder for paper	Paper only	Reminder for paper

## 2.2 Stratification

From previous research, we suspect that the likelihood of using the Internet will differ by the characteristics of the housing units (Lugtig *et al.*, 2011; Guarino, 2001; U.S. Department of Commerce, 2010). Therefore, we aimed to study the effect of the notification strategies among households that we expected to be more/less likely to use the Internet. We stratified the sample for this test so we could consider targeting the notification strategies in ACS production to different segments of the population if we found one treatment to be more successful in a specific stratum. To accomplish this goal, we stratified census tracts into two strata: Targeted and Not Targeted. The Targeted stratum consisted of tracts containing households that we expected to use the Internet at a higher rate based on past research. The remaining tracts were in the Not Targeted stratum. About one-third of the ACS universe fell in the Targeted stratum, while two-thirds fell in the Not Targeted stratum.

The Targeted stratum was created based on research conducted for the Census Integrated Communications Plan in preparation for the 2010 Census (U.S. Census Bureau, 2008) and results from the Census Barriers, Attitudes and Motivators Survey (CBAMS) (Johnson, 2009). The CBAMS provided information to evaluate the knowledge of and attitudes toward the decennial census and social issues as well as media usage (including Internet).

The tracts in the Targeted stratum were characterized as having either a large proportion of advantaged homeowners or single, unattached, mobile people. These tracts contained people who were, in general, highly educated, stable, married homeowners living in single-unit houses or single, mobile renters with higher than average education living in urban multi-units. We selected these tracts for the Targeted stratum for two reasons. First, Internet usage statistics suggest younger, college-educated households, with an annual income greater than \$75,000 who own their homes in urban areas comprise the group of individuals most likely to use the Internet (Couper, 2000; Brady *et al.*, 2004; U.S. Department of Commerce, 2010). Second, this group had the highest levels of Internet subscriptions, usage and preference (U.S. Census Bureau, 2008).

The Not Targeted stratum received the balance of the tracts. The people that resided in these tracts were believed to be as racially diverse or more than the national average, have the same or less education than the national average, and have the same or lower income than the national average (Bates *et al.*, 2007). Moreover, these areas have lower levels of Internet subscriptions, usage and preference (U.S. Census Bureau, 2008).

We crossed the four experimental notification strategies listed above with the two strata to create eight experimental treatment panels as shown in Table 2. We also stratified the Control (Mail only) group, the April 2011 ACS production sample panel, for a total of ten treatments. Each experimental treatment group had a sample of 15,000 addresses resulting in a total of 120,000 sample addresses selected specifically for the experiment and roughly 230,000 mailable sample addresses from ACS production for the control. The experimental treatment samples were equally allocated to the two strata, resulting in an oversample of addresses for the Targeted stratum. The Control (Mail only) contained a proportional allocation to the two strata, as it is fully representative of the sample universe.



Table 2. Sample Sizes (addresses) for the ACS Internet Notification Strategies Test

Notification Strategy	Targeted	Not Targeted
Control (Mail only) - ACS April Production Sample	71,585	161,683
<i>Experimental Treatments</i>		
<i>Choice</i>		
Prominent Choice	15,000	15,000
Not Prominent Choice	15,000	15,000
<i>Push Internet</i>		
Regular Mailing Schedule (3 weeks)	15,000	15,000
Accelerated Mailing Schedule (2 weeks)	15,000	15,000
<i>Subtotal of Experimental Treatments</i>	60,000	60,000

This test was designed to simulate a typical one-month mail data collection period in the ACS. There were no CATI or CAPI nonresponse follow-up operations for the experimental treatments, but the Control included nonresponse follow-up since it was the ACS production sample. We decided to keep the online survey available beyond the first month so we could see whether we would get more visits or return visits from the experimental treatment cases after we typically would have started nonresponse follow-up by CATI. Most of the analysis in this study is limited to the first month of data collection, before the Control cases were sent to CATI nonresponse follow-up, since we do not know what the effect of the CATI operation would have been on the experimental treatment cases.

### 2.3 Research Questions

In advance of the test, we identified a series of research questions to help assess the success of the various notification strategy treatments. We list the research questions here, and provide answers to these questions in Section 4 of this report. The analysis for each of these research questions was conducted separately for the Targeted and Not Targeted strata.

- Does offering an Internet option change the total self-administered response rate?
- Are the Internet usage rates statistically different by notification strategy?
- Did the rate of accessing the Internet instrument and subsequent break-offs differ among notification strategies?
- How do item nonresponse rates differ between Internet and mail responses as well as notification strategies?
- Are there differences in the demographics of Internet respondents and mail respondents? Across notification strategies?
- How does the speed of receiving Internet responses compare to mail responses?
- How many households returned multiple responses?
- What were the perceptions of the information contained in the mail materials?

### 2.4 Design of the ACS Internet Survey

The goal in designing the online survey was to enable even novice Internet users to complete the survey. We reviewed web survey research and consulted external web survey experts while designing the instrument. We also conducted five rounds of usability testing on survey prototypes to improve the design, flow and question presentation of the online survey. See Ashenfelter *et al.* (2011a), Ashenfelter *et al.* (2011b) and Leeman *et al.* (forthcoming) for results of usability testing. Findings from usability testing were incorporated into the final Internet survey design.

The Internet survey presented the questions in a manner similar to the other ACS data collection modes to minimize mode effects, while taking advantage of the technology to improve data quality. This means the survey had three sections of questions: the first section asked basic demographic questions for all persons in the household; the second section, the housing section, asked questions about the household; and the third section asked detailed questions about each person in the household. The survey was available in both English and Spanish. The Internet survey maintained the self-administered nature of the ACS paper questionnaire coupled with the automated advantages similar to the CATI and CAPI modes in its design.

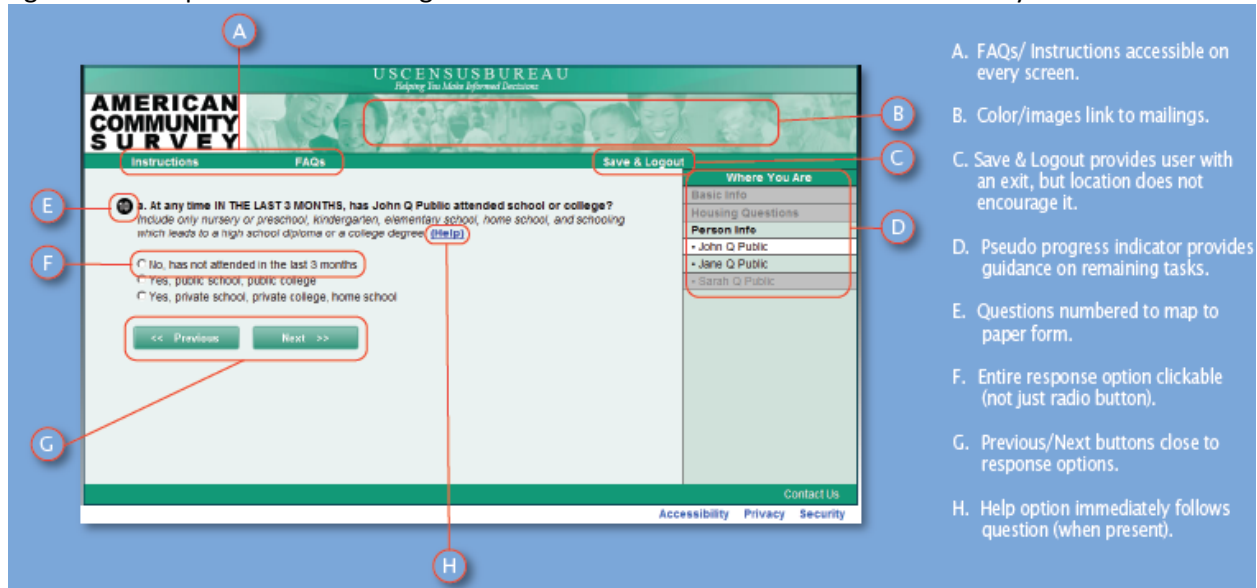
Like other federal agencies, the Census Bureau has strict information technology security to protect the privacy and confidentiality of survey respondents. The challenge for the ACS online survey was to find a way to meet the security requirements in a manner that was also user-friendly. Households were provided a randomly generated 10-digit User ID on the address label of the mail materials to enter the survey. After confirming the address for their household, respondents received a four-digit Personal Identification Number (PIN). Respondents needed to use this PIN along with their User ID if they wished to return to the survey at a later time. At the time they were provided with their PIN, we stressed the importance of retaining the PIN because, in an effort to protect the information that had already been provided at previous visits to the survey, we could not retrieve it. If respondents lost their PIN and wanted to use the Internet to complete the survey, they had to start the survey over from scratch after we reset their survey.

The ACS online survey maintained the look and feel of the ACS mailing pieces. Figure 1 highlights some of the design features. The screen background was the same light green color as the mail questionnaire, and the banner image came from a brochure in the survey mailings. The survey displayed one question per screen to facilitate skip patterns and to keep page content short to avoid scrolling.

The online survey provided several features intended to improve data quality. Critical survey questions were subject to soft error messages when left blank or when respondents provided inconsistent or invalid values. The respondent could either change the response or bypass the error using the navigation buttons to continue in the survey. Furthermore, the online survey provided topic-specific help by a link immediately following the question, where applicable. Finally, at the end of the survey, the respondent had the option of reviewing responses or submitting the survey without reviewing. If respondents chose to review, they could simply review the questions and answers or they could change their responses.

Although the focus of this test was on the effect of the notification strategies on self-response, we analyzed paradata (i.e., data about the Internet response process) to assess the effectiveness of certain design features, such as the error messages and help. Horwitz *et al.* (forthcoming) provides results from the analysis of these paradata.

Figure 1. Example of the Web Design Features for a Screen in the ACS Internet Survey



- A. FAQs/ Instructions accessible on every screen.
- B. Color/images link to mailings.
- C. Save & Logout provides user with an exit, but location does not encourage it.
- D. Pseudo progress indicator provides guidance on remaining tasks.
- E. Questions numbered to map to paper form.
- F. Entire response option clickable (not just radio button).
- G. Previous/Next buttons close to response options.
- H. Help option immediately follows question (when present).

For more information about the design of the Internet survey, please see Tancreto *et al.* (forthcoming).

## 2.5 Follow-up Interview

A sample of Internet respondents, mail respondents, and nonrespondents from this test were interviewed in a CATI follow-up to collect qualitative feedback about the mailing pieces, and re-asked certain questions to enable the study of response error for respondents. For each group, we asked a series of qualitative questions to determine what they remembered about the mailing pieces, their thoughts about the effectiveness of the mailing pieces, and the reasoning behind their selection of mode (or nonresponse). We also asked if there were any privacy concerns in using the Internet.

## 2.6 Analysis Design

We used a three-step method for comparing the notification treatments, described in Table 3, to maximize the testing power for each research question. In Step 1, we compared the two Choice strategies (Not Prominent and Prominent) to each other, and the two Push strategies (Regular and Accelerated schedule) to each other. In Step 2, we compared the Choice strategy winner to the Push strategy winner from Step 1. In Step 3, the winner between Push and Choice was compared to the Control. Note that the winners were determined based on specific evaluation measures for each research question. In the event that the treatments were not significantly different at any step in the process, the treatment with the most desirable rate was selected as the winner. At times, we extended the statistical testing to make comparisons between the Control and another treatment of interest as noted in the report.

All analyses used t-tests for the comparisons where the family-wise error rate was adjusted for multiple comparisons using the Bonferroni-Holm Multiple Comparison Procedure. All results are weighted to reflect their probability of selection into the sample.

Table 3. Comparisons Across Treatments (for each stratum)

Step 1	Step 2	Step 3
Compare Choice Strategies	Compare Choice Winner to Push Winner	Compare Winner of Step 2 to Control
Compare Push Strategies		

Details about the calculation of the evaluation measures are provided in the results section of this report.

### 3. LIMITATIONS

#### 3.1 Data for Incomplete Internet Responses

Internet respondents who did not complete their survey in their first session had the option of returning at a later time. The partial data provided for those cases were not processed until the end of the data collection period so we could keep that case open for respondents to re-enter. We did not keep interim records of the data provided at each visit. The only data record we had for these cases was the data that were provided by the end of the data collection period (May 31, 2011). Thus, analysis of the data for these cases does not necessarily reflect data received at the end of first month of data collection (at the time we created the response rates and other evaluation measures). Because we know the dates when cases returned to the survey, we know that this issue impacts only about one percent of Internet cases, and thus, we do not feel that this is a major limitation for this analysis.

#### 3.2 No Replacement Questionnaire Mailing to Internet Cases Considered “Sufficient Partial Interviews”

We intended to send the nonresponse follow-up paper questionnaire mailing to all households that had started the online survey, but had not completed it. Unfortunately, households that provided enough information in the online survey to be considered sufficiently complete were mistakenly not included in that mailing. As a result, we have no way to assess the impact that mailing would have had on their responses. This limitation impacts about 11 percent of Internet responses.

#### 3.3 No CATI Nonresponse Follow-up for Experimental Panels

The control was the ACS production sample panel for the month of April. This panel followed the ACS protocol of mail data collection in month one, followed by nonresponse follow-up by CATI in month two. The experimental notification strategy treatments did not go into the CATI nonresponse follow-up operation in month two. Thus, comparisons between the experimental treatments and the control panel are valid only for the first month of data collection since CATI calls are known to elicit mail response, which would affect response rate comparisons.

### **3.4 Rates of Cases Failing the Automated Clerical Edit Review (Flagged for Failed Edit Follow-up (FEFU))**

Failed Edit Follow-up (FEFU) is an operation in the ACS where telephone interviewers contact households that returned a paper questionnaire that requires follow-up for various reasons, including collection of data for large households (more than five people) and households with missing data for critical items (U.S. Census Bureau, 2009). All incoming questionnaires are run through an Automated Clerical Edit that identifies cases that require FEFU. A significant increase in the FEFU workload for Internet returns would add cost to ACS operations.

We did not send cases to the FEFU operation in this test, but we intended to compare the percent of returns that would require FEFU across strategies to see if any of the notification strategies caused an increase in the FEFU rate. Unfortunately, we became aware of inaccuracies in how the Automated Clerical Edit was applied to Internet cases. The rates we computed were questionable at best. Thus, we elected not to provide the rates for this test.

### **3.5 Analysis Universe**

Most of the analyses in this report focus on responses received in the first month of data collection, which reflects the timing when the ACS typically transitions to nonresponse follow-up by CATI. We use the first month for most analyses because we do not know what the impact of introducing the transition to CATI would have been on the experimental cases. Also, this test was designed to study the impact of the Internet mode in the first month of data collection under the assumption that we would maintain the current ACS operational design.

### **3.6 Variability in Monthly Mailing Schedule**

The ACS mailing schedule is based on timing rules rather than calendar dates. For instance, we generally send the initial survey questionnaire on the last Monday of the month prior to the data collection month. We identify nonrespondents for the replacement questionnaire on the Monday three weeks after the initial questionnaire mailing, and send the replacement questionnaire on Thursday of that week. We start the CATI nonresponse follow-up operation on the first day of the following month.

The way in which this schedule worked for the month of April 2011 compressed the amount of time for response before the start of the CATI operation. The CATI operation started on a Sunday (May 1, 2011), which means the response rates for the mail month (and the nonresponse universe identification for CATI) correspond to the last business day before the start of CATI (April 29, 2011) using all of the responses that were returned and checked-in by the night before (April 28, 2011). This effectively reduced the amount of time for respondents to return a paper form, and most affected the Push Regular treatment which had only one week between the mailing of the paper questionnaire to nonrespondents (April 21, 2011), and the date by which they had to have the form returned and acknowledged.

### 3.7 Item Nonresponse Rates

We used unedited, raw data to compute the evaluation measures in this report. We used raw data because we did not want edits and imputation to mask any potential problems with the data. As such, we cannot assess the impact of the edits and imputation on the final item nonresponse rates that would be used in ACS production.

Also, in calculating the item nonresponse rates, we looked at the presence of an answer, not at the validity of that answer. This may give an unfair advantage to the item nonresponse rates for Internet cases because the data we used from the mail responses had been keyed, which in many cases means that a invalid answer (i.e. “N/A”, “Don’t Know”, “None of your business”, etc.) for a particular question was turned into a blank response for that question. That same invalid answer in an Internet case was not turned into a blank response, and therefore, was counted as a response. Also, when multiple responses were marked for certain questions requiring a single response on the mail form, the responses are blanked because we do not know the true answer. However, the Internet instrument was programmed to allow only one answer for those questions, potentially leading to lower item nonresponse for those items.

## 4. RESULTS

While any test of an Internet response option presents numerous items for analysis, our main focus in this test was the effect of providing an Internet response option on the overall self-administered response rates. Besides these rates, we looked at the related items to get an overall picture of the effects of the new response mode and to gauge potential cost savings: Internet usage rates, Internet access rates and Internet break-off rates, item nonresponse rates, demographic profiles of respondents by mode and treatment, speed of responses, and amount of multiple returns. Again, we conducted the analyses separately for each stratum to determine which notification strategy treatment performed best in each stratum.

### 4.1 Does offering an Internet response option change the total self-administered (including mail and Internet) response rate?

The self-administered response rate is the percent of all sampled addresses<sup>2</sup> that provided a non-blank mail, Internet or Telephone Questionnaire Assistance<sup>3</sup> (TQA) response. Current ACS operations consider a form to be non-blank (and eligible for FEFU) even if there is only minimal information provided, specifically, a phone number or name of a household member. Thus, some Internet cases which broke-off before completing the survey are still considered responses in these rates.

Also, both mail and Internet responses may ultimately be deemed not complete enough to be processed, so these rates may be slightly inflated, but the rates of this are very low (about 0.1 percent) (U.S. Census Bureau, 2010).

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<sup>2</sup> The sample was selected only from mailable cases.

<sup>3</sup> The TQA process allows respondents to call a toll-free number to receive help or complete the survey. TQA responses are included with mail responses because they usually occur during the mail data collection month.

The rates presented in this report are different from the mode-specific and overall survey response rates that ACS publishes since we do not know the eligibility status of the addresses in the sample without personal visit follow-up, and thus we cannot remove vacant or nonexistent units from the denominator.

Table 4 contains the self-administered response rates for each treatment and Control by strata. These rates indicate the amount of self-response received at the time when we would normally transition to nonresponse follow-up by CATI, after the first month of data collection (April 28, 2011). The table also includes the percent of sampled cases that responded by Internet. Table 5 contains statistical testing of the total self-administered response rate according to the three-step process identified in Section 2.6 for both strata for the same time period.

Table 4. Self-Administered Response Rates and Internet Response Rates by Notification Strategy and Stratum (through April 28, 2011)

Stratum	Notification Strategy				
	Control (Mail only)	Prominent Choice	Not Prominent Choice	Push Regular	Push Accelerated
<i>Targeted</i>					
Response Rate (SE)	38.1 (0.2)	38.3 (0.4)	37.6 (0.4)	31.1 (0.3)	40.6 (0.4)
INT Response Rate (SE)	N/A	9.8 (0.2)	3.5 (0.2)	28.6 (0.3)	28.1 (0.4)
<i>Not Targeted</i>					
Response Rate (SE)	29.7 (0.2)	30.4 (0.4)	29.8 (0.3)	19.8 (0.4)	29.8 (0.4)
INT Response Rate (SE)	N/A	6.3 (0.2)	2.0 (0.1)	17.1 (0.3)	17.3 (0.3)

Source: U.S. Census Bureau, 2011 ACS Internet Test, April to May 2011

Table 5. Differences in Self-Administered Response Rates by Notification Strategy and Stratum (through April 28, 2011)

Stratum	Compare Choice Strategies		Compare Push Strategies		Compare Best Choice and Best Push		Compare Best Strategy and Control	
	Difference (Prom - Not Prom)	Best	Difference (Reg - Accel)	Best	Difference (Choice - Push)	Best	Difference (Best - Control)	Best
<i>Targeted</i>								
Estimate (SE)	0.7 (0.5)	Prom	-9.5* (0.5)	Push Accel	-2.3* (0.6)	Push Accel	2.6* (0.5)	Push Accel
<i>Not Targeted</i>								
Estimate (SE)	0.6 (0.5)	Prom	-10.1* (0.5)	Push Accel	0.5 (0.6)	Prom Choice	0.7 (0.4)	Prom Choice

Source: U.S. Census Bureau, 2011 ACS Internet Test, April to May 2011

\* Indicates statistical significance at  $\alpha < 0.1$ , controlling for multiple comparisons.

Offering the choice between Internet and mail, regardless of how prominently that choice was advertised, achieved self-response rates that tracked closely to offering mail only, in both strata. This result is very positive considering the substantial decrease in self-response we experienced when we provided a choice between modes in the 2000 ACS Internet test (Griffin *et al.*, 2001). As expected, more cases responded by Internet in the Prominent Choice compared to the Not Prominent Choice.

Surprisingly, in Targeted areas, self-response rates for the Push Accelerated strategy were better than those for the Prominent Choice (by 2.3 percentage points) and Control (by 2.6 percentage points). This is the first test where the Census Bureau has seen a push strategy perform well in a household survey. Moreover, the majority of respondents in the Push Accelerated treatment used Internet.

Perhaps the most unexpected finding was the strong performance of the Push Accelerated strategy in Not Targeted areas. Self-response rates were not significantly different from the rates from the Choice strategies or the Control<sup>4</sup>. Similar to Targeted areas, the majority of response in Push Accelerated came from Internet.

Comparing the two Push strategies clearly shows that moving the mailing of the paper questionnaire to nonrespondents up by one week was the key to the success of this strategy in both strata. Moving this mailing up allowed more time for mail returns to be received before we typically begin the next stage of data collection (nonresponse follow-up by CATI). As mentioned in the limitations, the regular ACS operational schedule (as implemented in the month of April 2011) only provided a seven-day window between mail out of the paper form to nonrespondents and the time when we typically begin CATI nonresponse follow-up. This is not enough time for households that are receiving the paper form for the first time to return a response. In fact, if we look at response rates for the Push Regular and Push Accelerated 14 days after we mailed out the paper questionnaire to nonrespondents (May 5<sup>th</sup> and April 28<sup>th</sup>, respectively), the rates are in the same range as we would expect. Thus, the Push Regular treatment is simply at a disadvantage because of the ACS operational schedule for the month of April 2011.

As we will discuss in Section 4.3, we observed a fair amount of Internet break-offs (cases that did not get to the last screen of the survey) in this test. Most of these break-offs had enough data to be considered non-blank, so they were included as responses in the rates in Table 4. However, we had some concerns about whether Internet break-offs should be considered responses. While we include partially complete mail returns as responses, mail respondents signify that they have completed as much information as they are willing to provide by the sheer act of sending back the form. On the Internet, we do not know whether households that started but did not complete their survey intended to come back to finish it at a later time. The decision on whether to treat Internet break-offs as responses impacts the response rate, so we wanted to study the impact to response if we removed some Internet break-offs from the respondent pool.

First, we classified Internet break-offs by how far the respondent made it through the survey. The survey has three main sections: basic demographic questions (age/date of birth, relationship, sex, race, and Hispanic origin) for each person in the household, housing questions, and detailed questions about each person. A response was deemed a “sufficient partial” when the respondent got to the first question in the detailed questions section for the first person in the household, which is the same criteria used for CATI/CAPI. An “insufficient partial” response did not get far enough into the survey to become a sufficient partial.

We then recalculated the response rates in Table 4 after removing the Internet insufficient partials (Tables 6 and 7).

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<sup>4</sup> Though not reflected in Table 5, the Push Accelerated strategy was tested against Control in the Not Targeted stratum, and the difference was not statistically significant.



Table 6. Self-Administered Response Rates and Internet Response Rates (excluding Internet break-offs that were insufficient partials) by Notification Strategy and Stratum (through April 28, 2011)

Stratum	Notification Strategy				
	Control (Mail only)	Prominent Choice	Not Prominent Choice	Push Regular	Push Accelerated
<i>Targeted</i>					
Response Rate (SE)	38.1 (0.2)	38.1 (0.4)	37.5 (0.4)	29.9 (0.3)	39.6 (0.4)
INT Response Rate (SE)	N/A	9.6 (0.2)	3.4 (0.2)	27.5 (0.3)	27.0 (0.4)
<i>Not Targeted</i>					
Response Rate (SE)	29.7 (0.2)	30.2 (0.4)	29.7 (0.3)	19.0 (0.4)	29.3 (0.4)
INT Response Rate (SE)	N/A	6.1 (0.2)	2.0 (0.1)	16.4 (0.3)	16.7 (0.3)

Source: U.S. Census Bureau, 2011 ACS Internet Test, April to May 2011

Table 7. Differences in Self-Administered Response Rates (excluding Internet break-offs that were insufficient partials) by Notification Strategy and Stratum (through April 28, 2011)

Stratum	Compare Choice Strategies		Compare Push Strategies		Compare Best Choice and Best Push		Compare Best Strategy and Control	
	Difference (Prom - Not Prom)	Best	Difference (Reg - Accel)	Best	Difference (Choice - Push)	Best	Difference (Best - Control)	Best
<i>Targeted</i>								
Estimate (SE)	0.5 (0.5)	Prom	-9.7* (0.6)	Push Accel	-1.5* (0.6)	Push Accel	1.5* (0.5)	Push Accel
<i>Not Targeted</i>								
Estimate (SE)	0.5 (0.5)	Prom	-10.2* (0.5)	Push Accel	0.9 (0.6)	Prom Choice	0.5 (0.4)	Prom Choice

Source: U.S. Census Bureau, 2011 ACS Internet Test, April to May 2011

\* Indicates statistical significance at  $\alpha < 0.1$ , controlling for multiple comparisons.

The removal of these cases affected the Push treatments most because Internet usage was very high in these treatments. In the Push Accelerated treatment, the response rates were reduced by 0.5 to 1.0 percentage points (compared to Table 4), while the rates in the Push Regular were reduced by 0.8 to 1.2 percentage points. Nonetheless, the overall conclusion is still same; that is, Push Accelerated still has the highest response rate in the Targeted stratum and is not different from the Prominent Choice treatment or Control in the Not Targeted stratum.

We did not conduct CATI nonresponse follow-up on cases in the experimental treatments in this test (control cases were included in CATI starting May 1, 2011). However, we did send the fifth mailing piece, the additional mailing postcard, to households that did not respond by mail or Internet, and for which we could not find a phone number.<sup>5</sup> These cases typically receive the postcard instead of a CATI call early in the second month of data collection (for this test, May 5, 2011). There were no remaining

<sup>5</sup> Households that accessed the Internet, but did not provide enough data to be considered a sufficiently complete response were mailed the additional postcard. Internet respondents who provided a sufficiently complete response were mistakenly excluded from this postcard mailing.

self-response rate differences among the strategies in the Targeted stratum<sup>6</sup> at the end of the second month of data collection. The Prominent Choice treatment had significantly higher self-response at the end of the data collection period than the Push Accelerated treatment in the Not Targeted stratum. Again, these rates do not simulate the rates we would expect if the treatment cases had gone to CATI nonresponse follow-up (see Appendix B).

The remaining analyses in this report are based on all responses, including Internet break-offs that were insufficient partials, unless otherwise noted.

#### 4.2 Are the Internet usage rates statistically different by notification strategy?

In Tables 4 and 6 above, we displayed the percent of sampled households that used the Internet to respond. The Internet usage rate is a related measure that shows the percent of all responses that came from Internet by the end of the first month of data collection (Table 8). We expected that the Prominent Choice treatment would have more Internet response than the Not Prominent Choice since the message about the mode choice was featured in that treatment. We also anticipated that the Push treatments would gain more Internet response than the Choice treatments because we did not provide a paper questionnaire until a few weeks into the data collection period. We compared the percent of responses that came from Internet across the treatments in Table 9.

Table 8. Internet Usage Rates by Notification Strategy and Stratum (through April 28, 2011)

Stratum	Notification Strategy			
	Prominent Choice	Not Prominent Choice	Push Regular	Push Accelerated
<i>Targeted</i>				
INT Usage Rate	25.7	9.4	92.0	69.1
(SE)	(0.6)	(0.4)	(0.4)	(0.6)
<i>Not Targeted</i>				
INT Usage Rate	20.6	6.9	86.5	57.9
(SE)	(0.6)	(0.4)	(0.6)	(0.7)

Source: U.S. Census Bureau, 2011 ACS Internet Test, April to May 2011

Table 9. Differences in Internet Usage Rates by Notification Strategy and Stratum (through April 28, 2011)

Stratum	Compare Choice Strategies		Compare Push Strategies		Compare Best Choice and Best Push	
	Difference (Prom - Not Prom)	Best	Difference (Reg - Accel)	Best	Difference (Choice - Push)	Best
<i>Targeted</i>						
Estimate	16.3*	Prom	23.0*	Push Reg	-66.4*	Push Reg
(SE)	(0.7)		(0.8)		(0.8)	
<i>Not Targeted</i>						
Estimate	13.8*	Prom	28.6*	Push Reg	-65.8*	Push Reg
(SE)	(0.7)		(0.9)		(0.9)	

Source: U.S. Census Bureau, 2011 ACS Internet Test, April to May 2011

\* Indicates statistical significance at  $\alpha < 0.1$ , controlling for multiple comparisons.

As expected, there were significantly more Internet responses in the Prominent Choice compared to the Not Prominent Choice in both strata. In fact, the Internet usage rate for Prominent Choice was almost

<sup>6</sup> The self-response rate for the Control (mail only) at the end of the data collection period was significantly higher than the experimental treatments due to the fact that CATI nonresponse follow-up calls resulted in some mail returns (treatment cases did not go to CATI). We removed the Control from Tables B-1 and B-2 since this is an unfair comparison.

three times higher than the rate in Not Prominent Choice. Although the difference in Internet usage between the Choice treatments is large, it is encouraging that seven to nine percent of response came from Internet in the Not Prominent treatment since we only advertised the online option on the paper questionnaire in a subtle fashion. We chose to advertise on the questionnaire because we have observed in cognitive testing that respondents tend to focus on the questionnaire and disregard the other materials in the mailing.

We also found significantly more responses came from Internet in the Push treatments than the Choice treatments in both strata, by as much as 40 to 65 percentage points. In fact, the majority of responses in both Push treatments came from Internet in both strata. The motivation behind the Push treatments was to drive response to the Internet to the extent possible, and certainly, the Push approach was successful in doing that.

The Push Regular treatment appears to have a greater proportion of Internet response than the Push Accelerated at the time we would identify the CATI nonresponse follow-up universe, but this difference is confounded by the fact that overall response is much lower in the Push Regular treatment (due to the lack of mail returns). By the end of the second month of data collection, Internet usage was marginally significantly higher in Push Regular than Push Accelerated in the Targeted stratum (tables not shown).

#### **4.3 Did the rate of accessing the Internet instrument and subsequent break-offs differ among notification strategies?**

We wanted to study response behavior surrounding the online survey. To do this, we computed the following three measures:

- The percent of sampled units in each treatment that accessed the online survey by the end of the second month of data collection (May 2011);
- The percent of those that accessed the survey but never reached the end of the survey (break-off);
- The percentage of those that broke-off the online survey who ultimately returned a paper questionnaire.

Table 10 contains the access and break-off rates by treatment and strata, as well as the percent of break-offs that returned a mail form, and Table 11 contains significance testing of these rates.

Table 10. Internet Access Rates, Break-off Rates, and Percent of Break-offs that Returned a Mail Form by Notification Strategy and Stratum (through May 31, 2011)

Stratum	Notification Strategy			
	Prominent Choice	Not Prominent Choice	Push Regular	Push Accelerated
<i>Targeted</i>				
Accessed	12.4	4.4	32.3	30.9
(SE)	(0.3)	(0.2)	(0.3)	(0.4)
Break-off	12.3	10.2	17.0	16.9
(SE)	(0.7)	(1.1)	(0.5)	(0.6)
Break-offs with mail return	12.7	20.9	11.7	10.2
(SE)	(2.3)	(5.0)	(1.1)	(1.1)
<i>Not Targeted</i>				
Accessed	7.9	2.5	19.6	19.0
(SE)	(0.2)	(0.1)	(0.3)	(0.3)
Break-off	13.0	12.8	17.6	16.9
(SE)	(0.9)	(1.7)	(0.7)	(0.7)
Break-offs with mail return	11.1	12.5	15.2	13.1
(SE)	(2.4)	(4.9)	(1.3)	(1.5)

Source: U.S. Census Bureau, 2011 ACS Internet Test, April to May 2011

Table 11. Differences in Internet Access Rates, Break-off Rates, and Percent of Break-offs that Returned a Mail Form by Notification Strategy and Stratum (through May 31, 2011)

Stratum	Compare Choice Strategies		Compare Push Strategies		Compare Best Choice and Best Push	
	Difference (Prom - Not Prom)	Best	Difference (Reg - Accel)	Best	Difference (Choice - Push)	Best
<i>Targeted</i>						
Accessed	8.0*	Prom	1.4*	Push Reg	-19.9*	Push Reg
(SE)	(0.3)		(0.6)		(0.5)	
Break-off	2.1	Not Prom	0.1	Push Accel	-6.7*	Not Prom
(SE)	(1.3)		(0.7)		(1.2)	
Break-offs with mail return	-8.2	Not Prom	1.5	Push Reg	9.2	Not Prom
(SE)	(5.4)		(1.4)		(5.2)	
<i>Not Targeted</i>						
Accessed	5.4*	Prom	0.6	Push Reg	-11.8*	Push Reg
(SE)	(0.3)		(0.4)		(0.4)	
Break-off	0.1	Not Prom	0.8	Push Accel	-4.0*	Not Prom
(SE)	(2.0)		(1.0)		(1.8)	
Break-offs with mail return	-1.4	Not Prom	2.1	Push Reg	-2.7	Push Reg
(SE)	(5.3)		(2.0)		(4.9)	

Source: U.S. Census Bureau, 2011 ACS Internet Test, April to May 2011

\* Indicates statistical significance at  $\alpha < 0.1$ , controlling for multiple comparisons.

As expected, significantly more households accessed the online survey in the Prominent Choice treatment compared to the Not Prominent Choice treatment due to the differences in how we advertised the Internet option. Similar to the Internet usage rates presented in Table 8, we also found that a much higher percent of households accessed the Internet survey in the Push treatments than the Choice treatments in both strata. The Push Regular treatment had a marginally significantly higher access rate than the Push Accelerated in the Targeted stratum.

Next, we turned our attention to the break-off rates. The rates are within the scope of what we have seen in other studies (Peytchev, 2009; Griffin *et al.*, 2001; Bentley *et al.*, 2011). We did not observe any differences in break-off rates between the two Choice treatments or the two Push treatments in both strata. We did find, however, that significantly more households broke-off in the Push treatments compared to the Choice treatments. We were not surprised by this finding. Most households that were pushed to use Internet did not see the paper questionnaire in advance of starting the online survey<sup>7</sup>, so they may not have expected the length or content of the survey when attempting to respond. Also, it is possible that respondents whom we pushed towards using the Internet may have not been comfortable using the technology, which may have also led to the increased break-off rates.

Looking across treatments, approximately 10 to 20 percent of the Internet break-offs ended up returning a mail form. We plan to look at these cases closer in future research so we can determine what factors caused them to abandon the Internet survey and eventually respond by mail. There were no significant differences in the rate of break-offs returning a mail form across the treatments.

#### **4.4 How do item nonresponse rates differ between Internet and mail responses as well as notification strategies?**

The purpose of this analysis was to study question-level response behavior between the two data collection modes and notification strategies. We first explored item nonresponse across mail and Internet returns to compare the completeness of the returns by mode. These rates were computed on raw, pre-edited data, so they do not reflect final ACS item nonresponse rates.

We found that the questions in the later part of the questionnaire (detailed person section) were much more likely to suffer from item nonresponse on the Internet than mail. In fact, item nonresponse rates for topics like place of birth, educational attainment, language spoken at home, and disability that appear in that section of the questionnaire were almost double the rates for the mail responses. We did find, however, that Internet item nonresponse rates were similar to (and in some cases better) than the rates for mail responses in the earlier sections of the questionnaire (basic demographic and housing questions).

Because Internet item nonresponse was worse in the detailed person section towards the end of the survey, we suspected that Internet break-offs were to blame. To confirm this theory, we re-computed the item nonresponse rates in Table 12 (see shaded column) after removing the Internet break-offs, specifically those that did not provide enough data to be considered sufficiently complete.

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<sup>7</sup> Most Internet response in the Push treatments came in before the paper questionnaire was mailed to nonresponding households.

Table 12. Item Nonresponse Rates for Selected Questions by Mode and Stratum (for Households that Responded by April 28, 2011; standard errors in parentheses)

Variable	Targeted			Not Targeted		
	Internet	Internet (excl. Insuff. Partials)	Mail	Internet	Internet (excl. Insuff. Partials)	Mail
<i>Basic Demographic Questions</i>						
Age/DOB	1.8* (0.1)	0.7 (0.1)	0.9 (0.1)	1.6* (0.1)	0.5** (0.1)	1.1 (0.1)
Sex	0.4** (0.1)	0.1** (0.0)	2.2 (0.1)	0.5** (0.1)	0.2** (0.0)	2.6 (0.1)
Relationship	0.2** (0.1)	0.0** (0.0)	0.6 (0.1)	0.2** (0.0)	0.0** (0.0)	0.8 (0.1)
Hispanic Origin	1.6** (0.1)	0.4** (0.1)	4.6 (0.2)	1.4** (0.2)	0.3** (0.1)	6.6 (0.3)
Race	1.6 (0.1)	0.4** (0.1)	1.9 (0.1)	1.5** (0.2)	0.3** (0.1)	2.6 (0.2)
<i>Housing Questions</i>						
Type of Building	1.6* (0.1)	0.1** (0.0)	1.2 (0.1)	1.5** (0.2)	0.0** (0.0)	2.0 (0.2)
Number of Rooms	2.5 (0.1)	0.6** (0.1)	2.1 (0.1)	2.3** (0.2)	0.4** (0.1)	3.2 (0.2)
Number of Vehicles	2.6* (0.1)	0.8** (0.1)	1.5 (0.1)	2.6* (0.2)	0.8** (0.1)	2.0 (0.2)
Food Stamps	2.9* (0.2)	0.7** (0.1)	1.8 (0.1)	3.0 (0.2)	0.8** (0.1)	2.6 (0.2)
Tenure	2.8** (0.2)	0.6** (0.1)	3.5 (0.2)	2.9** (0.2)	0.7** (0.1)	4.7 (0.2)
<i>Detailed Person Questions</i>						
Place of Birth	11.6* (0.4)	8.7* (0.3)	4.0 (0.2)	11.9* (0.4)	9.1* (0.4)	5.7 (0.3)
Educational Attainment	10.3* (0.3)	8.4* (0.3)	5.5 (0.2)	10.8* (0.4)	8.9 (0.4)	8.0 (0.3)
Speak Another Language	10.6* (0.3)	8.6* (0.3)	4.9 (0.2)	10.9* (0.4)	9.0* (0.4)	6.9 (0.3)
Health Insurance	12.6* (0.4)	9.8* (0.3)	4.6 (0.2)	13.0* (0.5)	10.1* (0.4)	6.5 (0.3)
Difficulty Hearing	12.5* (0.4)	9.7* (0.3)	4.5 (0.2)	12.9* (0.4)	10.1* (0.4)	6.3 (0.3)
Work Last Week	10.0* (0.3)	8.1* (0.3)	5.6 (0.2)	10.4* (0.4)	8.5* (0.3)	7.5 (0.3)

Source: U.S. Census Bureau, 2011 ACS Internet Test, April to May 2011

\* Indicates that mail is statistically significantly lower than Internet at  $\alpha < 0.1$ .

\*\* Indicates that Internet is statistically significantly lower than mail at  $\alpha < 0.1$

When we excluded Internet break-offs that were insufficient partial responses from the rates, we saw some improvement in the item nonresponse rates for Internet, but they were still higher than mail for the detailed person questions. For the demographic and the housing sections, however, we saw substantial improvements in the Internet item nonresponse rates. In fact, item nonresponse rates were mostly lower for Internet returns than mail returns in the demographic and housing sections when we removed the break-offs that were insufficient partial responses.

One other interesting observation from Table 12 is that the Internet achieves item nonresponse rates that are in the same range between the Targeted and Not Targeted stratum. Mail cases, on the other hand, trend towards having more item nonresponse in Not Targeted than Targeted. This may suggest that using Internet has some benefit for item nonresponse in the Not Targeted stratum.

Our focus thus far has been on comparing Internet and mail responses, but we also wanted to study the item nonresponse rates for the treatments since they contain a blend of Internet and mail responses. Table 13 contains item nonresponse rates for each treatment when we included all Internet break-offs. Table 14 displays item nonresponse rates when we excluded the Internet break-offs that were insufficient partial responses.

As Table 13 shows, item nonresponse rates for each treatment, particularly among the detailed person questions, are impacted by the amount of Internet response in that treatment. Ninety-two percent of responses in Push Regular (in Targeted) are from Internet so the item nonresponse rates for that treatment are most affected by the Internet break-offs, followed by Push Accelerated (of which, 69 percent is Internet response in Targeted). The Not Prominent Choice treatment, where Internet response is only nine percent in Targeted, was least affected by the Internet break-offs.

Table 13. Item Nonresponse Rates for Selected Questions by Notification Strategy (for Households that Responded by April 28, 2011; standard errors in parentheses)

Variable	Targeted					Not Targeted				
	Control (mail only)	Not Prom Choice	Prom Choice	Push Reg	Push Accel	Control (mail only)	Not Prom Choice	Prom Choice	Push Reg	Push Accel
<i>Basic Demographic Questions</i>										
Age/DOB	0.8 (0.1)	0.7 (0.1)	1.0 (0.1)	1.9 (0.2)	1.7 (0.2)	1.1 (0.0)	0.9 (0.1)	1.1 (0.2)	1.9 (0.4)	1.4 (0.2)
Sex	2.2 (0.1)	1.9 (0.1)	1.7 (0.1)	0.6 (0.1)	0.9 (0.1)	2.5 (0.1)	2.4 (0.2)	1.9 (0.2)	0.8 (0.2)	1.3 (0.1)
Relationship	0.6 (0.0)	0.5 (0.1)	0.5 (0.1)	0.2 (0.1)	0.3 (0.1)	0.8 (0.0)	0.8 (0.1)	0.6 (0.1)	0.3 (0.1)	0.3 (0.1)
Hispanic Origin	4.1 (0.1)	3.6 (0.2)	3.6 (0.2)	2.0 (0.2)	2.8 (0.2)	5.9 (0.1)	5.6 (0.3)	5.4 (0.4)	2.2 (0.4)	3.5 (0.3)
Race	1.9 (0.1)	1.6 (0.2)	1.6 (0.2)	1.9 (0.2)	1.8 (0.2)	2.5 (0.1)	2.4 (0.2)	2.4 (0.2)	1.8 (0.4)	1.8 (0.2)
<i>Housing Questions</i>										
Type of Building	1.4 (0.1)	0.9 (0.1)	1.1 (0.1)	1.8 (0.2)	1.8 (0.2)	2.4 (0.1)	1.4 (0.2)	1.9 (0.2)	1.9 (0.3)	2.1 (0.3)
Number of Rooms	2.3 (0.1)	1.8 (0.2)	1.9 (0.2)	2.9 (0.2)	2.7 (0.2)	3.3 (0.1)	2.8 (0.3)	2.8 (0.3)	2.6 (0.3)	3.1 (0.3)
Number of Vehicles	1.7 (0.1)	1.2 (0.2)	1.8 (0.2)	2.9 (0.2)	2.4 (0.2)	2.4 (0.1)	1.6 (0.2)	2.1 (0.2)	3.0 (0.3)	2.5 (0.3)
Food Stamps	1.7 (0.1)	1.7 (0.2)	1.7 (0.2)	3.4 (0.2)	2.7 (0.2)	2.5 (0.1)	2.3 (0.2)	2.5 (0.2)	3.5 (0.3)	2.9 (0.3)
Tenure	3.3 (0.1)	2.9 (0.3)	3.2 (0.2)	3.3 (0.2)	3.2 (0.2)	4.7 (0.1)	4.2 (0.3)	4.2 (0.3)	3.7 (0.4)	3.7 (0.3)
<i>Detailed Person Questions</i>										
Place of Birth	3.2 (0.1)	3.8 (0.3)	5.5 (0.3)	12.4 (0.5)	10.6 (0.5)	5.2 (0.1)	5.7 (0.4)	6.4 (0.4)	13.0 (0.6)	10.3 (0.6)
Educational Attainment	4.7 (0.1)	5.0 (0.3)	6.4 (0.3)	11.1 (0.5)	9.9 (0.4)	7.5 (0.1)	7.7 (0.4)	8.0 (0.4)	11.8 (0.7)	10.3 (0.5)
Speak Another Language	4.0 (0.1)	4.4 (0.3)	6.0 (0.3)	11.2 (0.5)	10.0 (0.4)	6.4 (0.1)	6.5 (0.3)	7.3 (0.4)	11.8 (0.6)	10.1 (0.6)
Health Insurance	3.7 (0.1)	4.4 (0.3)	6.2 (0.3)	13.5 (0.5)	11.5 (0.5)	5.9 (0.1)	6.4 (0.4)	7.1 (0.4)	14.0 (0.7)	11.4 (0.6)
Difficulty Hearing	3.7 (0.1)	4.4 (0.2)	6.1 (0.3)	13.4 (0.6)	11.3 (0.5)	5.8 (0.1)	5.9 (0.4)	7.2 (0.4)	13.9 (0.7)	11.3 (0.6)
Work Last Week	4.7 (0.1)	4.7 (0.2)	6.4 (0.3)	10.8 (0.4)	9.7 (0.4)	7.0 (0.2)	7.2 (0.4)	7.5 (0.5)	11.4 (0.6)	9.8 (0.5)

Source: U.S. Census Bureau, 2011 ACS Internet Test, April to May 2011

When we removed the Internet break-offs that were insufficient partial responses (Table 14), we saw some improvement in the item nonresponse rates, particularly for the treatments heaviest in Internet returns.



Table 14. Item Nonresponse Rates for Selected Questions by Notification Strategy (excluding Internet break-offs that were insufficient partials) (for Households that Responded by April 28, 2011; standard errors in parentheses)

Variable	Targeted					Not Targeted				
	Control (mail only)	Not Prom Choice	Prom Choice	Push Reg	Push Accel	Control (mail only)	Not Prom Choice	Prom Choice	Push Reg	Push Accel
<i>Basic Demographic Questions</i>										
Age/DOB	0.8 (0.1)	0.7 (0.1)	0.8 (0.1)	0.7 (0.1)	0.9 (0.1)	1.1 (0.0)	0.9 (0.1)	0.9 (0.1)	0.6 (0.2)	0.8 (0.1)
Sex	2.2 (0.1)	1.9 (0.1)	1.6 (0.1)	0.2 (0.0)	0.8 (0.1)	2.5 (0.1)	2.4 (0.2)	1.9 (0.2)	0.4 (0.1)	1.1 (0.1)
Relationship	0.6 (0.0)	0.5 (0.1)	0.5 (0.1)	0.0 (0.0)	0.3 (0.1)	0.8 (0.0)	0.8 (0.1)	0.6 (0.1)	0.1 (0.0)	0.3 (0.0)
Hispanic Origin	4.1 (0.1)	3.5 (0.2)	3.5 (0.2)	0.7 (0.1)	1.9 (0.2)	5.9 (0.1)	5.6 (0.3)	5.2 (0.3)	0.9 (0.2)	2.8 (0.3)
Race	1.9 (0.1)	1.6 (0.1)	1.5 (0.1)	0.5 (0.1)	0.8 (0.1)	2.5 (0.1)	2.4 (0.2)	2.1 (0.2)	0.4 (0.1)	1.1 (0.1)
<i>Housing Questions</i>										
Type of Building	1.4 (0.1)	0.8 (0.1)	0.9 (0.1)	0.2 (0.1)	0.6 (0.1)	2.4 (0.1)	1.3 (0.2)	1.6 (0.2)	0.4 (0.1)	1.4 (0.2)
Number of Rooms	2.3 (0.1)	1.7 (0.2)	1.7 (0.2)	0.9 (0.1)	1.2 (0.2)	3.3 (0.1)	2.8 (0.3)	2.5 (0.2)	0.6 (0.1)	2.1 (0.3)
Number of Vehicles	1.7 (0.1)	1.1 (0.1)	1.6 (0.2)	0.8 (0.1)	1.0 (0.1)	2.4 (0.1)	1.6 (0.2)	1.8 (0.2)	1.0 (0.2)	1.4 (0.2)
Food Stamps	1.7 (0.1)	1.6 (0.2)	1.4 (0.2)	0.9 (0.1)	1.0 (0.1)	2.5 (0.1)	2.3 (0.2)	2.1 (0.2)	1.1 (0.2)	1.7 (0.2)
Tenure	3.3 (0.1)	2.9 (0.2)	3.0 (0.2)	0.8 (0.1)	1.5 (0.2)	4.7 (0.1)	4.1 (0.3)	3.9 (0.3)	1.3 (0.2)	2.5 (0.2)
<i>Detailed Person Questions</i>										
Place of Birth	3.2 (0.1)	3.6 (0.2)	5.0 (0.3)	9.1 (0.4)	8.2 (0.4)	5.2 (0.1)	5.5 (0.3)	5.8 (0.3)	9.5 (0.5)	8.7 (0.5)
Educational Attainment	4.7 (0.1)	4.9 (0.3)	6.1 (0.3)	8.9 (0.4)	8.4 (0.4)	7.5 (0.1)	7.6 (0.4)	7.6 (0.4)	9.5 (0.6)	9.3 (0.5)
Speak Another Language	4.0 (0.1)	4.3 (0.3)	5.7 (0.3)	9.0 (0.4)	8.5 (0.4)	6.4 (0.1)	6.4 (0.3)	6.9 (0.4)	9.5 (0.6)	9.1 (0.5)
Health Insurance	3.7 (0.1)	4.3 (0.3)	5.7 (0.3)	10.3 (0.4)	9.2 (0.4)	5.9 (0.1)	6.2 (0.4)	6.5 (0.4)	10.6 (0.6)	9.8 (0.5)
Difficulty Hearing	3.7 (0.1)	4.2 (0.2)	5.7 (0.3)	10.1 (0.5)	9.0 (0.4)	5.8 (0.1)	5.8 (0.3)	6.6 (0.4)	10.5 (0.6)	9.8 (0.5)
Work Last Week	4.7 (0.1)	4.7 (0.2)	6.1 (0.3)	8.7 (0.4)	8.2 (0.4)	7.0 (0.2)	7.1 (0.4)	7.2 (0.5)	9.1 (0.5)	8.8 (0.5)

Source: U.S. Census Bureau, 2011 ACS Internet Test, April to May 2011

As mentioned in the limitations section, we failed to send nonresponse mailings to Internet break-offs that were considered sufficient partial responses, so we expect sending that mailing will help reduce item nonresponse. It is hard to say to what extent it will help, but the second ACS Internet follow-up test will shed light on this issue.

#### **4.5 Are there differences in the demographics of Internet respondents and mail respondents? Across notification strategies?**

Previous studies have shown that the characteristics of Internet respondents differ from mail respondents (Brady et al., 2004; Guarino, 2001; Lesser, 2010). We wanted to see if there were differences in demographic characteristics of Internet respondents and mail respondents that suggested differences in self-selection into response modes.

For each stratum, we grouped together all Internet respondents regardless of notification strategy. We did the same for mail respondents across strategies (excluding control panel production cases since they did not have the option to use the Internet). We then statistically compared selected demographic characteristics between Internet respondents and mail respondents to see if there were differences that may be due to respondents' self-selection into a mode. For the person-level items, we used the characteristics of the first person listed in the household roster (Person 1) to classify the household, although we know from past studies that Person 1 is not always the respondent (Hill *et al.*, 2008; DeMaio *et al.*, 1990).

As shown in Tables 15 and 16, compared to mail respondents, Internet respondents in both strata were more likely to be younger, female, Asian, other race, with higher education, and more likely to speak a language other than English at home. We also found that Internet respondents also were less likely to be Black. Some of these demographic trends are evident in previous studies as well; particularly, age and education have often been correlated with Internet use (Lutgig, 2011; Guarino, 2001). We also saw that Internet respondents tend to live in larger households than mail respondents. While this may be related to differences in how we gather household size and roster between the online survey and the mail form, we have also seen this trend in both the 2003 and 2005 National Census Tests as well (Brady *et al.*, 2004; Zajac *et al.*, 2007).

With respect to the finding that females were more likely to respond by Internet than mail, we have evidence that this finding may be a product of the assumption that Person 1 is the respondent. On the mail form, studies have suggested that married females sometimes list their husbands as Person 1 in the roster, even though they are completing the survey for the household (Hill *et al.*, 2008; DeMaio *et al.*, 1990). On the Internet, we asked for the name of the person completing the survey. If the respondent indicated that they lived in the household about which we were asking, they were automatically listed as Person 1. We believe these differences in how Person 1 is identified are driving the finding that Internet has more female respondents than mail.

In addition to the differences between Internet and mail respondents mentioned above, we also found some more differences specific to the Targeted stratum. In the Targeted stratum only, Internet respondents were more likely than mail respondents to be non-White and Hispanic. In the Targeted stratum, Internet respondents were more likely than the mail respondents to be renters, while in the Not Targeted stratum, Internet respondents were less likely to be renters. This difference in trend between the two strata is likely related to the fact that we used the renter characteristic in forming the Targeted stratum for this test (see Section 2.2). The Targeted stratum was designed to include units most likely to use Internet, focusing on young, mobile renters as one of the key constituencies. The Not Targeted stratum contained the balance, and thus, renters in Not Targeted may have been less likely to use Internet by design.

Table 15. Demographic Characteristics for the Respondent (Person 1) for Internet and Mail Returns (excluding Control) in Targeted Stratum (for Households that Responded by April 28, 2011; standard errors in parentheses)

Characteristic	Internet	Mail	Internet – Mail
Age (mean)	48.7 (0.1)	57.6 (0.2)	-8.9* (0.2)
Female	48.7 (0.5)	40.8 (0.5)	7.9* (0.6)
<i>Race</i>			
White	86.1 (0.3)	89.5 (0.3)	-3.3* (0.4)
Black	3.7 (0.2)	4.1 (0.2)	-0.4* (0.3)
Am Ind/AK Native	0.2 (0.0)	0.3 (0.1)	-0.0 (0.1)
Asian	6.2 (0.2)	3.8 (0.2)	2.3* (0.3)
Hawaiian/OPI	0.1 (0.0)	0.1 (0.0)	0.0 (0.0)
Other	1.6 (0.1)	0.7 (0.1)	0.9* (0.1)
Multiple Races	2.1 (0.2)	1.6 (0.1)	0.5* (0.2)
Hispanic	4.9 (0.2)	4.2 (0.2)	0.7* (0.3)
<i>Education</i>			
Less than High School	1.8 (0.1)	5.8 (0.2)	-4.0* (0.3)
High School Graduate	11.9 (0.3)	23.4 (0.5)	-11.5* (0.6)
More than High School	86.3 (0.4)	70.7 (0.5)	15.5* (0.6)
Household Size	2.66 (0.01)	2.28 (0.01)	0.39* (0.02)
Renter	18.1 (0.4)	17.0 (0.4)	1.0* (0.5)
Only Speaks English	88.1 (0.4)	89.8 (0.3)	-1.7* (0.4)

Source: U.S. Census Bureau, 2011 ACS Internet Test, April to May 2011

\* Indicates statistical significance at  $\alpha < 0.1$ .

Table 16. Demographic Characteristics for Respondent (Person 1) for Internet and Mail Returns (excluding Control) in Not Targeted Stratum (for Households that Responded by April 28, 2011; Standard Errors in parentheses)

Characteristic	Internet	Mail	Internet – Mail
Age (mean)	48.2 (0.2)	58.3 (0.2)	-10.1* (0.3)
Female	52.4 (0.6)	45.6 (0.5)	6.8* (0.8)
<i>Race</i>			
White	84.7 (0.5)	85.6 (0.4)	-0.9 (0.6)
Black	5.8 (0.3)	8.3 (0.3)	-2.5* (0.4)
Am Ind/AK Native	0.3 (0.1)	0.4 (0.1)	-0.1 (0.1)
Asian	5.0 (0.3)	2.4 (0.1)	2.7* (0.3)
Hawaiian/OPI	0.1 (0.0)	0.1 (0.0)	-0.0 (0.0)
Other	1.7 (0.2)	1.1 (0.1)	0.7* (0.2)
Multiple Races	2.3 (0.2)	2.1 (0.2)	0.2 (0.3)
Hispanic	6.7 (0.3)	6.4 (0.2)	0.3 (0.3)
<i>Education</i>			
Less than High School	3.8 (0.3)	12.2 (0.4)	-8.4* (0.5)
High School Graduate	16.3 (0.4)	30.3 (0.5)	-14.1* (0.6)
More than High School	79.9 (0.5)	57.5 (0.5)	22.5* (0.7)
Household Size	2.55 (0.02)	2.11 (0.01)	0.44* (0.02)
Renter	23.8 (0.6)	25.3 (0.5)	-1.5* (0.8)
Only Speaks English	88.1 (0.4)	89.2 (0.3)	-1.1* (0.5)

Source: U.S. Census Bureau, 2011 ACS Internet Test, April to May 2011

\* Indicates statistical significance at  $\alpha < 0.1$ .

Tables 17 and 18 display the demographic profiles of responding households across the notification treatments. We included all persons within the responding households for this analysis. The intention of this analysis was to see if there was any impact of using the Internet on the characteristics of responding households. We did not do any significance testing between estimates since we were trying to identify trends rather than measure any specific differences.

The first trend we observed was the impact of the lower response rate (with largely Internet returns) on the characteristics of those in the Push Regular treatment. Their characteristics looked out of sync with those in the other strategies on some dimensions, particularly age, education, race (white, Asian, and multiple races) and Hispanic origin. This was mostly because these results were generated at the end of the first data collection month before most mail returns were received for this treatment. We focused on the remaining treatments since we knew that this treatment was out of sync because of the low response rate.

The characteristics of households in the two Choice treatments (Prominent and Not Prominent Choice) and the Control appear to be close in range. The Push Accelerated characteristics are in line with those of the Choice and Control treatments, except that Push Accelerated responding households (like the Push Regular) appear to be younger and more educated, likely due to heavy Internet use in that treatment. We know that ACS mail respondents tend to be older on average than respondents in the CATI and CAPI modes (Joshipura, 2008), so moving the average age lower might be a benefit of using Internet.

In the Targeted stratum, Push Accelerated responding households may have fewer white people, and perhaps a few more “other” race than those in the Choice and Control treatments. In the Not Targeted Stratum, Push Accelerated households may have less females, Hispanics and renters than the households in the Choice and Control treatments.

While we observed some demographic trends, we are not overly concerned about the impact of the Internet mode on the respondent pool at this stage in the data collection. First, while it is the basis for these comparisons, mail data collection alone does not provide an accurate representation of the characteristics of ACS survey respondents (Joshipura, 2008). We still have nonresponse follow-up operations in CATI and CAPI to help ensure proper demographic representation.

Table 17. Demographic Characteristics of Responding Households by Notification Strategy in Targeted Stratum (for Households that Responded by April 28, 2011; Standard Errors in parentheses)

Characteristic	Control (Mail only)	Prominent Choice	Not Prominent Choice	Push Regular	Push Accelerated
Age (mean)	43.5 (0.1)	42.5 (0.3)	42.4 (0.4)	38.6 (0.3)	40.9 (0.2)
Female	51.3 (0.2)	51.2 (0.3)	51.8 (0.3)	50.7 (0.3)	51.0 (0.3)
<i>Race</i>					
White	86.7 (0.3)	86.4 (0.5)	86.5 (0.5)	83.2 (0.6)	84.9 (0.5)
Black	4.0 (0.2)	3.8 (0.3)	3.7 (0.2)	3.9 (0.3)	3.8 (0.3)
Am Ind/AK Native	0.3 (0.0)	0.3 (0.1)	0.3 (0.1)	0.2 (0.1)	0.2 (0.1)
Asian	5.5 (0.2)	5.4 (0.3)	5.7 (0.3)	7.1 (0.4)	6.2 (0.4)
Hawaiian/OPI	0.1 (0.0)	0.1 (0.0)	0.0 (0.0)	0.1 (0.0)	0.0 (0.0)
Other	0.9 (0.1)	1.3 (0.2)	1.0 (0.2)	2.0 (0.2)	1.8 (0.2)
Multiple Races	2.5 (0.1)	2.6 (0.2)	2.6 (0.2)	3.6 (0.3)	3.0 (0.2)
Hispanic	5.6 (0.2)	5.8 (0.3)	5.5 (0.3)	6.6 (0.4)	6.1 (0.4)
<i>Education</i>					
Less than High School	21.8 (0.2)	22.7 (0.5)	22.4 (0.5)	22.6 (0.5)	22.1 (0.4)
High School Graduate	19.0 (0.2)	17.8 (0.4)	18.5 (0.4)	14.3 (0.4)	17.3 (0.4)
More than High School	59.2 (0.2)	59.5 (0.5)	59.1 (0.5)	63.0 (0.5)	60.6 (0.5)
Household Size	2.35 (0.01)	2.39 (0.02)	2.40 (0.02)	2.60 (0.02)	2.49 (0.02)
Renter	16.7 (0.2)	18.0 (0.5)	16.9 (0.6)	17.4 (0.6)	17.9 (0.6)
Only Speaks English	87.0 (0.2)	87.8 (0.4)	87.8 (0.4)	88.5 (0.5)	87.5 (0.4)

Source: U.S. Census Bureau, 2011 ACS Internet Test, April to May 2011

Table 18. Demographic Characteristics of Responding Households by Notification Strategy in Not Targeted (For Households that Responded by April 28, 2011; Standard Errors in parentheses)

Characteristic	Control (Mail only)	Prominent Choice	Not Prominent Choice	Push Regular	Push Accelerated
Age (mean)	44.8 (0.1)	43.6 (0.3)	44.3 (0.3)	38.7 (0.4)	42.5 (0.3)
Female	52.7 (0.1)	53.0 (0.4)	52.4 (0.4)	51.6 (0.5)	51.5 (0.4)
<i>Race</i>					
White	82.5 (0.2)	81.4 (0.7)	83.2 (0.6)	83.7 (0.8)	82.5 (0.8)
Black	8.0 (0.2)	7.8 (0.5)	7.6 (0.4)	5.6 (0.5)	7.2 (0.6)
Am Ind/AK Native	0.6 (0.0)	0.4 (0.1)	0.5 (0.1)	0.4 (0.1)	0.5 (0.1)
Asian	4.3 (0.1)	4.6 (0.4)	3.7 (0.3)	4.6 (0.5)	4.8 (0.5)
Hawaiian/OPI	0.1 (0.0)	0.2 (0.1)	0.1 (0.0)	0.1 (0.1)	0.1 (0.0)
Other	1.6 (0.1)	2.1 (0.2)	1.8 (0.2)	2.6 (0.3)	2.0 (0.3)
Multiple Races	3.0 (0.1)	3.4 (0.3)	3.1 (0.3)	3.1 (0.3)	3.0 (0.2)
Hispanic	8.6 (0.2)	9.3 (0.5)	9.8 (0.5)	9.8 (0.7)	7.4 (0.5)
<i>Education</i>					
Less than High School	24.2 (0.2)	25.5 (0.6)	23.8 (0.5)	24.1 (0.6)	23.5 (0.5)
High School Graduate	24.8 (0.2)	23.8 (0.5)	25.6 (0.5)	18.3 (0.5)	23.0 (0.5)
More than High School	51.0 (0.2)	50.7 (0.7)	50.6 (0.6)	57.6 (0.8)	53.5 (0.6)
Household Size	2.20 (0.01)	2.24 (0.02)	2.18 (0.02)	2.47 (0.03)	2.33 (0.02)
Renter	25.1 (0.2)	25.5 (0.7)	25.9 (0.8)	23.2 (0.8)	23.6 (0.7)
Only Speaks English	86.0 (0.2)	85.9 (0.6)	85.4 (0.6)	87.3 (0.6)	88.4 (0.6)

Source: U.S. Census Bureau, 2011 ACS Internet Test, April to May 2011

#### 4.6 How does the speed of receiving Internet responses compare to mail responses?

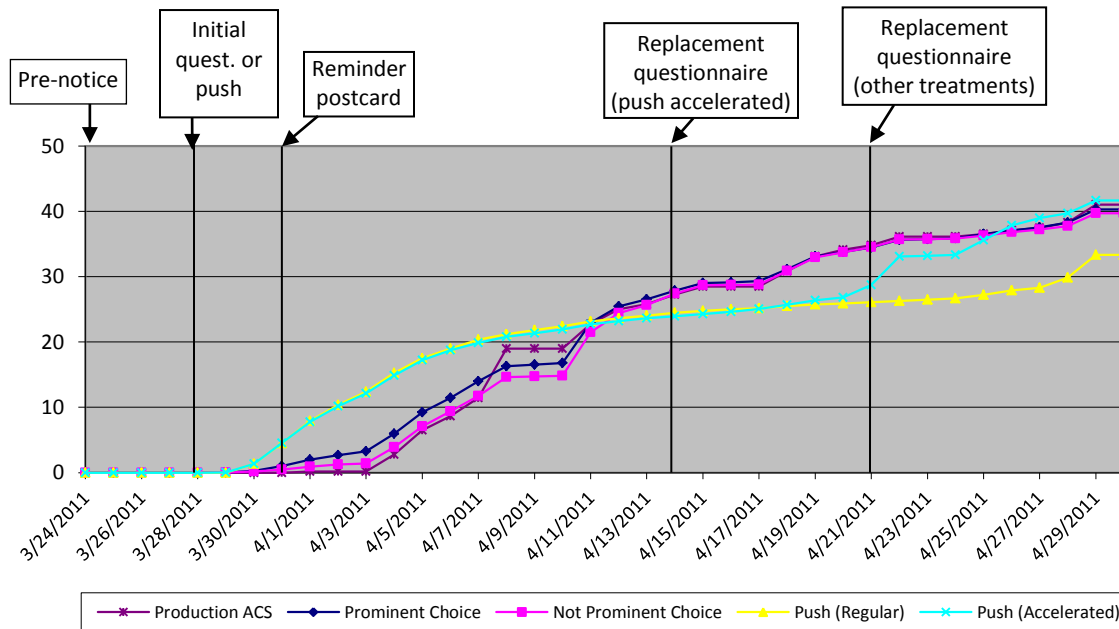
Previous studies have shown that an Internet mode leads to faster response (Brady et al., 2004). Faster response can lead to a reduction in the volume of replacement questionnaires, ultimately reducing associated costs.

We studied the timing of responses from each notification strategy treatment. Figure 2 displays the daily cumulative check-in rates by notification strategy for the Targeted stratum, and Figure 3 contains the rates for the Not Targeted stratum. As expected, Internet responses<sup>8</sup> came in much quicker than mail responses, as check-in rates for the Push treatments in the Targeted stratum were much higher a week after the initial mailing than Control (mail only). Two weeks after the initial mailing, we see the

<sup>8</sup>For comparability between mail and Internet, the check-in rates include non-blank mail responses and complete and sufficient partial Internet responses.

Push treatments begin to lag behind the other treatments as mail returns are accumulating. Moving up the paper questionnaire mailing in the Push Accelerated treatment by one week provides extra time for mail returns, allowing the check-in rate to catch up with the Choice and mail only treatments by the end of the first month of data collection. The lower check-in rate we observed for the Push Regular treatment is due to the fact that the timing does not allow adequate time for households to return the paper form.

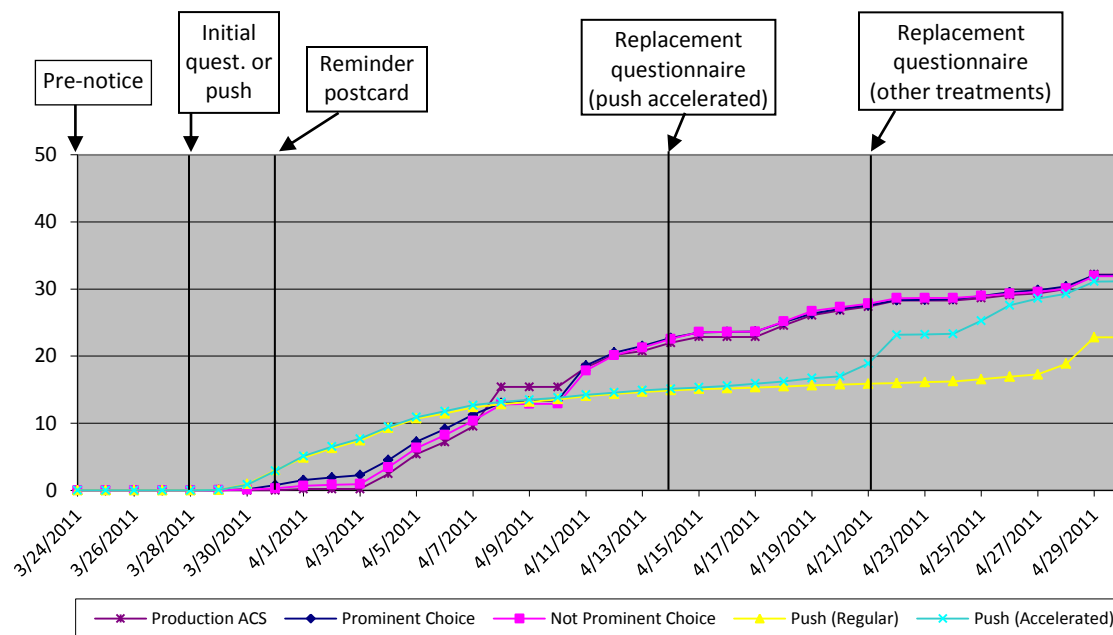
Figure 2. Graph of cumulative daily check-in rates for Targeted Stratum



Source: U.S. Census Bureau, 2011 ACS Internet Test, April to May 2011



Figure 3. Graph of cumulative daily check-in rates for Not Targeted Stratum



Source: U.S. Census Bureau, 2011 ACS Internet Test, April to May 2011

#### 4.7 How many households returned multiple responses?

For the various notification strategy treatments, multiple responses could be received in the following combinations: Mail/Mail, Internet/Mail, and Internet/Mail/Mail. Respondents who completed the survey online cannot submit more than one Internet return. We also counted as multiple responses cases where the respondent started the survey online, did not complete the survey, and then returned a paper questionnaire instead. The purpose of this analysis was to see if introducing the Internet response mode in the various notification strategies impacts the amount of households that respond to the ACS more than one time.

Very few households (one percent or less) responded more than once across all notification strategies (Table 19). There were no significant differences in multiple return rates across the notification strategies (Table 20).

Table 19. Multiple Return Rates by Notification Strategy and Stratum (through May 31, 2011)

Stratum	Notification Strategy				
	Control (Mail only)	Prominent Choice	Not Prominent Choice	Push (Regular)	Push (Accelerated)
<i>Targeted</i>					
Estimate	0.8	0.9	0.6	1.0	0.9
(SE)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)
<i>Not Targeted</i>					
Estimate	0.9	0.9	0.9	0.9	0.9
(SE)	(0.0)	(0.1)	(0.1)	(0.1)	(0.1)

Source: U.S. Census Bureau, 2011 Internet Test, April to May 2011

Table 20. Differences in Multiple Return Rates by Notification Strategy and Stratum (through May 31, 2011)

Stratum	Compare Choice Strategies		Compare Push Strategies		Compare Best Choice and Best Push		Compare Best Strategy and Control	
	Difference (Prom - Not Prom)	Best	Difference (Reg - Accel)	Best	Difference (Choice - Push)	Best	Difference (Best - Control)	Best
<i>Targeted</i>								
Estimate (SE)	0.3 (0.1)	Not Prom	0.1 (0.2)	Push Accel	-0.2 (0.1)	Not Prom Choice	-0.1 (0.1)	Not Prom Choice
<i>Not Targeted</i>								
Estimate (SE)	0.0 (0.2)	Not Prom	0.0 (0.2)	Push Accel	0.0 (0.2)	Push Accel	0.0 (0.1)	Tie

Source: U.S. Census Bureau, 2011 ACS Internet Test, April to May 2011

\* Indicates statistical significance at  $\alpha < 0.1$ , controlling for multiple comparisons.

#### 4.8 What were the perceptions of the information contained in the mail materials?

We instituted a telephone follow-up interview called the Attitudes and Behavior Study (ABS) to measure why respondents chose Internet or paper to respond to the April 2011 ACS Internet Test and whether anything specific in the mailing materials pushed respondents toward one mode over the other. Secondly, the ABS attempted to measure why some did not respond to the ACS at all, and whether nonresponse had to do with the multiple mode offers in the test.

The ABS data showed that not all ACS respondents in the notification strategies knew about the reporting mode choice, even in the treatments where the mode choice was explained in multiple places. Not knowing about the other mode option appears to be a factor for more mail respondents (37 to 47 percent across notification strategies did not know about the Internet form) compared to those who chose the Internet (only 10 to 26 percent did not know about the paper form).

There did not seem to be any messages specific to the mailing materials or motivation strategies that motivated respondents to choose one mode over the other. Rather, about 33 percent of Push Accelerated respondents who chose the paper form said they did so either because they did not have Internet access or because they had computer problems. Less than 18 percent of mail respondents in the Prominent and Not Prominent Choice treatments mentioned those reasons for choosing paper. This difference suggests that respondents in the Push treatments were considering the Internet reporting option more than the other treatments, and that the reason for choosing one mode over the other had more to do with the inability to complete an Internet form, rather than any message or preference. For the mail respondents in the Not Prominent and Prominent Choice (who indicated they knew about the Internet), preference for the paper form was the reason cited the most often.

From the ABS data, we did not find indications that mode paralysis, that is when offered two modes neither are chosen, was a reason for nonresponse. Instead, the main drivers of nonresponse were the lack of knowledge of the ACS mail package and the busy schedules of the potential respondents. No more than 5 to 15 percent of nonresponse can be attributed to the mode choice because that is the proportion of nonrespondents who knew about both modes. For more information from this report, please see Nichols (forthcoming).

## **5. Cost Effectiveness of the Notification Treatments**

An Internet response option is part of the future of ACS data collection. Several factors from this experiment will help determine the cost-effectiveness of the Internet response mode, including the response rate, speed of response as it impacts follow-up contacts, and material cost differences. The American Community Survey Office (ACSO) that oversees production operations for the ACS is developing a cost model into which estimates from this test will be put to determine the strategy that is the most cost-effective. Cost analyses were ongoing at the time we published this report.

## **6. SUMMARY**

We evaluated the various Internet notification treatments across a variety of measures, and now we summarize the cumulative results to determine which treatment provides the most advantages. Among the treatments tested, the Push Accelerated strategy seems to provide a lot of benefits. First, it increased the response rate by 2.6 percentage points over Control in the Targeted stratum, and maintained the response rate in the Not Targeted stratum, at the time we would normally cut for nonresponse follow-up by CATI.

In both strata, most of the response in Push Accelerated came from Internet returns. We know Internet returns come in more quickly than mail returns. However, we also found that Internet break-offs are harmful to the item nonresponse rates, particularly in the detailed person section of the questionnaire.

We observed some demographic trends among responding households in the Push Accelerated treatment relative to Control and Choice treatments, namely that they appear to be younger and more educated. We expect that using CATI and CAPI for nonresponse follow-up will help ensure proper representation among demographic groups, similar to how CATI and CAPI operate now to compensate for the limitations of mail data collection.

We have to reconsider the best way to handle the cases that broke-off in the Internet instrument. The FEFU operation will help correct for some of the missing data, but we also need to consider alternative ways to deal with cases that broke-off. Should we deviate from the way we handle mail returns, and send these cases to nonresponse follow-up? How does that impact the associated costs? Are there other ways to get these cases to complete the Internet survey or respond to the mail questionnaire? We hope to see some improvement in break-offs in our second Internet test (results forthcoming) where we sent the nonresponse follow-up paper mailing to all Internet break-offs.

## **7. NEXT STEPS**

We fielded a follow-up ACS Internet test in November 2011 based solely on the response rate results from this test. The goal of the November test was to test enhancements to the two strategies that had the highest response rates, the Prominent Choice and Push Accelerated. The results from the follow-up test will help determine which notification strategy we will use when we introduce an Internet response option in ACS production, which will start in January 2013. The results of the November test will be available in Spring 2012.

Internet break-offs are problematic because they cause higher item nonresponse rates for questions that appear later in the survey. We need to find a way to encourage people to complete the survey,

particularly those that started the survey online. We plan to explore alternative ways of contacting these households, including email or text reminders to come back and complete the survey. We are also using the paradata to explore where the break-offs are occurring to see if we can identify and remedy issues with the questions or design that are driving break-offs (Horwitz *et al.*, forthcoming).

The paradata will also help evaluate the effectiveness of the design of the online survey. These results can pinpoint potentially problematic questions or features. We can then use laboratory testing to drill down the nature of the issue and test potential resolutions in the Internet survey.

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## Appendix A: 2011 ACS Internet Test Mail Materials

<b>I. Prominent Internet Offer (Choice)</b>	<b>Page</b>
1. Pre-Notice Letter.....	A-2
2. Initial Mailing Package.....	A-3
a. Letter.....	A-3
b. Instruction Card (Front Side – English).....	A-4
c. Instruction Card (Reverse Side – Spanish).....	A-4
d. Questionnaire Cover.....	A-5
3. Reminder Postcard.....	A-6
4. Second (Replacement) Mailing Package Letter.....	A-7
5. Additional Reminder Postcard.....	A-8

NOTE: The Prominent Internet Offer (Choice) Instruction Card and Questionnaire from the First Mailing Package was included in the Second (Replacement) Mailing Package.

<b>II. Not Prominent Internet Offer</b>	<b>Page</b>
1. Pre-Notice Letter.....	A-9
2. Initial Mailing Package.....	A-10
a. Letter.....	A-10
b. Questionnaire Cover.....	A-11
3. Reminder Postcard.....	A-12
4. Second (Replacement) Mailing Package Letter.....	A-13
5. Additional Reminder Postcard.....	A-14

NOTE: The Not Prominent Internet Offer Questionnaire from the First Mailing Package was included in the Second (Replacement) Mailing Package.

<b>III. Push Internet</b>	<b>Page</b>
1. Initial Mailing Package.....	A-15
a. Letter.....	A-15
b. Instruction Card (Front Side – English).....	A-16
c. Instruction Card (Reverse Side – Spanish).....	A-16
2. Reminder Postcard.....	A-17
3. Regular Schedule - Second (Replacement) Mailing Package Letter.....	A-18
4. Modified Schedule - Second (Replacement) Mailing Package Letter.....	A-19
5. Additional Reminder Postcard.....	A-20

NOTE: The Push Internet Pre-Notice Letter is the same as the Prominent Internet Offer (Choice) Pre-Notice Letter. Also, the Prominent Internet Offer (Choice) Instruction Card and Questionnaire from the First Mailing Package was included in the Push Internet Second (Replacement) Mailing Packages.

**Prominent Internet Offer (Choice): Pre-Notice Letter**



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

Dear Resident:

In a few days your household will receive instructions in the mail on how to complete a very important national survey, the American Community Survey. Please follow the instructions to complete the survey promptly. The U.S. Census Bureau is conducting this survey and chose your address, not you personally, as part of a randomly selected sample.

The American Community Survey collects information about various topics like education, housing, and jobs. Information from this survey is used by federal, state, local, and tribal governments to meet the needs of communities across America. For example, community leaders use this information to decide where schools, highways, hospitals, and other services are needed. The survey also is used to develop programs to reduce traffic congestion, provide job training, and plan for the healthcare needs of the elderly.

If you have access to the Internet and want to learn more about the American Community Survey, please visit the Census Bureau's Web site:  
[www.census.gov/acs/www](http://www.census.gov/acs/www).

Thank you in advance for your help.

Sincerely,

Robert M. Groves  
Director

ACS-12LXPIO-PS (1-2010)

**USCENSUSBUREAU**  
*Helping You Make Informed Decisions*

[www.census.gov](http://www.census.gov)



**Prominent Internet Offer (Choice): First Mailing Package Letter**



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

Dear Resident:

The U.S. Census Bureau recently sent a letter to your household about the American Community Survey. There are two ways to complete this survey. Please choose **ONLY** one.

**Option 1:** Go to <https://respond.census.gov/acs> to complete the survey online. You will need information from the address label on the enclosed questionnaire to log in.

**Option 2:** Fill out and mail back the enclosed questionnaire.

This survey collects critical up-to-date information used to meet the needs of communities across the United States. For example, results from this survey are used to decide where new schools, hospitals, and fire stations are needed. This information also helps communities plan for the kinds of emergency situations that might affect you and your neighbors, such as floods and other natural disasters.

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. The enclosed brochure answers frequently asked questions about the survey.

If you need help completing the survey, please use the enclosed guide or call our toll-free number (1-888-369-3602).

Thank you.

Sincerely,

Robert M. Groves  
Director

Enclosures

ACS-13(LX)PIO (7-2010)

**U S C E N S U S B U R E A U**  
*Helping You Make Informed Decisions*

[www.census.gov](http://www.census.gov)

**Prominent Internet Offer (Choice): First Mailing Package Instruction Card (Front Side – English)**

**USCENSUSBUREAU**  
*Helping You Make Informed Decisions*

**AMERICAN  
COMMUNITY  
SURVEY**

**Two Ways to Complete the American Community Survey:**

 **Option 1** – Go to <https://respond.census.gov/acs> to complete the survey online. **IMPORTANT:** You will need information from the address label on the enclosed questionnaire to log in.

 **Option 2** – Fill out the enclosed questionnaire and mail it back in the postage-paid envelope.

Please choose **ONLY** one way to respond. If you need help or have questions about the American Community Survey, call the toll-free number 1-888-369-3602.

*Vea el otro lado para español.*

**Prominent Internet Offer (Choice): First Mailing Package Instruction Card (Reverse Side – Spanish)**

**USCENSUSBUREAU**  
*Helping You Make Informed Decisions*

**AMERICAN  
COMMUNITY  
SURVEY**

**Hay dos maneras para completar la Encuesta sobre la Comunidad Estadounidense:**

 **Opción 1** – Vaya a <https://respond.census.gov/acs> para completar esta encuesta por el Internet en español. **ATENCIÓN:** Necesitará información que aparece en la etiqueta del cuestionario adjunto para iniciar la sesión.

 **Opción 2** – Llene y devuelva el cuestionario adjunto en el sobre de franqueo pagado.

Por favor, escoja **SOLAMENTE** una manera de responder. Si usted necesita ayuda para llenar la encuesta o tiene preguntas acerca de la Encuesta sobre la Comunidad Estadounidense, llame sin cargo al 1-888-369-3597.

*See other side for English.*



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

# THE American Community Survey

## Start Here

Respond online today at:  
<https://respond.census.gov/acs>

OR

Complete this form and mail it  
back as soon as possible.

This form asks for information about the  
people who are living or staying at the  
address on the mailing label and about the  
house, apartment, or mobile home located  
at the address on the mailing label.



**If you need help or have questions  
about completing this form**, please call  
**1-888-369-3602**. The telephone call is free.

**Telephone Device for the Deaf (TDD):**  
Call 1-800-582-8330. The telephone call is free.

**¿NECESITA AYUDA?** Si usted habla español y  
necesita ayuda para completar su cuestionario,  
llame sin cargo alguno al **1-888-369-3597**.  
Usted también puede completar su entrevista  
por teléfono con un entrevistador que habla  
español. O puede responder por Internet en  
<https://respond.census.gov/acs>

For more information about the American  
Community Survey, visit our web site at:  
<http://www.census.gov/acs/www/>

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

➔ Please print today's date.

Month Day Year

➔ Please print the name and telephone number of the person who is  
filling out this form. We may contact you if there is a question.

Last Name

First Name MI

Area Code + Number  
 -

➔ How many people are living or staying at this address?

- **INCLUDE** everyone who is living or staying here for more than 2 months.
- **INCLUDE** yourself if you are living here for more than 2 months.
- **INCLUDE** anyone else staying here who does not have another place to stay, even if they are here for 2 months or less.
- **DO NOT INCLUDE** anyone who is living somewhere else for more than 2 months, such as a college student living away or someone in the Armed Forces on deployment.

Number of people

➔ Fill out pages 2, 3, and 4 for everyone, including yourself, who is  
living or staying at this address for more than 2 months. Then  
complete the rest of the form.

FORM ACS-1(X)PINT(2010)KFI  
(08-13-2010) Option 4

OMB No. 0607-0810



**Prominent Internet Offer (Choice): Reminder Postcard**



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

Dear Resident:

A few days ago, you should have received a request to complete the American Community Survey. If you have already responded, thank you. If you have not, please complete the survey online at <https://respond.census.gov/acs> or mail the questionnaire back soon.

Local and national leaders use the information from this survey for planning schools, hospitals, roads, and other community needs.

If you need help filling out the questionnaire or have questions, please call our toll-free number (1-888-369-3602).

Thank you.

Robert M. Groves  
Director

ACS-20(X)PIO (8-2010)

**Prominent Internet Offer (Choice): Second (Replacement) Mailing Package Letter**



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

Dear Resident:

About three weeks ago, the U.S. Census Bureau sent a request to complete the American Community Survey to your address. We asked you to help us with this very important survey by completing and mailing back the questionnaire or providing your information online. But we have not received your response yet.

If you have already completed the survey, thank you very much. If you have not, please complete the survey soon using ONE of the following two options.

**Option 1:** Fill out and mail back the enclosed questionnaire.

**Option 2:** Go to <https://respond.census.gov/acs> to complete the survey online.

This survey is so important that a Census Bureau representative may attempt to contact you by telephone or personal visit if we do not receive your response.

The information collected in this survey will help decide where new schools, hospitals, and fire stations are needed. The information also is used to develop programs to reduce traffic congestion, provide job training, and plan for the health care needs of the elderly.

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. The enclosed brochure answers frequently asked questions about the survey.

If you need help completing the survey, please use the enclosed guide or call our toll-free number (1-888-369-3602).

Thank you.

Sincerely,

Robert M. Groves  
Director

Enclosures

ACS-14(LX)PIO (7-2010)

**U S C E N S U S B U R E A U**  
*Helping You Make Informed Decisions*

[www.census.gov](http://www.census.gov)

**Prominent Internet Offer (Choice): Additional Reminder Postcard**



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

Dear Resident:

Within the last few weeks, the U.S. Census Bureau mailed American Community Survey questionnaire packages to your address twice. **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. If you have already responded, thank you. If you have not, please complete the questionnaire and send it now, or complete the survey online now at <https://respond.census.gov/acs>.

**Your response is critically important to your local community and to your country.** If you do not respond, a Census Bureau interviewer may contact you by personal visit to complete the survey.

If you would like to complete the survey by telephone or need assistance, please call our toll-free number (1-8888-369-3602). Thank you.

Robert M. Groves  
Director, U.S. Census Bureau

ACS-23(X)PIO (8-2010)

**Not Prominent Internet Offer: Pre-Notice Letter**



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

Dear Resident:

In a few days your household will receive a request in the mail for a very important national survey, the American Community Survey. Please complete the survey promptly. The U.S. Census Bureau is conducting this survey and chose your address, not you personally, as part of a randomly selected sample.

The American Community Survey collects information about various topics like education, housing, and jobs. Information from this survey is used by federal, state, local, and tribal governments to meet the needs of communities across America. For example, community leaders use this information to decide where schools, highways, hospitals, and other services are needed. The survey also is used to develop programs to reduce traffic congestion, provide job training, and plan for the health care needs of the elderly.

If you have access to the Internet and want to learn more about the American Community Survey, please visit the Census Bureau's Web site:  
[www.census.gov/acs/www](http://www.census.gov/acs/www).

Thank you in advance for your help.

Sincerely,

A handwritten signature in blue ink that reads "Robert M. Groves".

Robert M. Groves  
Director

ACS-12(LX)NIO (2-2010)

**USCENSUSBUREAU**  
*Helping You Make Informed Decisions*

[www.census.gov](http://www.census.gov)

**Not Prominent Internet Offer: First Mailing Package Letter**



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

Dear Resident:

The U.S. Census Bureau recently sent a letter to your household about the American Community Survey. Enclosed is a questionnaire and information about the survey. Please complete the survey and return it as soon as possible.

This survey collects critical up-to-date information used to meet the needs of communities across the United States. For example, results from this survey are used to decide where new schools, hospitals, and fire stations are needed. This information also helps communities plan for the kinds of emergency situations that might affect you and your neighbors, such as floods and other natural disasters.

The U.S. 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. The enclosed brochure answers frequently asked questions about the survey.

If you need help completing the survey, please use the enclosed guide or call our toll-free number (1-888-369-3602).

Thank you.

Sincerely,

A handwritten signature in black ink that reads "Robert M. Groves".

Robert M. Groves  
Director

Enclosures

ACS-13(LX)NIO (7-2010)

**U S C E N S U S B U R E A U**  
*Helping You Make Informed Decisions*

[www.census.gov](http://www.census.gov)






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

# THE American Community Survey

**Please complete this form and return it as soon as possible after receiving it in the mail.**

This form asks for information about the people who are living or staying at the address on the mailing label and about the house, apartment, or mobile home located at the address on the mailing label.

 If you prefer, you can respond online at: <https://respond.census.gov/acs>



**If you need help or have questions about completing this form**, please call **1-888-369-3602**. The telephone call is free.

**Telephone Device for the Deaf (TDD):**  
Call 1-800-582-8330. The telephone call is free.

**¿NECESITA AYUDA?** Si usted habla español y necesita ayuda para completar su cuestionario, llame sin cargo alguno al **1-888-369-3597**. Usted también puede completar su entrevista por teléfono con un entrevistador que habla español. O puede responder por Internet en <https://respond.census.gov/acs>

For more information about the American Community Survey, visit our web site at: <http://www.census.gov/acs/www/>

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

## Start Here

➔ **Please print today's date.**

Month Day Year

➔ **Please print the name and telephone number of the person who is filling out this form.** We may contact you if there is a question.

Last Name  
  
First Name  MI

Area Code + Number  
 -

➔ **How many people are living or staying at this address?**

- **INCLUDE** everyone who is living or staying here for more than 2 months.
- **INCLUDE** yourself if you are living here for more than 2 months.
- **INCLUDE** anyone else staying here who does not have another place to stay, even if they are here for 2 months or less.
- **DO NOT INCLUDE** anyone who is living somewhere else for more than 2 months, such as a college student living away or someone in the Armed Forces on deployment.

Number of people

➔ **Fill out pages 2, 3, and 4 for everyone, including yourself, who is living or staying at this address for more than 2 months. Then complete the rest of the form.**

FORM **ACS-1(X)NPINT(2010)KFI**  
(07-30-2010)

OMB No. 0607-0810



**Not Prominent Internet Offer: Reminder Postcard**



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

Dear Resident:

A few days ago, you should have received an American Community Survey questionnaire. If you have already responded, thank you. If you have not, please complete the survey soon.

Local and national leaders use the information from this survey for planning schools, hospitals, roads, and other community needs.

If you need help completing the survey or have questions, please call our toll-free number (1-888-369-3602).

Sincerely,

A handwritten signature in black ink that reads "Robert M. Groves".

Robert M. Groves  
Director

ACS-2010N10 (8-2010)

**Not Prominent Internet Offer: Second (Replacement) Mailing Package Letter**



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

Dear Resident:

About three weeks ago, the U.S. Census Bureau sent a request to complete the American Community Survey to your address. We asked you to help us with this very important survey. But we have not received your response yet.

If you have already completed the survey, thank you very much. If you have not, please complete it soon. We have included another questionnaire with this letter.

This survey is so important that a Census Bureau representative may attempt to contact you by telephone or personal visit if we do not receive your response.

The information collected in this survey will help decide where new schools, hospitals, and fire stations are needed. The information also is used to develop programs to reduce traffic congestion, provide job training, and plan for the health care needs of the elderly.

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. The enclosed brochure answers frequently asked questions about the survey.

If you need help completing the survey, please use the enclosed guide or call our toll-free number (1-888-369-3602).

Thank you.

Sincerely,

Robert M. Groves  
Director

Enclosures

ACS-14(LX)NIO (7-2010)

**U S C E N S U S B U R E A U**  
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[www.census.gov](http://www.census.gov)

**Not Prominent Internet Offer: Additional Reminder Postcard**



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

Dear Resident:

Within the last few weeks, the U.S. Census Bureau mailed American Community Survey questionnaire packages to your address twice. **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. If you have already mailed back a questionnaire, thank you. If you have not, please complete one and send it now.

**Your response is critically important to your local community and to your country.** If you do not send your completed questionnaire, a Census Bureau interviewer may contact you by personal visit to complete the survey.

If you would like to complete the survey by telephone or need assistance, please call our toll-free number (1-800-354-7271). Thank you.

Sincerely,

Robert M. Groves  
Director, U.S. Census Bureau

ACS-23(2011) (7-2010)

**Push Internet: First Mailing Package Letter**



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

Dear Resident:

The U.S. Census Bureau recently sent a letter to your household about the American Community Survey. Using the enclosed instructions, please complete the survey online as soon as possible at:

**<https://respond.census.gov/acs>**

The Census Bureau is using the Internet to collect this information in an effort to conserve natural resources, save taxpayers' money, and process your data more efficiently. If you are unable to complete the survey online, there is no need to contact us. We will send you a paper questionnaire in a few weeks.

This survey collects critical up-to-date information used to meet the needs of communities across the United States. For example, results from this survey are used to decide where new schools, hospitals, and fire stations are needed. This information also helps communities plan for the kinds of emergency situations that might affect you and your neighbors, such as floods and other natural disasters.

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. The enclosed brochure answers frequently asked questions about the survey.

If you need help completing the survey, please call our toll-free number (1-888-369-3602).

Thank you.

Sincerely,

Robert M. Groves  
Director

Enclosures

ACS-13(LX)PS (7-2010)

U S C E N S U S B U R E A U  
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[www.census.gov](http://www.census.gov)

**Push Internet: First Mailing Package Instruction Card (Front Side – English)**

**USCENSUSBUREAU**  
*Helping You Make Informed Decisions*

**AMERICAN  
COMMUNITY  
SURVEY**

Go to <https://respond.census.gov/acs> to complete the American Community Survey online.



ACS 946 839 215 01 122 1103 00                      17392-75247  
SEQ004-49315

TO THE RESIDENT OF:  
198 Young Rd  
Anytown, MD 03612

*(Vea el otro lado  
para español.)*

**IMPORTANT:** You will need information from the address label on this card to log in. If you need help or have questions about the American Community Survey, call the toll-free number 1-888-369-3602.

**Push Internet: First Mailing Package Instruction Card (Reverse Side – Spanish)**

**USCENSUSBUREAU**  
*Helping You Make Informed Decisions*

**AMERICAN  
COMMUNITY  
SURVEY**

Vaya a <https://respond.census.gov/acs> para completar la Encuesta sobre la Comunidad Estadounidense por el Internet en español.

**ATENCIÓN:** Necesitará información que aparece en la etiqueta en el otro lado de esta tarjeta para iniciar la sesión. Si usted necesita ayuda para llenar la encuesta o tiene preguntas acerca de la Encuesta sobre la Comunidad Estadounidense, llame sin cargo al 1-888-369-3597.

*See other side for English.*

Push Internet: Reminder Postcard



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

Dear Resident:

A few days ago, you should have received instructions for completing the American Community Survey online. If you have already responded, thank you. If you have not, please do so as soon as possible at <https://respond.census.gov/acs>. If we do not receive your response, we will mail you a paper questionnaire in a few weeks.

Local and national leaders use the information from this survey for planning schools, hospitals, roads, and other community needs.

If you need help completing the survey or have questions, please call our toll-free number (1-888-369-3602).

Sincerely,

A handwritten signature in black ink that reads "Robert M. Groves".

Robert M. Groves  
Director

ACS-20(X)PS (8-2010)

**Push Internet: Regular Schedule - Second (Replacement) Mailing Package Letter**



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

Dear Resident:

About three weeks ago, the U.S. Census Bureau sent instructions for completing the American Community Survey to your address. 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, please complete the survey soon using ONE of the following two options.

- Option 1:** Go to <https://respond.census.gov/acs> to complete the survey online.
- Option 2:** Fill out and mail back the enclosed questionnaire.

This survey is so important that a Census Bureau representative may attempt to contact you by telephone or personal visit if we do not receive your response.

The information collected in this survey will help decide where new schools, hospitals, and fire stations are needed. The information also is used to develop programs to reduce traffic congestion, provide job training, and plan for the health care needs of the elderly.

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. The enclosed brochure answers frequently asked questions about the survey.

If you need help completing the survey, please use the enclosed guide or call our toll-free number (1-888-369-3602).

Thank you.

A handwritten signature in black ink that reads "Robert M. Groves". The signature is written in a cursive style.

Robert M. Groves  
Director

Enclosures

ACS-14(LX)PSR (9-2010)

U S C E N S U S B U R E A U  
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[www.census.gov](http://www.census.gov)



**Push Internet: Modified Schedule - Second (Replacement) Mailing Package Letter**



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

Dear Resident:

About two weeks ago, the U.S. Census Bureau sent instructions for completing the American Community Survey to your address. 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, please complete the survey soon using ONE of the following two options.

**Option 1:** Go to <https://respond.census.gov/acs> to complete the survey online.

**Option 2:** Fill out and mail back the enclosed questionnaire.

This survey is so important that a Census Bureau representative may attempt to contact you by telephone or personal visit if we do not receive your response.

The information collected in this survey will help decide where new schools, hospitals, and fire stations are needed. The information also is used to develop programs to reduce traffic congestion, provide job training, and plan for the health care needs of the elderly.

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. The enclosed brochure answers frequently asked questions about the survey.

If you need help completing the survey, please use the enclosed guide or call our toll-free number (1-888-369-3602).

Thank you.

Sincerely,

Robert M. Groves  
Director

Enclosures

ACS-14(LX)PSM (9-2010)

U S C E N S U S B U R E A U  
*Helping You Make Informed Decisions*

[www.census.gov](http://www.census.gov)

**Push Internet: Additional Reminder Postcard**



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

Dear Resident:

Within the last few weeks, the U.S. Census Bureau mailed an American Community Survey questionnaire package to your address. **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. If you have already responded, thank you. If you have not, please complete the questionnaire and send it now, or complete the survey online now at <https://respond.census.gov/acs>.

**Your response is critically important to your local community and to your country.** If you do not respond, a Census Bureau interviewer may contact you by personal visit to complete the survey.

If you would like to complete the survey by telephone or need assistance, please call our toll-free number (1-888-369-3602). Thank you.

Robert M. Groves  
Director, U.S. Census Bureau

ACS-23(X)PS (8-2010)

**Appendix B: Self-Administered Response Rates and Internet Response Rates by Notification Strategy and Stratum (through May 31, 2011)**

Table B-1. Self-Administered Response Rates and Internet Response Rates by Notification Strategy and Stratum (through May 31, 2011)

Stratum	Notification Strategy			
	Prominent Choice	Not Prominent Choice	Push Regular	Push Accelerated
<i>Targeted</i>				
Response Rate (SE)	51.6 (0.4)	51.5 (0.4)	50.8 (0.4)	51.0 (0.4)
INT Response Rate (SE)	12.1 (0.3)	4.3 (0.2)	31.7 (0.3)	30.4 (0.4)
<i>Not Targeted</i>				
Response Rate (SE)	41.6 (0.5)	41.3 (0.3)	38.9 (0.4)	39.2 (0.4)
INT Response Rate (SE)	7.7 (0.2)	2.4 (0.1)	19.1 (0.3)	18.6 (0.3)

Source: U.S. Census Bureau, 2011 ACS Internet Test, April to May 2011

Table B-2. Differences in Self-Administered Response Rates by Notification Strategy and Stratum (through May 31, 2011)

Stratum	Compare Choice Strategies		Compare Push Strategies		Compare Best Choice and Best Push	
	Difference (Prom - Not Prom)	Best	Difference (Reg - Accel)	Best	Difference (Choice - Push)	Best
<i>Targeted</i>						
Estimate (SE)	0.2 (0.6)	Prom	-0.2 (0.6)	Push Accel	0.6 (0.6)	Prom Choice
<i>Not Targeted</i>						
Estimate (SE)	0.3 (0.6)	Prom	-0.4 (0.5)	Push Accel	2.4* (0.6)	Prom Choice

Source: U.S. Census Bureau, 2011 ACS Internet Test, April to May 2011

\* Indicates statistical significance at  $\alpha < 0.1$ , controlling for multiple comparisons.