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**Report for Round 3 of Usability Testing of the
2011 American Community Survey Online Instrument:
Focus on Login and Roster Features**

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1. Introduction and Background

The U.S. Census Bureau's Usability Lab conducted the third round of usability testing on the 2011 American Community Survey (ACS) Internet instrument from June 30th, 2010 to July 29th, 2010. This third usability test focused on the Login and Rostering sections of the ACS.

Some of the mailing materials associated with the instrument were also evaluated. The Initial mailing packet for the prominent choice, not prominent choice, or regular/modified push panel was given to the participant to use to access the online instrument and some feedback on the materials was gathered. These three panels were the ones that offered an Internet option for responding to the ACS, so the materials could be used in the lab by participants to access the online survey. A detailed description of the experimental panels from the 2011 ACS Internet test can be found in Ashenfelter, Holland, Quach, Nichols, & Lakhe (2011). A vignette methodology using fictitious complex living situations was applied in addition to having participants complete the survey based on their own living situations. This allowed the researchers to glean information related to a wider variety of coverage issues than those of the participants.

The coverage issues addressed in this test have been referenced in previous research and are described in Chan (2007) as, "Unlike, perhaps other types of undercoverage, errors due to problems in the application of rules and definitions would seem to offer some fertile ground for coverage improvements based on improved questionnaire design" (pg. 1) (see also Childs, Carter, Norris, Hanaoka, & Schwede, 2007; Childs, 2008; Hunter & de la Puente, 2005). The results from Rounds 1 and 2 of testing of the ACS Internet instrument are documented in Ashenfelter et. al (2011).

This report contains the results of usability testing and eye-tracking analysis of the instrument, results of the vignette completion of alternative living situations, and participant debriefing about the instrument and mailing materials as well as recommendations for improving the instrument. Aggregate data from the demographic questionnaire, satisfaction questionnaire, and eye tracking data are presented in tables throughout the report. We report content issues that were identified where appropriate.

2. Method

This section describes the materials used in the study, the procedures, and the participants involved.

2.1 *Materials Tested*

The screens tested in this round of testing were mostly fully-functioning Web survey screens. Screen shots can be found in Appendix A. The mailing materials tested can be found in Appendix B.

2.2 *General Protocol*

The test administrator read the background material and explained several key points about testing at the beginning of each usability study session. The purpose of the general introduction of the ACS testing was to ensure the participants understood that they were contributing to the development of the ACS online instrument, and that they were not being personally evaluated. This also allowed the participants the opportunity to understand the purpose of the usability study and the value of their feedback. See Appendix C.

2.3 *Procedure*

Each usability session was conducted in the usability lab and lasted about 60 minutes. Upon arriving, each participant was seated in the testing room. The test administrator greeted the participant and read the general introduction (Appendix C1), which explained the purpose of the session, the testing procedure, and the importance of participant contribution. Before beginning the usability study, the participant read and signed the consent form (Appendix C2), which explained that all information gathered during the study was confidential and that the session would be videotaped and used solely for research purposes. In addition, participants were informed that we would be using eye tracking to see how they interacted with the survey. After receiving the participants' written consent, video recording began.

Next, the test administrator asked the participant to do a practice task using a familiar site (e.g., WTOP.com) to practice thinking aloud. They were asked to find an interesting article from the WTOP.com website. During testing, the think-aloud technique was used to understand the participant's cognitive processes as they interacted with the interface. Think-aloud is modeled on Ericsson and Simon's (1993) approach to collecting verbal protocols, which was used to maintain a running verbal commentary of the participants' expectations and reasoning. A participant engaging in think-aloud verbalizes his or her available, conscious thoughts and decisions while completing the tasks. If at any time a participant became quiet for more than 10 to 15 seconds, the test administrator encouraged the participant to continue to think-aloud, using prompts such as, "What are you thinking?", "Can you tell me your thoughts?" and "Keep talking."

After the practice think aloud task, the test administrator calibrated the participant's eyes for eye-tracking. The test administrator proceeded to the control room and did a sound check while the participant completed the Questionnaire on Computer Use and Internet Experience and Demographics (Appendix C3).

The participant sat in a room, facing one-way glass and a wall camera, in front of a Liquid Crystal Display (LCD) monitor that was on a table at standard desktop height. During the usability test, the test administrator sat in the control room on the other side of the one-way glass. The test administrator and the participant communicated through microphones and speakers. While sitting in front of the LCD monitor, the participant completed the screens contained in Appendix A. These screens focused on the login page and the household composition collected using the roster. Eye-tracking equipment was used during the portion of testing where the participants completed the ACS for their own households. The participant sat in front of a Tobii T120 equipped with cameras for eye tracking. The Tobii eye-tracking device and the Tobii Studio software program monitored the participants' eye movements and recorded eye gaze data.

Although this was not a formal cognitive test of the mailing materials for the ACS Internet test, small changes were made between rounds 2 and 3 of usability testing, so participants saw each piece of mail for their test condition to check for any major problems. They saw these materials prior to completing the online screens for the ACS. Specifically, participants used mailing materials from the Prominent Choice, Not Prominent Choice, or Push Internet conditions to access the ACS online (see Appendix B for the materials and Ashenfelter, Quach, Nichols, & Lakhe (2011) for a more detailed description of them).

After completing the survey, the participant filled out a Satisfaction Questionnaire (Appendix C4) based on the Questionnaire for User Interface Satisfaction (QUIS) (Chin, Diehl, & Norman, 1988) and the test administrator asked the participant debriefing questions (Appendix C5) allowing for a conversational exchange about the American Community Survey instrument.

After completing the ACS screens for their own real-life households, participants completed them for a fictitious household based on the vignettes.

2.4 Vignettes

Vignettes were used to assess participants' cognitive understanding of questions that could add and remove household members from the final roster. Vignettes are "fictional scenarios that describe people, behavior, and situations" (Beck, 2010, p. 3). Vignettes offer a neutral way to test participants' understanding of scenarios based on their personalized schemas (Beck, 2010). The use of vignettes in this study increased the

amount of testing for situational-specific roster questions that the majority of participants may not encounter.

One positive feature of vignettes is that they allow participants to envision that they possess properties that do exist in the general population (Gerber, Wellens, & Keeley, 1996), but these situations are usually less common situations; we may not be able to recruit enough people that share these properties for a study, so the vignettes simulate these realistic scenarios. For instance, Sweet and Alberti (1994) reported that approximately nine percent of respondents: “had more than one residence, lived away at college, lived away from home to be closer to their jobs, or lived in an institution or were in the military” (Martin, 1997, pg. 5). Martin (2007) concluded that “People whose residence status is ambiguous or uncertain are at risk of being omitted from or incorrectly included in demographic surveys and the census” (pg. 13). Additionally, Brownrigg and Martin (1993), as paraphrased in Tourangeau, Shapiro, Kearney, and Earnst (1997), list one of the five main reasons for undercoverage, as “irregular household structure or living arrangements” (pg. 2).

Errors due to respondents not correctly following residence rules can result in costly follow-up resources to correct them. Research from the Coverage Edit Followup (CEFU) following the 2000 Census has shown that although no changes were necessary for 81.4 percent of the 1,019,194 cases, there were 232,777 cases (18.6 percent) that did need roster changes (Sheppard, 2003).

Specific cognitively complex living situations such as children in boarding school, shared custody, and commuter worker living situations that have been found to be difficult for participants in past research (e.g., Martin, 2007) were assessed in this study. According to ACS residence rules, children in boarding school should be counted at the sample address. Children in shared custody should be counted at the sample address only if the child is present the day the ACS is completed. The commuter worker, who is someone who has a second residence to be closer to work (usually only during the week) should be counted at the sample address where he/she lives with the rest of the household. These rules are often not well defined for participants.

Past research has shown that there is a mismatch between ACS residence rules and commonplace intuition about whom to include (or not) (Gerber et. al, 1996).

Compounding the issue with the unintuitive nature of ACS residence rules is the fact that a large segment the population falls into the unintuitive categories. In 1994, of the 18.6 million children living in the United States who were living with only one parent, about two thirds were living with divorced or separated parents (Kuhn and Guidubaldi, 1997). If parents cannot understand the rules to answer the roster questions accurately for the

ACS, this poses a serious threat to data quality via nonsampling error. Other examples of roster questions misunderstood by participants include boarding schools and commuters.

In order for participants to complete the vignette correctly, they would need to understand rules regarding whether members of the household are physically AWAY NOW or away for more than TWO MONTHS present above the questions on each roster screen. The Roster B and C screens were designed to walk participants through the complex ACS residency rules. Performance was assessed by comparing the participants' roster at the end of the vignette to an answer sheet.

The complete vignettes and their associated documentation can be found in Appendix E. Tables 1-5 show the list of fictitious household members used for each of the vignette conditions, a description of their living situations, and whether or not they should have been counted according to ACS residence rules. Eye-tracking data were not recorded for the vignettes.

Table 1: Prototype/All Vignette

Household Member	Description	Counted at Sample Address?
Maggie G./Sam F. Robinson (Depending on sex of test administrator)	Respondent	Yes
Sam F./Maggie G. Robinson	Commuter Worker (Respondent's Spouse)	Yes
Alice L. Robinson	Currently Away at Boarding School	Yes
Nicholas S. Smith	Child in Shared Custody (There on the day of the interview)	Yes
Lucy G. Jones	Sister of Respondent (Home from College for two and a half Months)	No
Maria/ Mary C. Davis	Housekeeper who stays at sample address during the week but has another home with her family	No

Table 2: Boarding School Vignette

Household Member	Description	Counted at Sample Address?
Participant	Respondent	Yes
Alice	10-year old Daughter currently living away at boarding school	Yes

Table 3: Commuter Vignette

Household Member	Description	Counted at Sample Address?
Participant	Respondent	Yes
Sam/Maggie	Commuter Worker (Respondent's Spouse)	Yes

Table 4: Shared Custody 1 Vignette

Household Member	Description	Counted at Sample Address?
Participant	Respondent	Yes
Nicholas	Son, usually lives with other parent but is at sample address on the day of the interview	Yes

Table 5: Shared Custody 2 Vignette

Household Member	Description	Counted at Sample Address?
Participant	Respondent	Yes
Nicholas	Son, usually lives with respondent but is <u>not</u> at sample address on the day of the interview	No

2.5 *Participants*

Before formal testing occurred, the usability staff conducted a dry-run (i.e., pilot test) of the usability testing procedure. Based on the pilot sessions, the methods and procedures were refined slightly to ensure an effective usability study.

The researchers recruited participants based on the following characteristics:

- i. Participants had at least one year of experience using a computer and the Internet;
- ii. Participants had little to no experience with the American Community Survey; and
- iii. Participants lived in a complex household (e.g., with roommates, in a household with five or more people, had a shared custody arrangement, etc.).

Thirty participants were recruited from the Census Bureau's Usability Laboratory's participant database. One participant, a Census Bureau employee, participated as part of the dry run. Because the experimental procedure did not vary greatly from protocol, the dry run's data were included with the other 30 participants for a total of 31 participants. The average age of the participants was 37 years old. The youngest participant was 18 years old and the oldest participant was 69 years old. Out of the 31 participants, 17 were male, while 14 were female. All of the participants except for three had at least a high school degree. With respect to Internet access, all of the participants had extensive experience with the Internet. All but five participants had Internet access at home; these five participants indicated that they go someplace else for Internet access. Of the 31 participants, 14 indicated that they use the Internet for 1-3 hours a day, 13 for 4-6 hours a day, and 4 for 7 or more hours a day. Table 6 shows the breakdown of the participants' demographics.

Table 6: Age, Gender, Hours on the Internet and Education Breakdown

Participant	Condition	Age	Gender	# of Hours Spent on the Internet	Education
dry run		20	F	4-6 Hours	Some College
P1	Prominent	25	F	4-6 Hours	4-Year College Degree
P2	Not Prominent	26	F	1-3 Hours	High School
P3	Prominent	50	M	1-3 Hours	2-Year College Degree
P4	Not Prominent	46	M	7+ Hours	Some College
P5	Prominent	25	M	1-3 hours	Some Post Graduate
P6	Prominent	24	M	4-6 Hours	4-Year College Degree
P7	Push	41	F	4-6 Hours	Some Post Graduate
P8	Prominent	20	M	7 or more Hours	High School
P9	Push	41	F	1-3 Hours	Some College
P10	Prominent	26	F	4-6 Hours	No Data
P11	Push	43	M	1-3 Hours	Some College
P12	Not Prominent	27	F	4-6 Hours	Some Post Graduate
P13	Push	23	F	4-6 hours	Some College
P14	Prominent	18	F	4-6 Hours	Some College
P15	Not Prominent	42	F	1-3 Hours	2-Year College Degree
P16	Push	43	M	4-6 Hours	Some College
P17	Not Prominent	42	M	1-3 Hours	Some College
P18	Not Prominent	53	M	1-3 Hours	Some Post Graduate
P19	Not Prominent	19	F	1-3 Hours	Some College
P20	Prominent	31	F	1-3 Hours	Post Graduate Degree
P21	Push	29	F	4-6 Hours	4-Year College Degree
P22	Prominent	38	M	4-6 Hours	Some College
P23	Push	34	M	7+ Hours	Some College
P24	Not Prominent	52	M	7 + Hours	2-Year College Degree
P25	Prominent	53	F	4-6 Hours	Post Graduate Degree
P26	Push	69	M	1-3 Hours	Post Graduate Degree
P27	Not Prominent	52	M	1-3 Hours	4-Year College Degree
P28	Not Prominent	59	M	1-3 Hours	Some College
P29	Push	54	M	1-3 Hours	Some High School
P30	Push	30	M	4-6 Hours	Some Post Graduate

3. Findings and Eye tracking

The following section presents issues detected during testing with the online questionnaire and the mailing materials. The results of usability testing of the online instrument are presented first, followed by the results from testing the mailing materials. Content issues with the survey questions and residence rules are also presented.

Eye-tracking data such as heat maps, gaze opacity plots, and fixation data (AOIs and visits) are presented as elements of analysis of the online questions. An explanation of each type of eye-tracking data follows:

Heat maps: The heat maps generated for this report demonstrate the number of fixations in an area of the screen on a given page. The colors on a heat map range in visual intensity as the number of fixations in an area of the screen increases. Green indicates a lower number of fixations in a given area, whereas red indicates a higher number of fixations in a given area. As the number of fixations increases, the color grows in intensity.

Gaze opacity maps and plots: Gaze opacity maps clearly show the areas where most participants did not fixate at all. For this report, gaze opacity maps were generated based on fixation counts. The brightness of a gaze opacity map ranges from black to white. Areas in black received very few to no fixations and areas in white received more fixations from participants. At the most basic level, a gaze opacity map shows the areas that received the most fixations and the areas that received no fixations. A gaze plot shows the participants' scan paths across the screen. Each fixation (where a participant stops) is illustrated by a dot. Longer fixations are represented by larger dots.

Areas of Interest: Areas of Interest (AOIs) are defined by the experimenter at the beginning or end of a usability study. An area is chosen by developers interested in a feature, an area neglected by participants, or any other question that could be answered utilizing eye-tracking data. Numerous metrics can be exported based on the eye-tracking data gathered in a study. One commonly reported measure, time to first fixation, shows the number of seconds before a participant fixates upon an AOI or its group for the first time. These metrics can be used as indicators as to where participants look first. Another metric, first fixation duration, shows the number of seconds the first fixation lasts. A shorter time indicates participants moving onto other areas, while a longer time indicates that participants focused on the content. However, this can be indicative of confusion, or processing of information. Short first fixation duration times spread across the various AOIs may be indicative that participants are looking over the entire page to assess where they should start.

Visits: A visit count is an attribute of an AOI calculated as the number of fixations made by a participant on the AOI. For example, if the participant fixates upon the progress indicator and the next fixation is outside the progress indicator, the visit count is increased by one. A high visit count may be indicative of confusion as the participant re-visits an area. For example, participants may have to re-examine the question after looking at the response options. It may also indicate expectations if they re-visit AOIs where they expect to see information that they may have missed in a prior visit.

Visit and Fixation duration: Visit duration is determined by the total time spent between these two fixations on an AOI. The total visit duration is the sum of all visit durations on the AOI; often this number will be similar to the total fixation duration. Long fixation durations may be indicative of confusion depending on the complexity of the text being read.

The findings are presented as issues that came out of answering for the participant's own household, answering for a vignette, and whether or not there was also a survey content issue uncovered.

Limitations

Several changes were made to web pages throughout the usability testing of the ACS because the developers were actively working on the Web site. For example, text was moved around and bold was added to some of the roster screens. As a result, aggregate eye-tracking data may not be valid on screens where severe changes were made. There was also a wide range in the number of residents that respondents listed on the form. The number of listed residents would move text down, changing the appearance of an aggregate heatmap. As a result, eye-tracking data for these screens (e.g., the roster screens) are not reported.

3.1 Confusion about Residence Rules and Whom to List on the Roster¹

3.1.1 Ambiguity of the terminology associated with the “Two Month Rule” (Usability and Content Issue)

Vignette Issue: Concepts such as “usually stay” or “2 months” were misunderstood by most participants. This issue surfaced most often during the vignette testing. For example on the AWAY NOW screen, some participants perceived two months over the course of

¹ This issue is both a usability issue and an ACS content issue and could seriously impact the accuracy of the data.

a year, rather than consecutively. Other participants were momentarily confused but answered the question according to Census Bureau intent in these statements. For example, one participant pointed out the inherent ambiguity of the question before deciding to use two months consecutively as the rule for the vignette. In contrast, another participant decided to use two months over the course of a year as the criterion. Yet another participant pointed out the ambiguity present in the statement, but also decided to use the two-month consecutive period rule. Other situations, such as shared custody, lacked key information needed by the participants to answer the question correctly.

The AWAY NOW screen, which asks, “Are any of these people away NOW for more than two months, like college students living away at school or armed forces living away?” was also a source of confusion during the vignettes (see Figure 1). Some participants seemed to think that the military and college student examples listed on the webpage were the only determining criteria, instead of the intended Census Bureau interpretation of residents in other similar situations. Other participants interpreted the NOW statement to mean whether the occupant was residing in that residence recently. For example, one participant did not include Lucy from the vignette because of the NOW statement. Other participants read quickly and skipped over the NOW statement. For example, one participant said he was thinking along the lines of going to be away for more than two months but misread the question and did not see AWAY NOW.

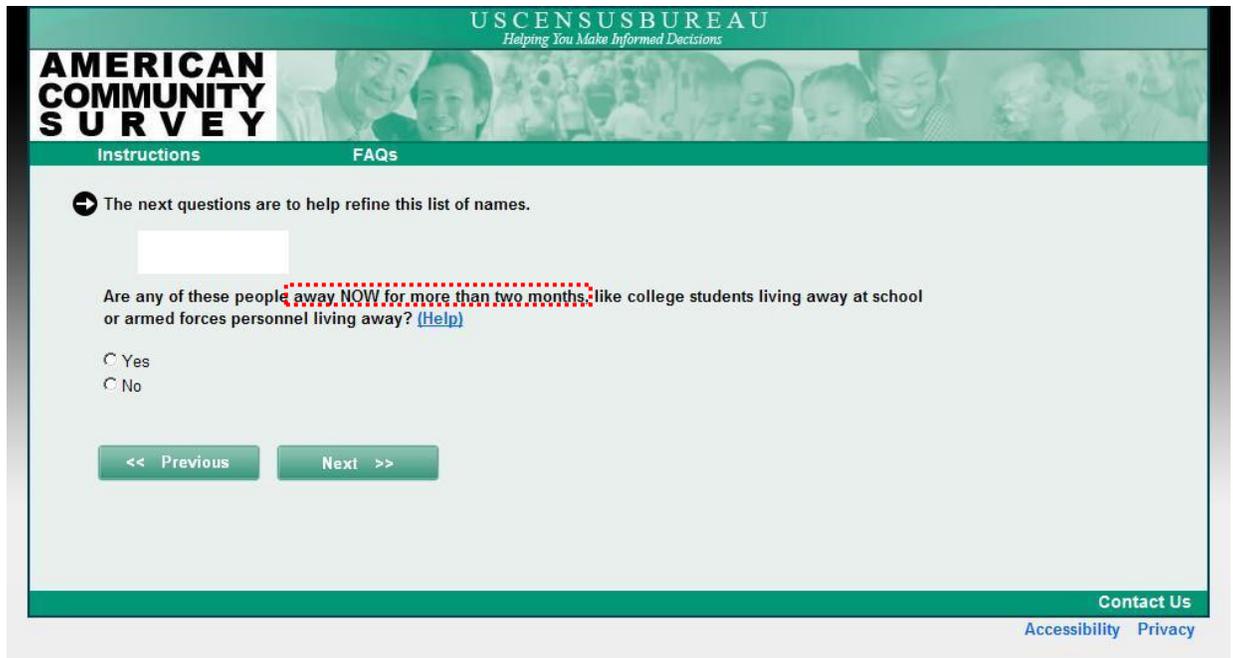


Figure 1: The “AWAY NOW” screen²

The open-ended nature of the “usually stay” terminology on the ANOTHER HOME (Figure 2) screen confused two participants. One participant said it could mean people whose official residence is this household, but they may be in school. While clarification for these statements may have been present in Help, the majority of participants did not use it. One participant said he thought the questions were straightforward, which is why he did not consult Help. Ambiguous statements are likely to increase the likelihood of receiving incorrect data, requiring more resources to correct responses.

Besides the content issues described above, there were also some usability issues with Help. Because most participants did not click on the help link, they did not see the residence rules for whom to count for this screen. Participants are more likely to guess or create assumptions rather than take more steps to find the appropriate answer. Nielsen writes “People arrive at a website with a goal in mind, and they are ruthless in pursuing their own interest and in rejecting whatever the site is trying to push” (Nielsen, 2008). The current solution of utilizing help links depends on the participants’ willingness to consult help, which could prove problematic.

² The live screens as seen by participants did not have white boxes as in Figure 1. This box was added to protect the privacy of the participants’ data for this report.

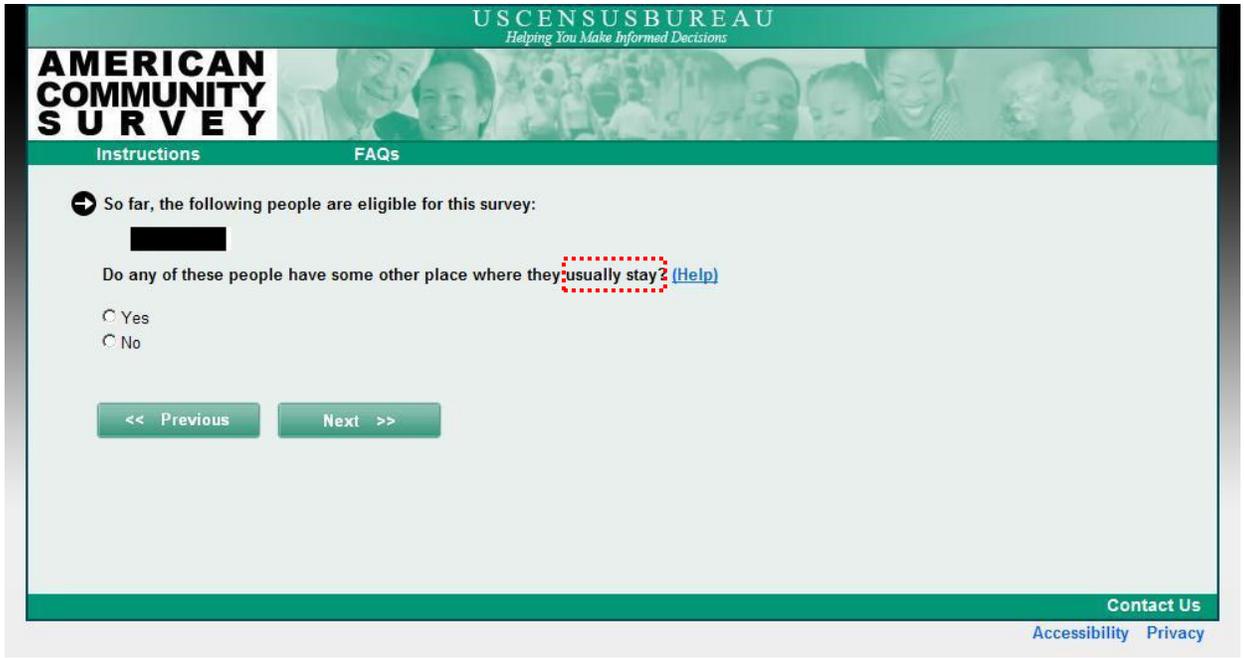


Figure 2: The “usually stay” phrase in the ANOTHER HOME screen³

³ The live screens as seen by participants did not have black boxes as in Figure 2. This box was added to protect the privacy of the participants’ data for this report.

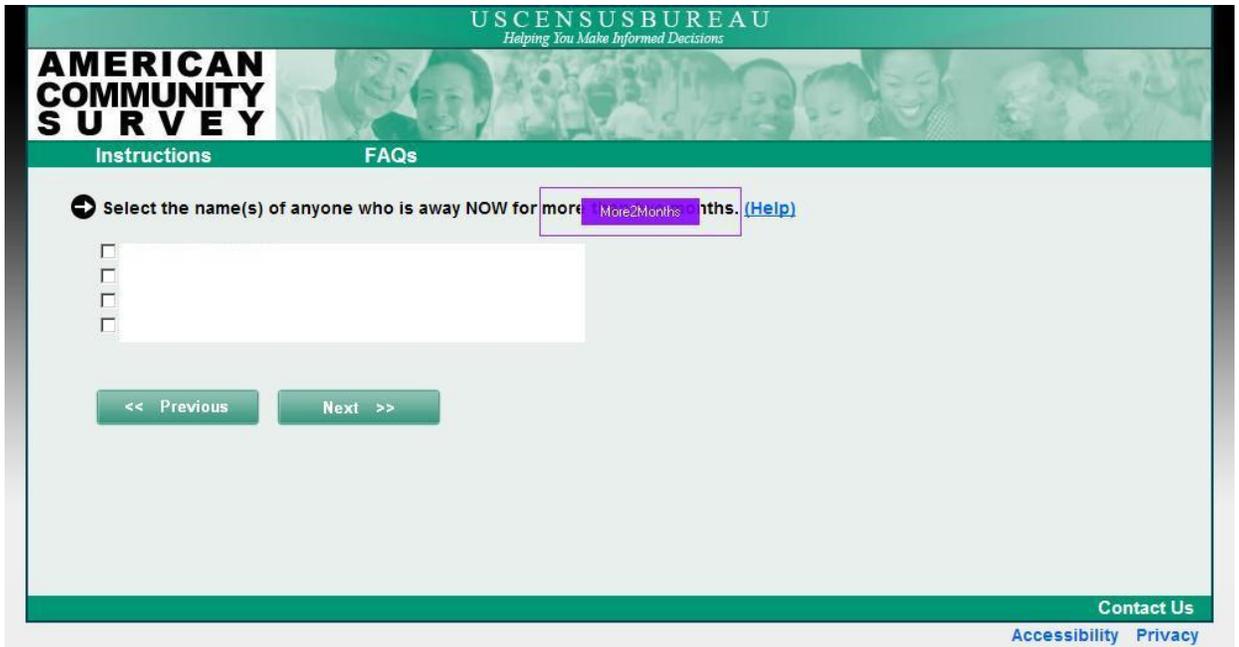


Figure 3: AOI mapping of the REMOVE ONE screen. The phrase under the purple AOI box is “more than two months.”

Participants also did not seem to read key parts of the questions. The AOI box in Figure 3 above shows the area around the phrase of interest, “more than two months.” Although there are only two participants who saw this screen, these data are very informative about their interaction with the screen. We wanted to see how long it took participants to look at the phrase and how long they spend looking at it and found 3.51 seconds elapsed before participants fixated upon the phrase. Their first fixation duration is only 0.19 seconds and overall the total number of fixations made (2.5) and the total duration of these fixations (0.83 seconds) are low compared to the time taken to first fixate onto it (3.51 seconds). The two out of three recordings of participants who saw this screen showed that participants made few visits (1.5)⁴. Overall, this indicates that participants did not think deeply about the statement “more than two months.”

Recommendations:

- We recommend further testing of alternative ways of expressing the two-month rule.
- The residence rules should not be hidden behind help links; further testing of alternative methods of conveying the residence rules is recommended.

⁴ One participant who saw this screen did not have his/her eye movements recorded because of equipment failure.

3.1.2 ACS Definitions Ignored in Favor of Heuristics (Usability and Content Issue)

Vignette Issue: Participants responded to the questions in the survey utilizing their own heuristics instead of seeking help. For example, one participant said “Even though he stays there more, [I] would put him here [be]cause <sic> he lives with me.” Participants rushed through the survey to complete it as quickly as possible. The same participant also commented, “It said more than 2 months; I skimmed through it real fast.” Several participants believed they answered the questions correctly when asked “if it was clear how to answer the question.” Some participants remarked, “You just have to read carefully,” providing a glimpse of how confident participants were about their responses.

Performance on the vignette task varied greatly due to the usage of individual heuristics. The heuristics came into play because the rules are inconsistent with respect to where household members should be counted. For example, in the Custody 2 vignette, Nicholas should have been marked as away according to ACS rules, but one participant responded that Nicholas stayed with him since he lives there despite seeing the text inside the help screen. Another participant used a similar heuristic in the vignette to mark Lucy as staying at the sample address despite her absence due to being away at college. Yet another participant used the same justification to mark Maggie as staying there despite Maggie’s current absence for work-related reasons in the commuter worker scenario; however, in this scenario, this is the correct answer due to the commuter residence rule. Applying the same justification to household members but having the residence rules be different for these various scenarios can be very confusing to respondents.

Some participants took additional time to try to understand the ACS and Census Bureau rules. In the vignette, one participant noted that where Sam lives or stays is defined more by his work situation than the personal relationship. However, most participants did not take that much time to try to understand the rules.

Many participants were confused by the rules and lack of explanation of whom should be included. For example, when one participant was probed about why he included Maria the housekeeper on his household list, he said “because you say she stays the night over there...you were saying that she works there during the day time” before commenting “Maybe I shouldn’t have put her down there because she’s only staying there for work...she technically does not reside there...like her mail does not go there.” This participant began to consider utilizing factors like if the resident receives mail as a heuristic after the fact, but did not follow it when initially responding. Therefore, he answered incorrectly for Maria. The Census Bureau is likely to receive incorrect or false data as participants use their own heuristics to answer questions. That is, because the rules are not clear in the survey, and complex rules are difficult for people in general to

follow, nonsampling errors can occur. These results are consistent with past research (e.g., the Living Situation Survey: Gerber, 1994; Sweet, 1994).

Table 7 (below) shows the vignette performance of 29 out of 31 participants.

Table 7: Vignette Performance (n = 29)

Condition	Correct	Incorrect	Total (N)	% Correct
Prototype	0	1	1	0.00%
All				
Boarding School	0	11	11	0.00%
Commuter Worker	3	8	11	27.27%
Custody 1	10	1	11	90.91%
Custody 2	6	5	11	54.55%
Boarding School	1	3	4	25.00%
Commuter Worker	4	1	5	80.00%
Custody 1	1	2	3	33.33%
Custody 2	2	3	5	40.00%

Two participants did not complete the vignette due to technical or personal difficulties. Results are separated by the vignette completed (e.g., each has its own row in the table) due to changes made throughout testing to reduce participant confusion. A prototype vignette used in the Dry Run that included several different scenarios was simplified into an All vignette. Eleven participants completed the “All” vignette that contained all four scenarios. This vignette was still too complicated and time-consuming, so it was further separated to create individual Boarding School, Commuter, Custody 1, and Custody 2 vignettes. Table 7 shows that participants completing the “All” vignette had the most trouble with the Boarding School and Commuter Worker scenarios. When the scenarios were split apart and completed individually, participants were much less accurate with their responses to the Custody 1 scenario but much more accurate with their responses to the Commuter worker scenario. It is possible that the complexity of the combined “All” vignette may have contributed to lower accuracy of the Commuter scenario, but it is unclear why the accuracy for Custody 1 dropped when it was completed as a separate task.

Errors varied based on misunderstanding of counting rules, such as the two month rule, or use of personal definitions such as where the person “really lives.” For example, when one participant was asked why she did not list Alice the boarding school student, she replied “I think she should but she’s away at school.” Another participant commented “Mary is like part of the family, maintains her household. But Mary’s home is my home because she stays there 5 days a week.”

All Vignette

Overall, performance across most of the vignettes was poor. In the All condition, where participants had to answer all of the individual vignette scenarios, there was no one who got them all right. Most participants incorrectly listed Lucy (college student) and Mary (housekeeper) on the roster. These participants often had trouble deciding whether they should list Mary since she spent most of her time at the residence. Only one participant did not list Mary on the roster. These results indicate that participants may have been confused by how often Mary was at the household. Other participants removed Nicholas incorrectly (shared Custody 1) or listed him twice on the roster. However, most participants correctly completed the commuter section (Sam/Maggie) of the All vignette.

Boarding School Vignette

Participants in the Boarding School (Alice) vignette may have had difficulty understanding the AWAY now rule. One participant correctly completed the Boarding School vignette, but the other three participants did not list Alice as living with them.

Commuter Vignette

Four out of 5 participants completed the Commuter worker vignette correctly. Only one participant incorrectly answered Sam or Maggie as living away.

Custody 1 and 2 Vignette

Results from the Custody vignettes were mixed. Participants in Custody 2 listed Nicholas as staying with them with justification that they were the parent. Participants who incorrectly answered the question for the vignette seemed to ignore whether Nicholas was physically away at the time the survey was completed, or they misunderstood the phrase “away now.” Likewise, a similar misunderstanding may have occurred for Custody 1 that led to participants not listing Nicholas even though he was at the sample address at the time the survey was completed.

Recommendations:

- We recommend further testing of alternative methods of encouraging participants to use the ACS residence rules instead of their own.
- Alternatively, breaking down the questions into a branching structure would remove the need for participants to understand the residence rules themselves.⁵

⁵ An alternative version of the roster for the ACS Internet test that would have followed such a design was vetted, but ultimately was not programmed or tested due to time constraints. We recommend testing the alternative roster for performance comparison purposes.

3.2 Unclear Intent of Roster Questions

3.2.1 Duplication of Residents on Roster (Usability Issue)

Own Household Issue: This issue is reflective of the unclear nature of the question and/or how it is displayed on Roster B. The Roster screens can be found in Appendix A. Two participants duplicated a member of their household on the Roster B screen after already listing them on Roster A. Occasionally, this led to puzzled reactions from the participants. One participant, when asked about the duplication, mentioned that she had thought it was odd, but stated she had responded to the question as asked by the questionnaire. Figure 4 shows part of the gazeplot for when she encounters this screen. The names are redacted to protect their anonymity. This participant starts reading from “make sure this list is as complete as possible” before moving onto the grayed out text. From there she re-entered her roommates’ names on the roster before clicking “next.” Participants may miss the roster showing the existing listed household members as they skim through the survey quickly.

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Instructions FAQs

➔ The following questions are to make sure this list is as complete as possible.

[Redacted]

Does anyone else live or stay there such as roommates, foster children, boarders, or live-in employees? [\(Help\)](#)

Yes
 No

Enter the names and then click Next. Enter one person on each line. Leave any extra lines blank. [\(Help\)](#)

First Name	MI	Last Name

[Click here to add more people](#)

<< Previous Next >>

Figure 4: Part of one participant’s gaze on Roster B screen

Vignette Issue: Nicholas (shared custody) was also duplicated on the roster in the vignettes once on Roster B.

Recommendations:

- Alert respondents to duplicates by checking their input against names on the roster. Duplicated names could appear in red font upon entry on a subsequent page with a message notifying the user that this may be a duplicate. Users should then be able to remove the individual from this page.
- Clarify the question to make it clear that it is asking for additional people and not whether people already listed fit the categories. Based on the usability staff's recommendations, the words "anyone else" were put in all caps and the question itself was moved to the top of the screen instead of under the list of names.

3.2.2 Perception of Question Redundancy (Usability and Content Issue)

Own Household Issue: The repetitiveness of the roster questions and other screens annoyed some participants. One participant, while completing the survey for her own household, said the 2nd roster probe was redundant to the first; and laughed when she got to the 3rd roster question, saying we just asked the same question 3 times. She also pointed out the redundancy in the "does anyone have other place where they usually stay" question. The participant also addressed the redundancy of the first two address questions. Specifically these questions were "Are you completing the American Community Survey for: *Address*, Yes/No" and "Do you live or stay at: *Address*, Yes/No."

In some cases, the redundancy caused participants to make mistakes for their own households and for the vignettes. One participant added her roommates twice, resulting in a duplication of the roster list as a result of the ROSTER B screen. When asked about the duplication she said she was only following directions from the website itself. Her response indicates that she seemed to misunderstand the purpose of the roster follow up.

Vignette Issue: For the vignette, one participant listed Nicholas twice by adding Nicholas on Roster B or C in the vignette. When asked about this, the participant said she noticed it, but did not know what to make of it. Another participant, when encountering the Roster Check screen (See Appendix A for a screen shot) in the vignette opted to return to a previous screen to add Mary instead of answering yes and adding Mary. Participants were skimming over the key information "does anyone else" that clarifies why this question is being asked again.

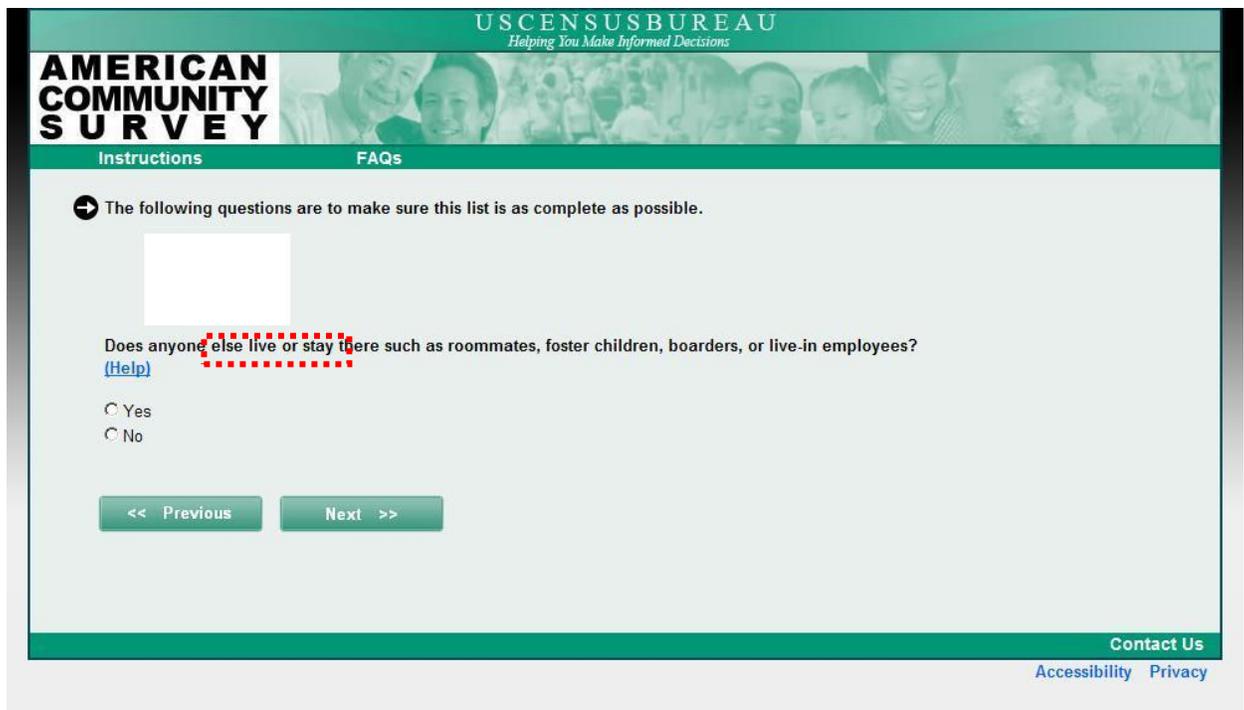


Figure 5: Roster B screen

Recommendations:

Use a different font color, size, and/or capitalization to help the key information shown in the red box in Figure 5 (above) stand out. Most participants do not recognize the subtle nuances between the questions and perceive that the Census Bureau re-asks the same question in two to three different ways. For example, we ask additional questions because we ask the "who lives here?" questions in different ways to probe participants into considering people they might not normally think about.

- Highlighting that the repeated questions act as a follow-up check may reduce confusion. The question was ultimately re-formatted in another round of testing following this one, which did seem to ameliorate this problem.
- We recommend testing alternative formatting of the roster questions that calls attention to the intent of the questions to add or delete household members. For example, adding words such as “**Double Check:**” may clarify to respondents that these questions are checking if the respondent has captured everyone in their household.

3.3 *Trouble finding User ID (Usability Issue)*

Own Household Issue: Several participants had trouble locating the example User ID on the login screen (Figure 6).

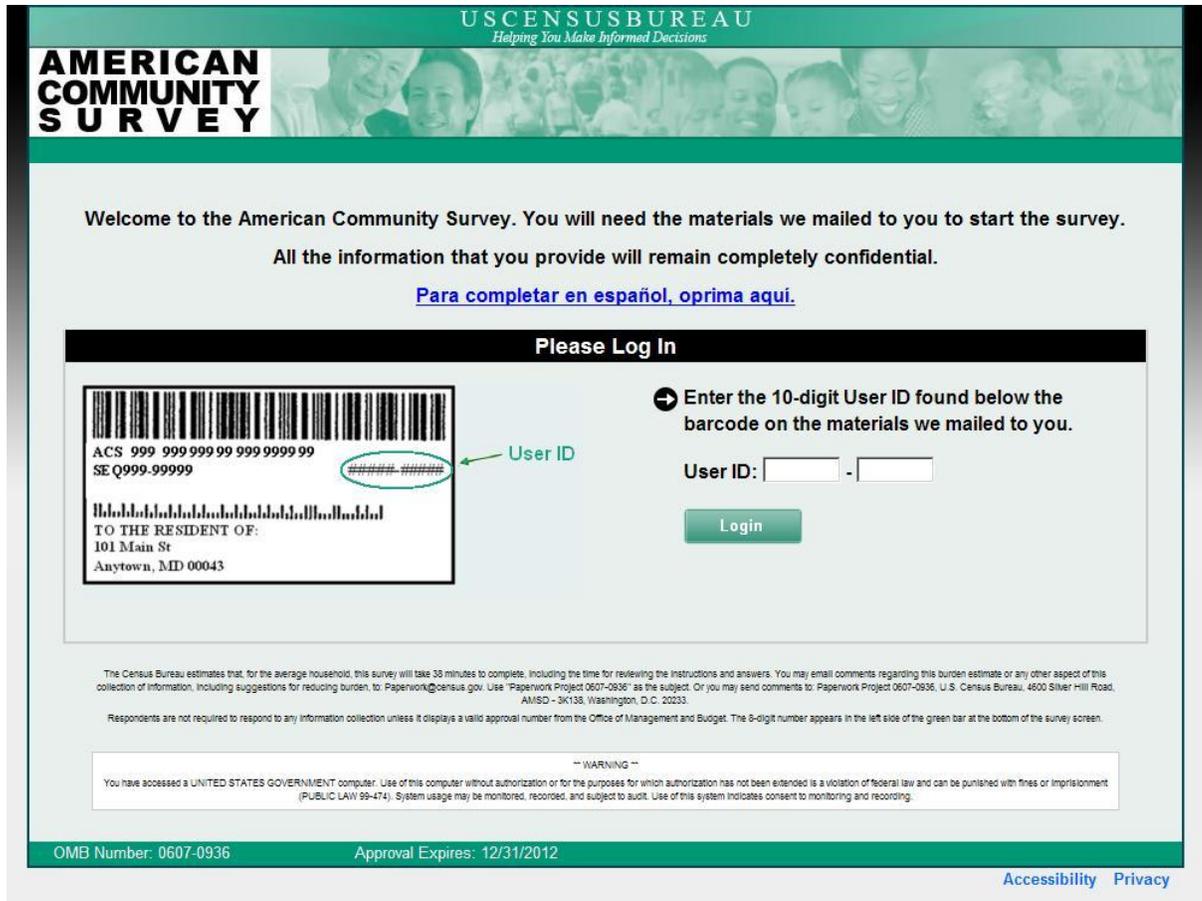


Figure 6: Login page of the ACS

One participant commented that the green font of the text blended into the background. Other participants noted that it should be in red since red catches your attention. One participant said that the “enter the 10 digit ID” (above the login text fields) should be in red. One participant thought the SEQ 999 code was the ID at first. Another participant commented, “oh you know what, they showed a picture of it” after finding the User ID from the mailing materials. He commented that they should mark the user ID better on the packet.

Figure 7 (below) shows a gaze opacity image of the login page of the American Community Survey. As a reminder, the dark areas of the image represent areas of the screen that users rarely looked at. The white areas represent areas that users looked at most of the time they were on the page. The data consists of 29 participants who were eligible to include in the eye-tracking data. The other two participants were excluded from eye-tracking analysis due to insufficient data or no data because of inability to track their eyes. The majority of participants quickly skimmed over the text and focused on the login screen. The location of the “Login” button moved during the course of testing for unknown reasons, which can be seen in the two clusters of clicks in the black regions of the screen near the “Login” button in Figure 8.

There was some attention paid to the example User ID and one participant tried to click on “Please Log In” in the black bar, but participants, for the most part, did not focus on anything else on the screen. This indicates goal-oriented behavior associated with logging into the survey. The warning message at the bottom of the screen was not seen or read.



Figure 7: Gaze Opacity image for Login Screen in relative duration (n = 29)

The Gazeplot in Figure 8 (below) shows the first second of the 29 participants' gazes. This image shows that most participants started from the center of the screen⁶, looked at the message above, and finally to the login area. Participants generally skimmed the text and looked for the key element needed to complete the task of logging in. Participants varied widely on the amount of time spent on the login screen due to the difficulty in locating the user ID. Although all the necessary information to log in was contained in the mail materials distributed earlier in the session, users had difficulty matching the image in the mailing materials to the screen. The example image on the screen did not seem to help users locate the User ID on the mailing materials.



Figure 8: Gazeplot of the Login Screen. First second (n = 29)

⁶ Center fixation may be due to the Tobii Studio calibration before starting the recording.

Figure 9 (below) shows the mapping of the nine areas of interest (AOIs) on the Login screen. AOIs were specified for instructions and other statements that participants needed to read and understand to start the survey. AOIs were also specified on the example image and other areas on the page to examine the duration and speed at which participants examined the various web elements.

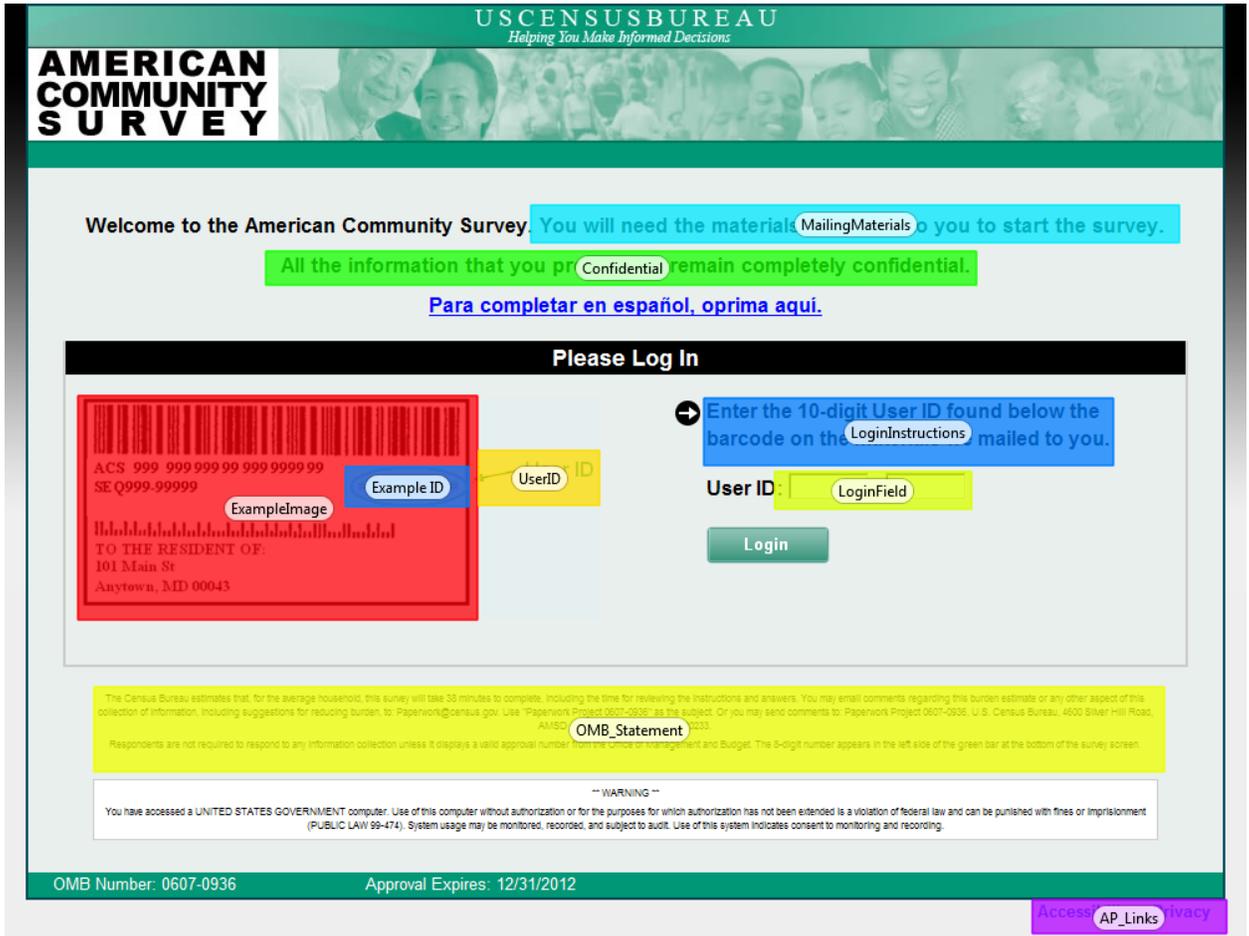


Figure 9: AOI mapping of the ACS Login screen

Table 8 (below) shows the average number of seconds before a participant fixated upon an AOI for the first time. No participants fixated upon the accessibility and privacy links in the bottom right corner of the screen. On average, participants looked at the login instructions (9.67 seconds) first before looking at the example image next (8.95 seconds). Participants, on average, took the longest to look at the OMB statement (25.64 seconds).

Table 8: Time to first fixation in seconds for the login screen (n = 28)⁷

	AP Links	Confidential	Example ID	Example Image	Login Field	Login Instructions	Mailing Materials	OMB Statement	User ID
Average	-	11.59	17.32	8.95	14.70	9.67	13.83	25.64	13.11
N	-	18	18	25	26	22	11	19	15

Table 9 (below) shows the average number of seconds a participant fixated on an AOI before fixating elsewhere. Times in this table are less than half a second, reflecting that participants are looking around the page before deciding what to do. Few participants are reading the statements on their very first fixation.

Table 9: First fixation duration in seconds for the login screen (n = 28)

	AP Links	Confidential	Example ID	Example Image	Login Field	Login Instructions	Mailing Materials	OMB Statement	User ID
Average	-	0.31	0.29	0.28	0.35	0.24	0.20	0.13	0.28
N	-	18	18	25	26	22	13	19	15

Table 10 (below) shows the average total number of seconds spent on each AOI. On average, participants spent 4.96 seconds looking at the Example Image. The longest time spent by a single participant was 29.76 seconds. Longer total fixation times for simple statements may indicate confusion or an increase in the time taken to process and understand what a particular area of the screen is telling them. If users easily understood how the image on the screen relates to their mailing materials, we should see shorter total fixation times. The mailing materials statement (0.83 seconds) and OMB Statement (0.53 seconds) were fixated upon the least.

Table 10: Total fixation duration in seconds for the login screen (n = 28)

	AP Links	Confidential	Example ID	Example Image	Login Field	Login Instructions	Mailing Materials	OMB Statement	User ID
Average	-	1.20	1.40	4.96	2.80	3.74	0.83	0.53	1.32
N	-	18	18	25	26	22	13	19	15

Table 11 (below) shows the number of visits made by each participant to the AOIs designated on the login screen. Each visit is determined by a fixation inside the AOI with

⁷ Throughout the report the tables caption lists an N. The Ns listed in the table represent the number of people the eye tracker reported recording fixation data from the marked AOI. This number might be different than the total number of people who saw the screen because eye-tracking data were not recorded for all participants on all screens because of equipment problems.

the next fixation outside the AOI. AOIs with a high number of visits may be indicative of confusion or search behavior as the participant tries to find key information needed to proceed. For example, one participant had 25 visits to the Example Image, 27 visits to the Login Field, and 25 visits to the Login Instructions. The Example Image had the greatest number of average visits (10.0) compared to the other AOIs designated on the Login screen. The Login Instructions received the next highest number of visits (6.41). In comparison, the mailing materials received the lowest number of visits, with an average of 1.69. Therefore, the relatively high number of visits to the Example Image and Login instructions and field could indicate participant confusion and difficulty logging in.

Table 11: Visit count for the login screen (n = 28)

	AP Links	Confidential	Example ID	Example Image	Login Field	Login Instructions	Mailing Materials	OMB Statement	User ID
Average	-	3.89	4.33	10.00	5.27	6.41	1.69	2.47	4.53
N	-	18	18	25	26	22	13	19	15

Table 13 (below) shows the average number of seconds from the participants' first fixation on their first AOI to their first mouse click on the same AOI. Data from this table can be used as an indicator of how quickly participants focus on navigational elements they can use. The shortest time it took a participant to click on the Login Field after seeing it was 0.35 seconds. This participant briefly scanned the example image before typing in "ACS." The participant then paused, deleted his/her text entry, and entered in the login number. In contrast, the longest time was 181.13 seconds. On average, participants took 26.23 seconds to click on the Login Field after seeing it.

Table 12: Time from first fixation to first mouse click (n = 28)

	Login Field	Login Instructions
Average	26.23	7.54
N	9	1

Recommendations:

- For future surveys, it might be best not to include any vital information about confidentiality or the length of the survey (OMB burden) on this screen because it is not read by participants. It might be better to include this information on another screen (e.g., welcome screen after logging in). The goal of logging in seems to dominate the participants' attention and not the peripheral information.
- **Sponsor Response:** We suggested to the sponsors that the color of the circled should be changed to red in order to stand out more during testing. The User ID problem has been resolved. Red font color is used and the example is now explicit.

- **Sponsor Response:** We suggested improving the example image placement. In later rounds of ACS testing, the placement of example image and login fields is flipped to guide participants visually to look at the example image before logging in.

3.4 *Help Helpfulness (Usability and Content Issue)*

Own Household and Vignette Issue: The majority of participants did not click on any of the help links or view the help text. Participants who did use help remarked it was rarely helpful. One participant declined to use help again after having an unsatisfactory reaction to the help text for the *Another_Home_Who* screen. This question asked the participants to “Select the name(s) of anyone who has another place where they usually stay”. Another participant was confused by the help text on the *MORE THAN TWO* screen. She commented that the difference between do select / do not select and yes / no was confusing and made her think way too much. This participant’s comment about the cognitive workload may reflect the experience of other participants who try to use the help feature. The statements of the sort “do select X if Y” require participants to understand the relationship between X and Y and the “do select” versus the “do not select” statements. The additional cognitive workload associated with processing these statements increases the burden of the survey. Respondents are unlikely to be either satisfied or compliant if they are cognitively burdened when completing the survey.

Figure 10 shows the *AWAY NOW* help text and Figure 11 displays a heatmap for it. It shows that this participant read the beginning section of the text, but did not read the last three bullet points that actually refer to the three complex living situations previously discussed: children in shared custody, boarding school students, and commuter workers. This information may have been beneficial to the participant while completing the vignette.

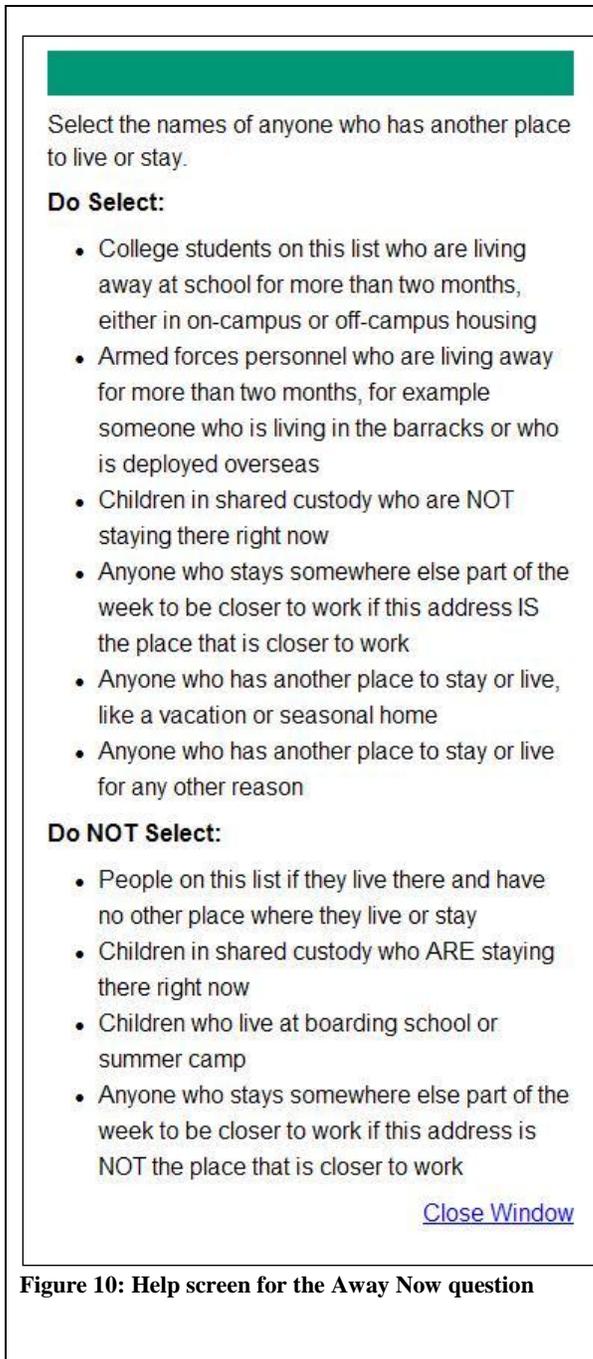


Figure 10: Help screen for the Away Now question

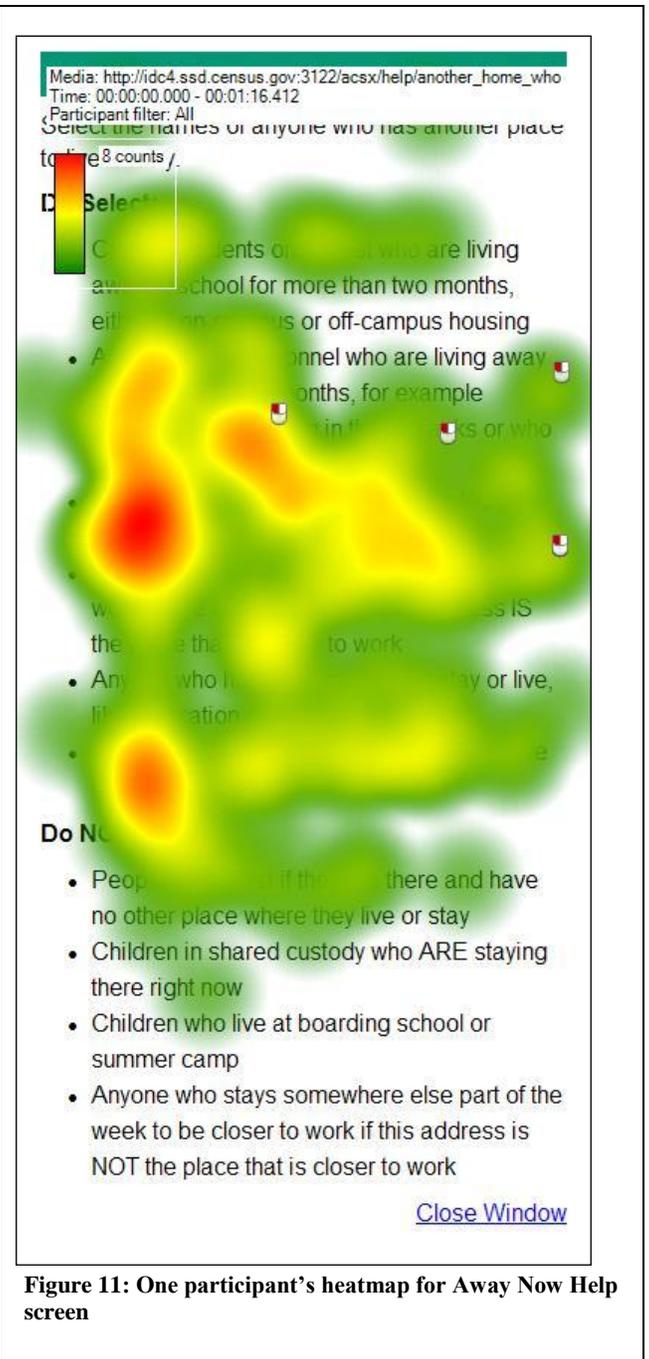


Figure 11: One participant's heatmap for Away Now Help screen

Recommendations:

- The wording in the help text should be simplified. Try to simplify the “do select X if Y” rules. An alternative layout such as a two-column layout may reduce the need to remember, “do select” versus “do not select.”

- Branching question and answer questions inside help may be preferable to complex “do select X if Y” statements. For example, asking respondents if they have someone in shared custody, and then asking the respondent where this person currently is. It may significantly reduce the cognitive burden of answering the questions if participants are able to answer a series of short questions based on their initial responses rather than trying to apply complex residence rules to their own lives.

3.5 *Length of the text on the PIN screen (Usability Issue)*

Own Household Issue: The PIN screen (see Figure 12) consists of several paragraphs of text and a PIN number in large red font. Nielsen writes, “Users won’t read your text thoroughly in a word-by-word manner.” He adds, “The first two paragraphs must state the most important information. There’s some hope that users will actually read this material, though they’ll probably read more of the first paragraph than the second” (Nielsen, 2006). Although key information is located in the first two paragraphs, users were more likely to read the first paragraph. Several participants missed information about the length of the survey or the PIN’s purpose when they quickly scanned through the text. Debriefing questions about the length of the survey and the PIN rarely resulted in correct answers. One participant said, “like ten minutes” when asked about the total duration of the survey. Another participant thought the PIN was for extra security, and did not notice how long it would take to complete the survey. Other participants understood the PIN’s purpose but did not notice the estimation of time required to complete the survey.

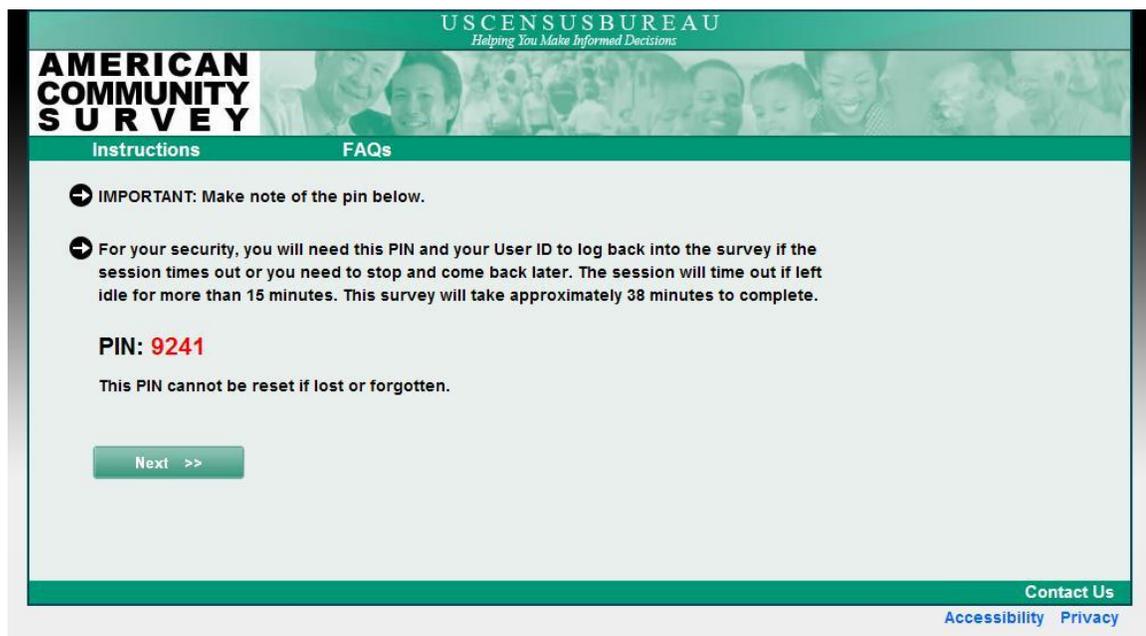


Figure 12: PIN screen

The gaze opacity image in Figure 13 shows the relative amount of time that participants spent looking at the PIN screen. This image factors the total number of fixations and the fixation duration of each fixation together. This gaze opacity image shows that the majority of fixation and the duration are spent on the PIN number itself and not the text explaining the PIN's purpose, the length of the survey, or if the PIN can even be recovered.

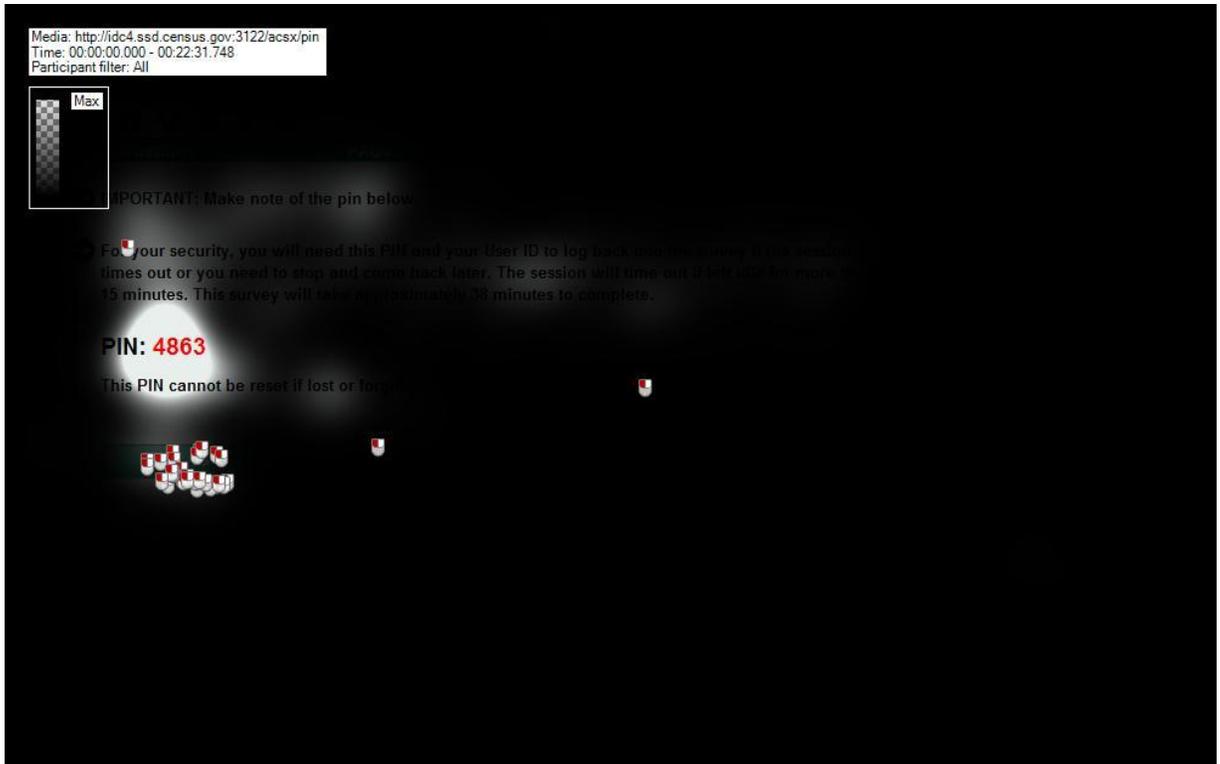


Figure 13: PIN Gaze opacity relative duration (n = 29)

The gazeplot in Figure 14 (below) shows that in five seconds the majority of participants skimmed through the text on the PIN screen. Since participants are skimming rather quickly, they may be missing key information in the text. Upon review of the data, the usability staff determined that all of the participants had moved onto the next page by the two-minute mark.

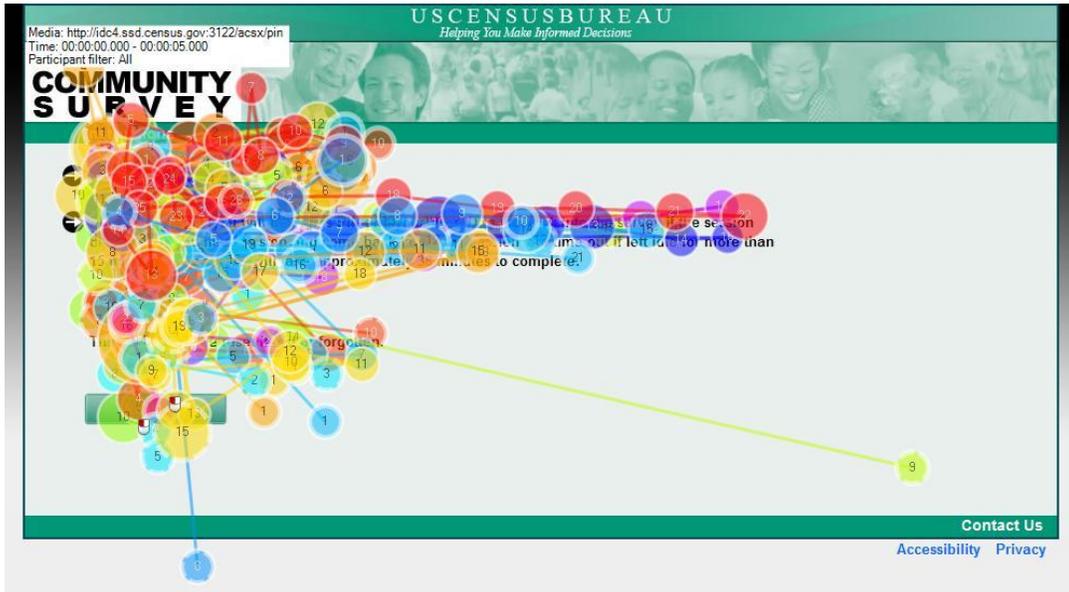


Figure 14: PIN gazeplot for the first 5 seconds (n = 29)

Figure 15 (below) shows the AOI mapping of the PIN screen.

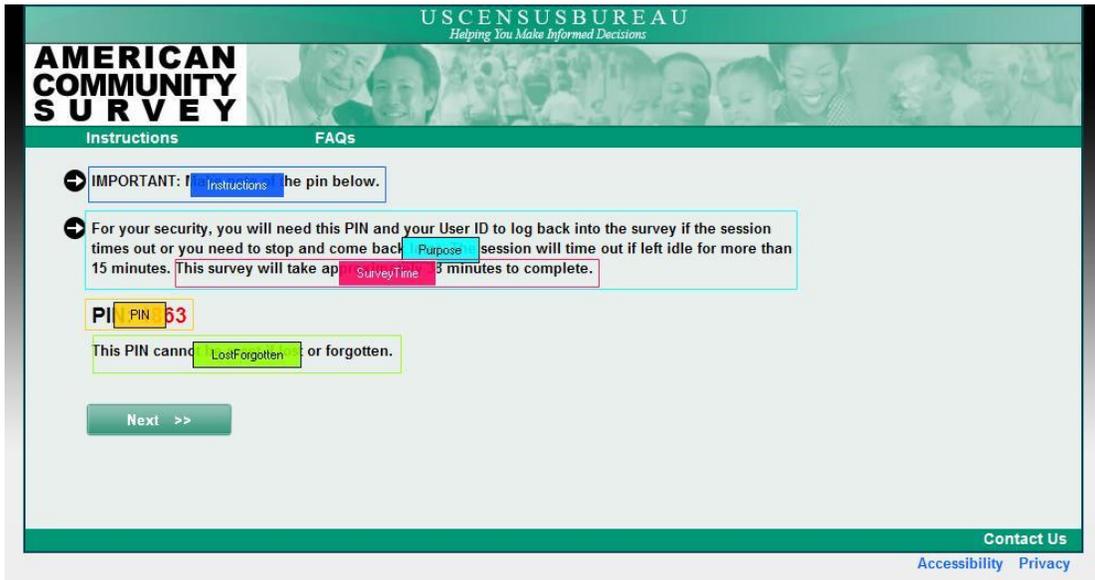


Figure 15: AOI mapping of the PIN screen

Table 13 (below) shows the average number of seconds before a participant fixated upon an AOI (as specified in Figure 15 above) on the PIN screen. On average, participants fixated upon the Instructions first in 0.96 seconds. On average, they fixated upon the SurveyTime last at 11.45 seconds. With the exception of one participant, most participants had low time to first fixation times. This participant took 22.09 seconds to fixate upon the Purpose and 22.09 seconds to fixate upon the SurveyTime. Because the SurveyTime AOI is subsumed by the Purpose AOI the data indicates this participant looked at the amount of time taken before the rest of the Purpose message.

Table 13: Time to first fixation in seconds for the AOIs on the PIN screen (n = 28)

	Instructions	LostForgotten	PIN	Purpose	SurveyTime
Average	0.96	7.66	4.85	4.14	11.45
N	16	19	20	21	18

Table 14 (below) shows the average number of seconds participants fixated upon an AOI on their first fixation. On average, the time spent on the first fixation is generally less than a second. This pattern indicates scanning behavior as participants look at the information on the screen.

Table 14: First fixation duration in seconds for PIN screen (n = 28)

	Instructions	LostForgotten	PIN	Purpose	SurveyTime
Average	0.26	0.28	0.34	0.23	0.28
N	16	19	20	21	18

Table 15 (below) shows the average total number of seconds spent fixating on each AOI. Participants spent an average of 2.38 seconds on the Instructions, 2.07 seconds on the LostForgotten AOI, 2.18 seconds on the PIN, 6.36 seconds on Purpose, and 1.4 seconds on the SurveyTime. Overall, participants spent little time on this screen.

Table 15: Total fixation duration on PIN screen (n = 28)

	Instructions	LostForgotten	PIN	Purpose	SurveyTime
Average	2.38	2.07	2.18	6.36	1.4
N	16	19	20	21	18

Table 16 (below) shows the average number of visits made to each AOI. Overall participants had an average of less than five visits for all AOIs excluding the Purpose of the PIN (7.05 visits). However, some participants had a high number of visits to the PIN number and Purpose statement. For example, one participant had 18 visits to the Pin and 14 visits to the Purpose, and another had 16 visits to the Pin and 13 visits to the Purpose.

These participants may have been re-examining the information on the webpage for the PIN’s purpose.

Table 16: Visit Count for PIN screen (n = 28)

	Instructions	LostForgotten	PIN	Purpose	SurveyTime
Average	3.69	4.05	4.8	7.05	2.94
N	16	19	20	21	18

Recommendations:

- The text on the PIN screen should be broken down into bullet points. Bullet points allow for faster processing of information if they are short; the second paragraph is too lengthy to be considered a bullet point. This will benefit the respondent and generally create a more efficient survey.
- Bullet points should also be physically present when their placement is appropriate. For example, the statement “This PIN cannot be reset if lost or forgotten” should have a bullet.

3.6 Noticing Add Functionality (Usability Issue)

Vignette Issue: Some participants did not notice the “click here to add more people” link highlighted in Figure 16 (below). This is based on comments from the participants and behavioral observations throughout the study. One participant did not see the link. Another participant asked what he should do if he had more than five people to list. This participant missed the link, and only listed five residents. These participants may have been skimming through the pages, trying to complete the survey as quickly as possible. Nielsen notes participants are likely to miss links or text while skimming through a Web page (2006).

Other participants only noticed the link after they were probed whether they thought there was any way to add more people. Participants who saw the link understood that it would allow them to add more people, although their responses about the outcome of clicking on the link varied. Some participants expected to be taken to another screen, while others correctly deduced that more response boxes would be added.

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Instructions
FAQs

➔ The following questions are about everyone who is living or staying at 198 Young Rd., Anytown MD 03612.

First, create a list of people. Enter one person on each line. Leave any extra lines blank. Enter names until you have listed everyone who lives or stays there, then click Next. [\(Help\)](#)

First Name	MI	Last Name
<input style="width: 100%;" type="text"/>	<input style="width: 100%;" type="text"/>	<input style="width: 100%;" type="text"/>
<input style="width: 100%;" type="text"/>	<input style="width: 100%;" type="text"/>	<input style="width: 100%;" type="text"/>
<input style="width: 100%;" type="text"/>	<input style="width: 100%;" type="text"/>	<input style="width: 100%;" type="text"/>
<input style="width: 100%;" type="text"/>	<input style="width: 100%;" type="text"/>	<input style="width: 100%;" type="text"/>
<input style="width: 100%;" type="text"/>	<input style="width: 100%;" type="text"/>	<input style="width: 100%;" type="text"/>

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Figure 16: AOI mapping of the Roster A screen

Table 17 (below) shows the average number of seconds before the participants' first fixation, the participants' first fixation duration, the total number of seconds fixated, the number of fixations, visits, and seconds before the first mouse click on the screen. On average, participants spent 29.46 seconds looking at the screen before they fixated on the "Click Here" link. However, the first fixation and the total fixation were short (0.23 seconds for the former and 0.78 seconds for the latter). The low fixation count (2.7) and visit count (2.2) also indicates that participants understood the purpose of the link.

Table 17: Compiled AOI data from Roster A screen in seconds

Click Here						
	Time to First Fixation	First Fixation Duration	Total Fixation Duration	Fixation Count	Visit Count	Time to First Mouse Click
Average	29.46	0.23	0.78	2.7	2.2	75.6
N	20	20	20	20	20	2

In summary, participants understood the purpose of the link if they saw it, but there were some issues with it being frequently overlooked by participants who needed it.

Recommendation:

- Use a larger size, different color, and bolding to make the link visually obvious.

3.7 Contact Information Concern (Usability Issue)

Own Household Issue: Participants differed in their willingness to provide their name and telephone number to the Census Bureau. The request for contact information comes before the roster screens. This issue was explored during the debriefing segment of the testing. The majority of participants were unconcerned about providing names since they were used in everyday interaction. However, participants regarded phone numbers as private information, although one participant did comment that phone plans can be changed at any time. Other participants commented that they were hesitant to provide their telephone number since it might be shared.

Participants rarely understood how their contact information is used or kept secure⁸ since few participants read the privacy statement at the bottom of the login screen. Few participants noticed the confidentiality policy. Despite the uncertainty, most participants concluded that the contact information would be used to call them back if problematic responses were found. Their conclusion may have been the result of the message when

⁸ Although the protocol does not include any questions about security, the debriefing is not a set document. We can ask questions based on comments or behavior we noticed during the session. We tended to ask at least one unscripted question per session.

they were asked for their contact information. Other participants thought the Census Bureau should already have their names. All participants listed their names and phone numbers; however this may have been due to their physical location inside the Census Bureau. One participant specifically mentioned that he was not concerned with sharing his phone number because he was in the Census Bureau lab. A statement regarding the confidentiality of the information does exist on the login page, although participants may have forgotten about it if even if they had read it.

Figure 17 (below) shows the AOI mapping of the Respondent Name screen.

USCENSUSBUREAU
Helping You Make Informed Decisions

**AMERICAN
COMMUNITY
SURVEY**

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

← What is your name and your telephone number? We may contact you for this purpose. This is a question.

First Name MI Last Name

Area
Code Number
 - -

[Next >>](#)

[Contact Us](#)
[Accessibility](#) [Privacy](#)

Figure 17: Respondent Name screen

The gazeplot in Figure 18 (below) shows the participants' gazes on the RespName screen. Participants do read the text stating the purpose of the contact information request; however some are not satisfied with the information. Several participants looked towards to the bottom right at the accessibility and privacy links. However, no participants clicked on these links despite looking at them.

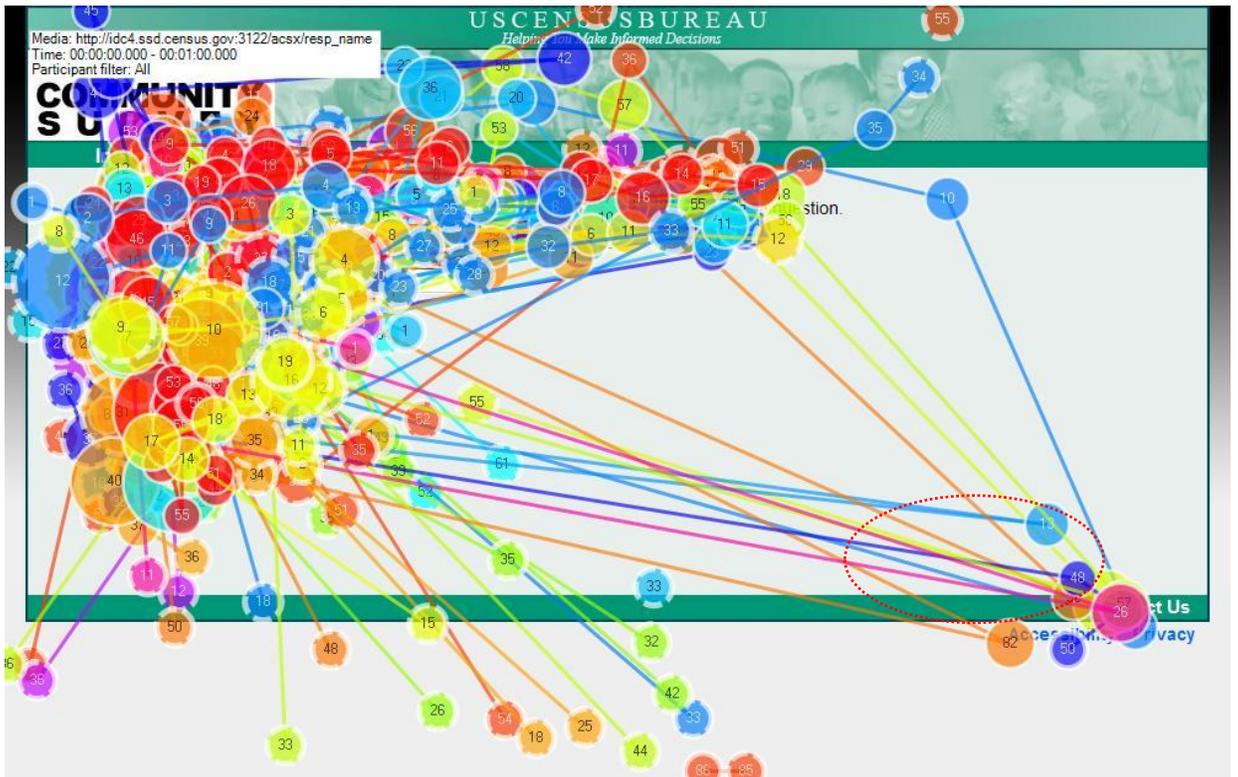


Figure 18: Gazeplot first second on RespName screen (n = 28)

Table 18 (below) shows a compiled table consisting of the time to first fixation, first fixation duration, total fixation duration, and visit count of the RespName screen. On average, participants took 9.53 seconds to look at the reason why we are asking them for their name and phone number, a supplemental instruction following the question itself. They spent little time looking at the message and visited the AOI on average 1.54 times.

Table 18: Compiled AOI data table (times and durations are in seconds)

	Purpose			
	Time to first fixation	First Fixation Duration	Total Fixation Duration	Visit Count
Average	9.53	0.21	0.45	1.54
N	13	13	13	13

Recommendations:

- A message stating how respondents' information will be used (near the name and phone number text fields in bullet point form) may assuage their concern. Specifically, that information is kept only for follow-up questions. Figure 19 (below) shows the advised placement.

The screenshot shows the 'Respondent Name' screen of the American Community Survey. At the top, the USCensusBureau logo and tagline 'Helping You Make Informed Decisions' are visible. Below that, the 'AMERICAN COMMUNITY SURVEY' title is displayed. Navigation links for 'Instructions' and 'FAQs' are provided. The main heading is 'What is your name and your telephone number?' followed by a purple box containing the text 'We may contact you for a purpose. This is a question.' Below this are input fields for 'First Name', 'MI', 'Last Name', 'Area Code', and 'Number'. A green 'Next >>' button is at the bottom left. A callout box with a pointer to the purple text box contains the text 'Place information or privacy link here'. Footer links for 'Contact Us', 'Accessibility', and 'Privacy' are at the bottom right.

Figure 19: Respondent Name screen: Suggested placement of information or privacy link

- Alternatively, place a link that will state how their information will be used and kept secure.

3.8 *Vagueness of Message on Roster Check Screen (Usability Issue)*

Own Household Issue: Participants understood the function and message on the roster check page (Figure 20). Although they understood them, participants had different reactions to these features. Some participants appreciated the thank you while another commented “A little meaningless polite sentence. Vague statement about what to expect in the future.” These statements indicate that while participants understood the message, they did not find the thank you particularly informative or sincere.

A perceived lack of sincerity, as based on the participant's comment from the previous paragraph, from the Census Bureau may result in participants' perceptions that their responses are not important. Combined with the length of the ACS, participants may speed through the survey due this perception. For example, participants misspelled names and decided to choose answers to questions with complex residency rules without

consulting help. In addition, the screen could benefit from some more informative text, possibly added where suggested in Figure 21.

It is important to note that this finding may be related in part to the laboratory environment in which the testing took place. All participants understood that they would be asked questions about the residents they listed.

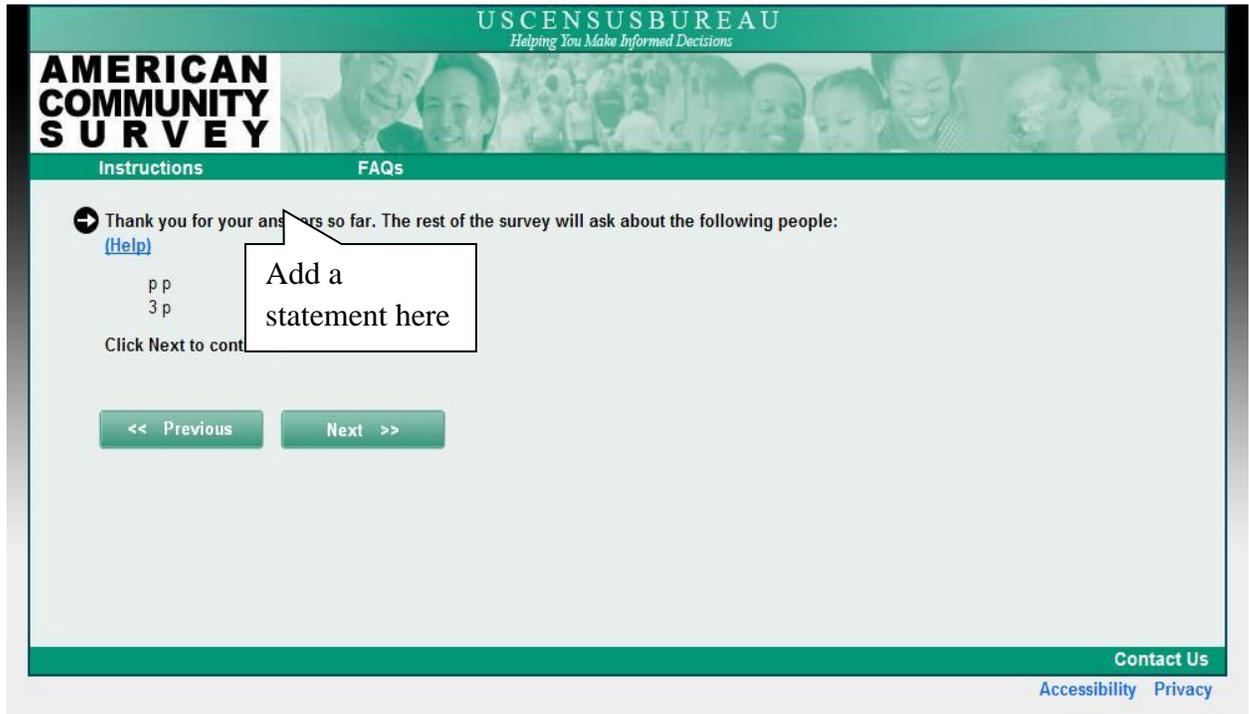


Figure 20: Roster Check screen

Recommendation:

- Make greater appeals to the respondent's sense of community, consistent with the messages in the ACS mailing materials. An additional statement following the thank you statement will remind the respondent why they are completing this survey. For instance, a message about how the responses will be used to allocate community resources in the local area might be helpful. By conveying that the user's responses are important they are more likely to respond to the survey accurately. Figure 20 (above) shows the suggested placement of an additional statement. We recommend further testing this type of additional statement.

4. Results: Mailing Materials

Participants used mailing materials from the Prominent Choice, Not Prominent Choice, or Push Internet conditions to access the ACS online before completing it for their own households. In Round 2 of 2011 ACS Internet testing (Ashenfelter, Quach, Nichols, & Lakhe, 2011), we asked numerous probes about all of the mailing pieces. In this round, however, we only asked a few basic questions about the Initial mailing package. Participants understood the text in the materials that they saw and few issues were recorded.

4.1 *Difficulty finding online option on survey questionnaire (Usability Issue)*

4.1.1 *Not-Prominent Choice Panel*

Participants in the Not-Prominent condition differed in whether they saw the Internet message on the paper questionnaire. Two participants did not see it. One participant commented that she would not have noticed it unless she was specifically looking for it. Other participants did not notice the online option until probed if the survey could be completed another way. However, one participant commented that he would have found the option if he was at home. Participants seemed to examine the paper questionnaire last compared to the other mailing documents, although they often commented on its size and length before placing it aside.

4.1.2 *Prominent Choice Panel*

Some participants in the Prominent condition found the online option through noticing the touch-tone telephone icon located below the computer icon (see Figure 21 below). One participant later said that she may have missed the computer icon. However, another participant commented that the computer icon helped her find the message. Overall, participants varied greatly in whether they detected the online option on the questionnaire.



Figure 21: Picture from the Prominent ACS Panel Option

The online option statement in the letter is likely the respondent’s first exposure to the online version of the American Community Survey. However, some participants did start with the paper survey.

4.1.3 Push Panel

Participants did not tend to have trouble accessing the online survey using the instruction card from the Push conditions. However, they did tend to flip the card over to check both sides before they logged in. One participant commented that she was not sure what the purpose of the card was before realizing the login information was on one of the sides.

Recommendation:

- Although some participants did find the message, the Internet message should be in another color to help it stand out from the other text on the card. It was noted that the green color camouflages the online option.

4.2 Perceived Waste of Paper (Usability Issue, all panels)

Participants thought that there were too many mailing cycles, and many commented that too much paper was wasted because of the method used. The ACS consists of four mailing cycles based on the Dillman mailing schedule. Some of these mailing cycles

consist of letters or postcards, while others comprise a package of information pamphlets, letters, and the ACS questionnaire itself. Scientific evidence has demonstrated that the use of mailing cycles can increase response rates (e.g., Dillman, 2007). One participant in the Not Prominent condition thought the number of mailing materials in the envelope was “daunting.” He commented that some of the materials would not have been read, leading to a “waste of paper.” Another participant commented on the weight of the mailing materials and another participant commented on the size of the envelope. Not all participants disliked the mailing materials. One participant appreciated the pamphlets and found them informative.

Recommendation:

- Consider limiting the number of mailing pieces on the first few rounds of mail. Focus on capturing as many online respondents as possible before moving to telephone or mail modes.

4.3 Results: Satisfaction Questionnaire

Average satisfaction questionnaire ratings for the online survey instrument are provided in the figures below. Table 19 shows QUIS satisfaction ratings for participants in all of the conditions. Overall, it appears that most users are satisfied with the online survey, given the results of the Satisfaction Questionnaire.

Table 19: Satisfaction Questionnaire Results (n = 31)

Participant	QUIS1	QUIS2	QUIS3	QUIS4	QUIS5	QUIS6	QUIS7	QUIS8	QUIS9
Average	6.84	7.65	7.42	7.42	7.65	7.26	7.65	8.58	8.13

The average rating for each satisfaction questionnaire item was over five, the middle point of the scale, which is the typical usability goal. The little variation between questionnaire items (6.84-8.58) indicated that on average, participants were equally satisfied with all aspects of the instrument. QUIS item 1 asked for a rating of the overall reaction to the survey; item 2 rated screen layout, item 3 rated the use of terminology throughout the survey; item 4 rated the adequacy of the instructions displayed on the screens; item 5 rated how the questions were displayed on the screen; item 6 rated whether questions could be answered in a straightforward manner; item 7 rated the organization of questions, instructions, and response categories in the survey; item 8 rated the forward navigation in the survey; and item 9 rated the overall experience of completing the survey. Although none of the QUIS items directly evaluated ease of logging onto the system, items 1 and 9 addressed the participants’ overall satisfaction with the ACS online survey, which would encompass this aspect. Although item 1 received the lowest average score, item 9 received the highest average score. According

to these results, participants were not as satisfied with their overall reaction to the survey (the physical survey itself) as they were with their overall experience of completing the survey (the act of going through and completing the survey). The lower score for item 1 could indicate that although participants thought the ACS was straightforward to complete, they were dissatisfied with some other aspect(s) of the survey.

The write-in responses to the last question on the satisfaction questionnaire, where participants wrote out any additional comments that they had, is included in Appendix D.

5. Discussion

The largest issues uncovered in this round of testing fell into two categories: difficulty accessing the survey and providing incorrect responses. The latter category did not impede the respondent from completing the survey but may result in the respondent being later burdened with responding to a request for clarification. Another problem focused on respondents' missing information about the PIN as they quickly scanned the page. Participants may have trouble re-entering the survey if they do not finish the survey in one sitting.

Participants had problems completing the roster for their own real-life households and for the vignettes. We recommend further testing of the roster section of the ACS and similar demographic surveys to achieve a more accurate final household roster. To reiterate the suggestion from Gerber, Wellens, and Keeley (1996), "First, although we utilized different rosters which presented the rules in different formats and with different wordings, we have not been able to evaluate the effects of these changes in rule presentation. An evaluation of this nature would be necessary to determine if some wordings or formats of a rule perform better than others. Second, additional research will be necessary to discover the effect of the actual composition of the respondents' households on their ability to respond correctly to information provided in the questionnaires" (pg. 5). Research being conducted for the decennial census may have some relevance to this issue.

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Appendix A: Screens from Round 3 ACS Internet Testing (June 2010)

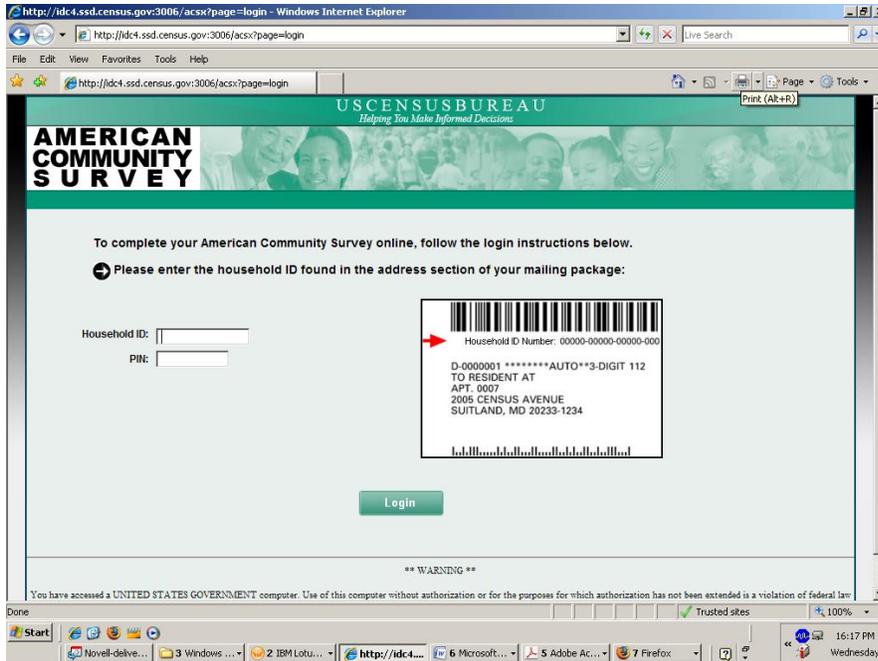


Figure A1 : Login Screen

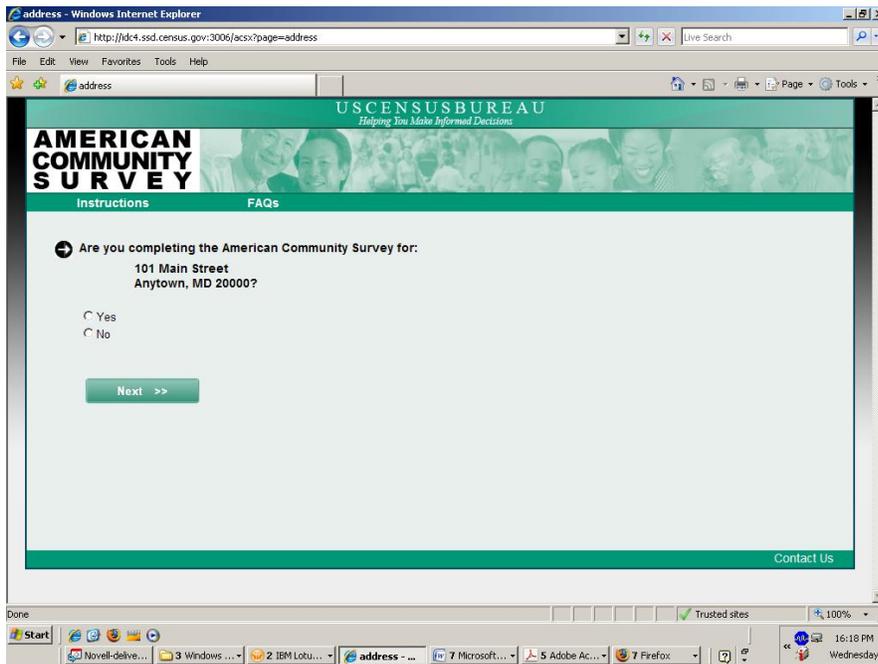


Figure A2: Address Verify

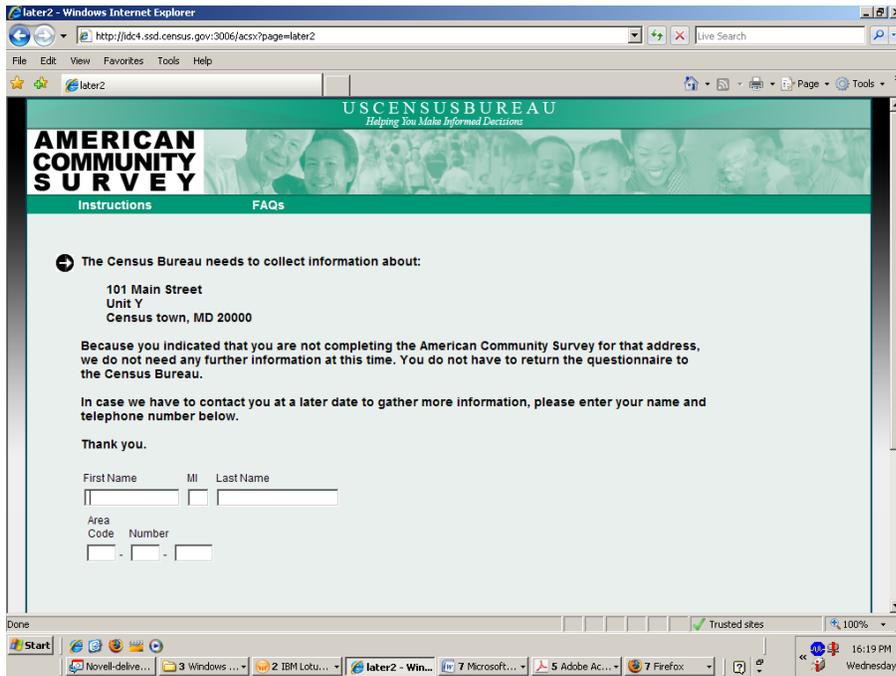


Figure A3: Thank You Wrong Address If the respondent indicates that they are not completing the ACS for the address listed, they will see this screen.

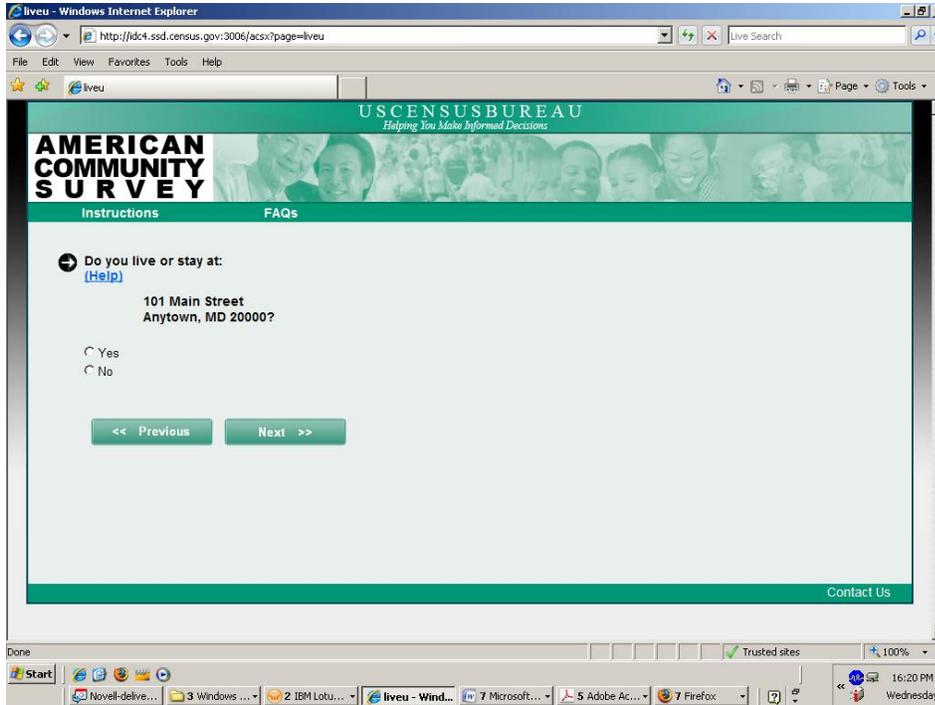


Figure A4 : Residency Verify (LiveU)

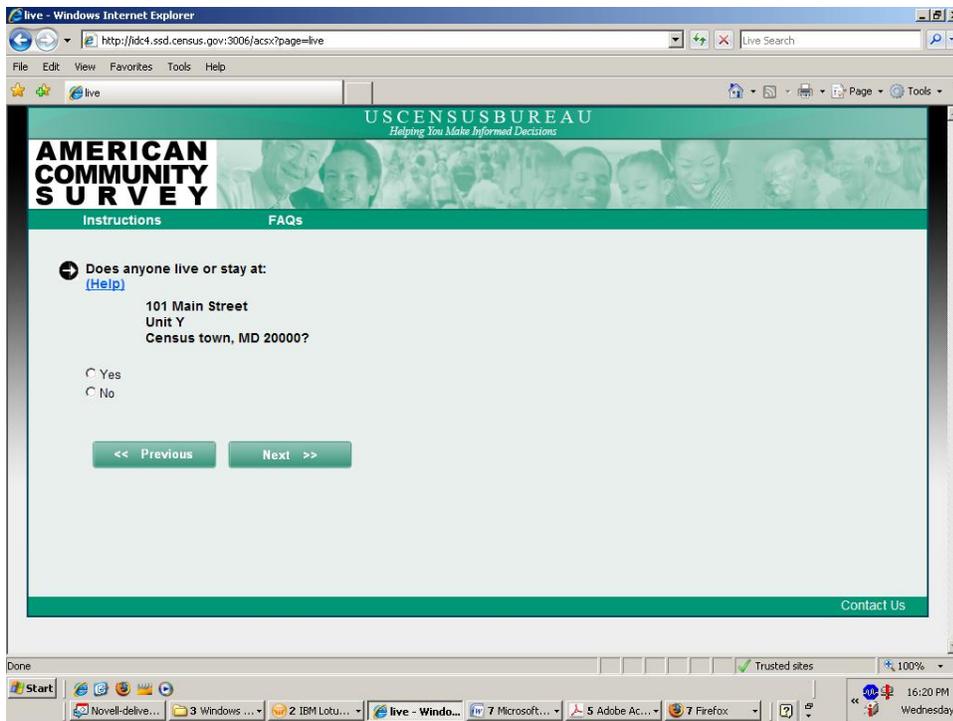


Figure A5: Anyone Live Or Stay

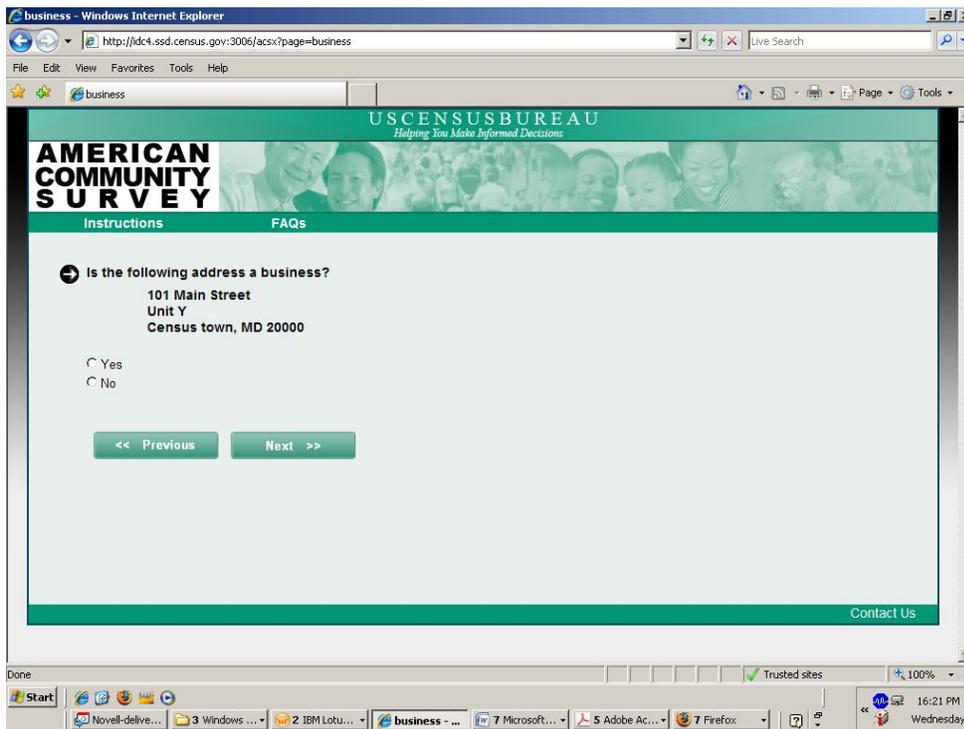


Figure A6: Business

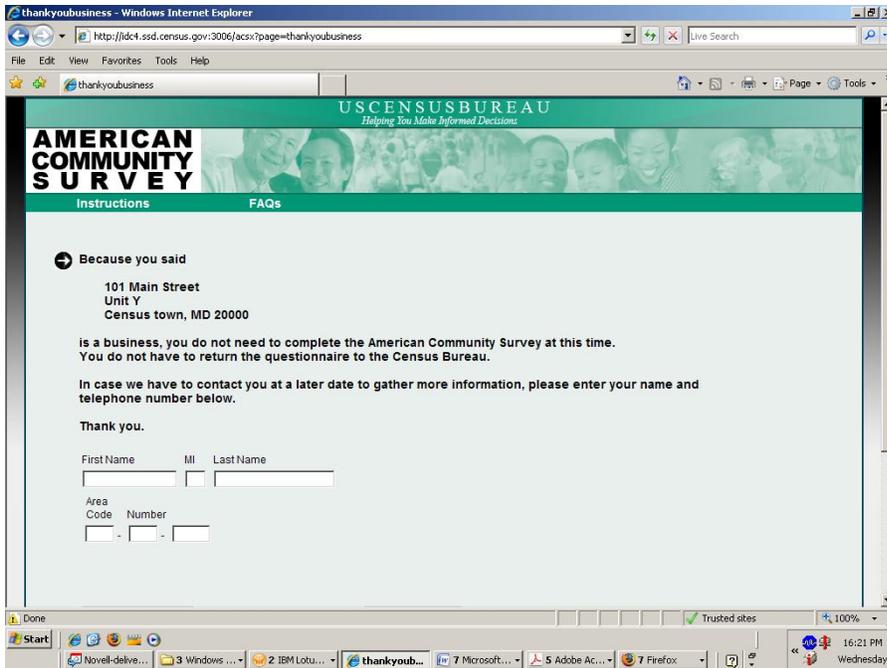


Figure A7 : Thank You Business

If the respondent indicates that the address is a business for the previous question, they will see this screen.

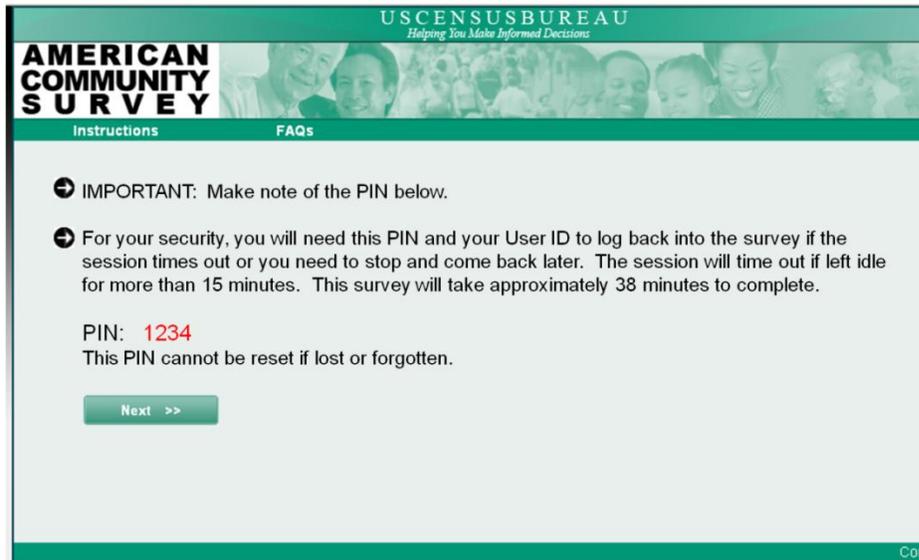


Figure A8 : PIN Creation

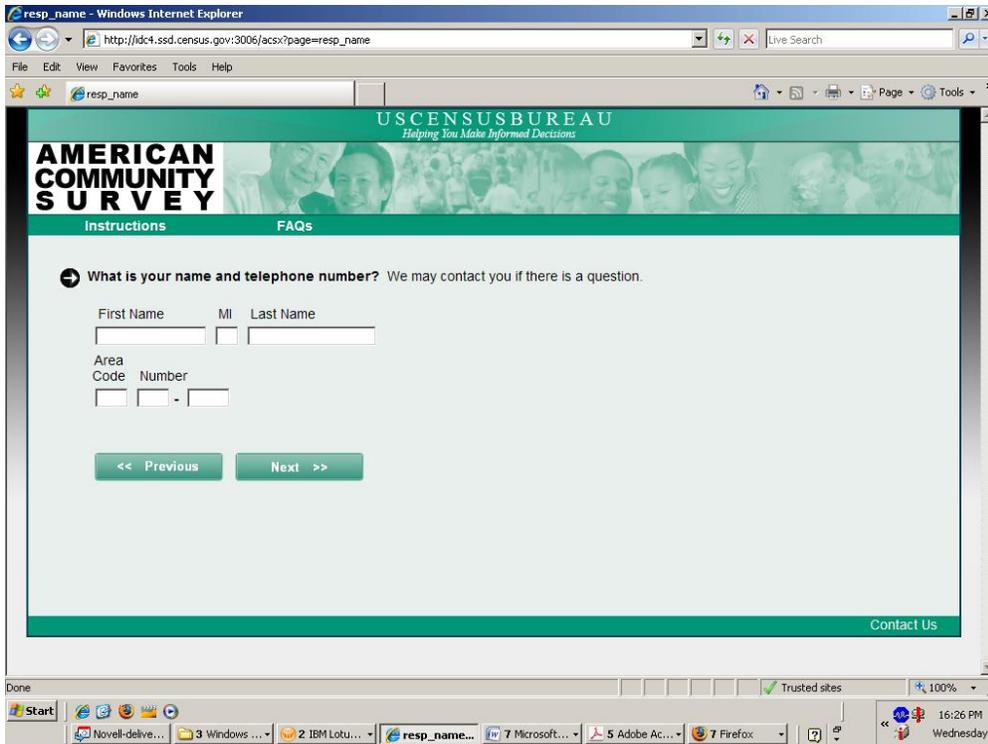


Figure A9 : Respondent Name

Roster Screens

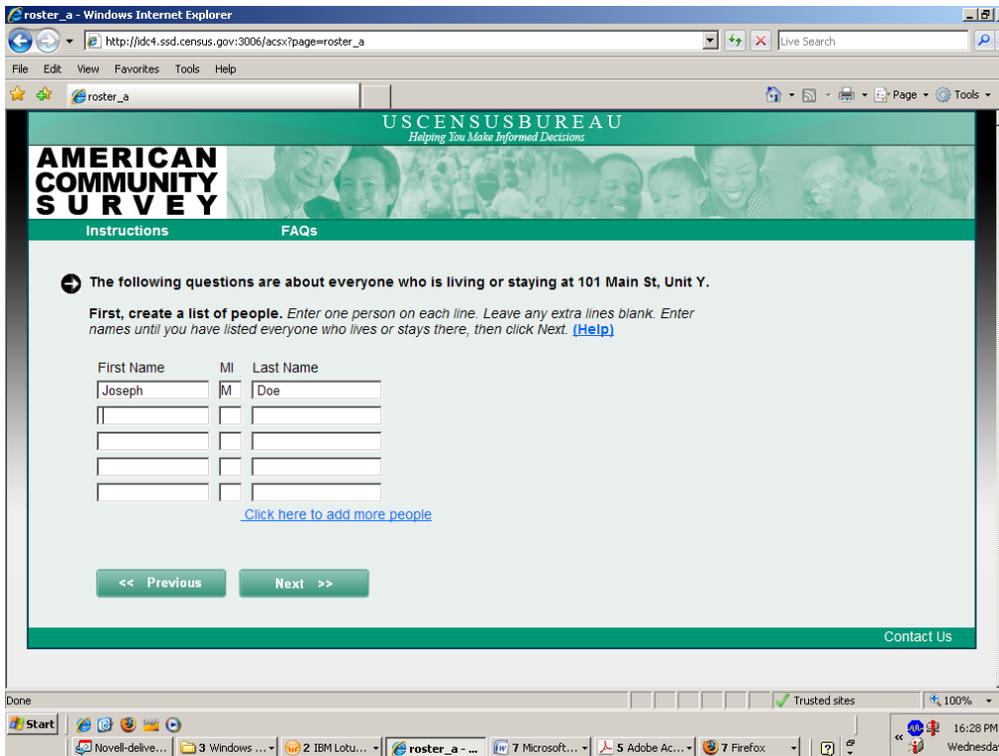


Figure A10 : Roster A

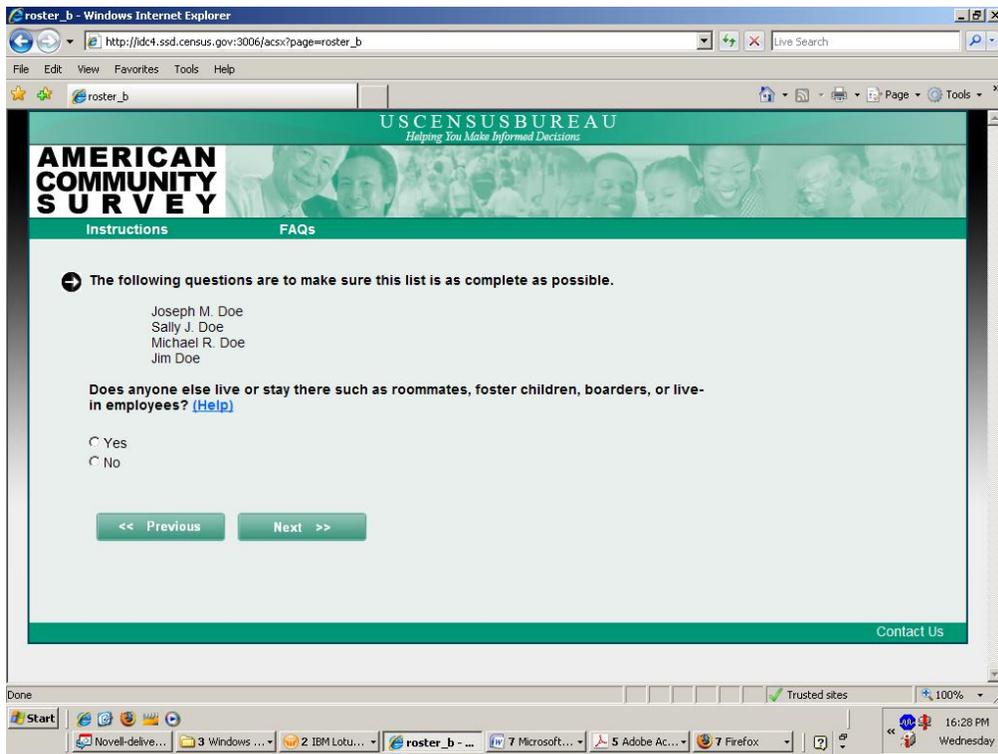


Figure A11 : Roster B

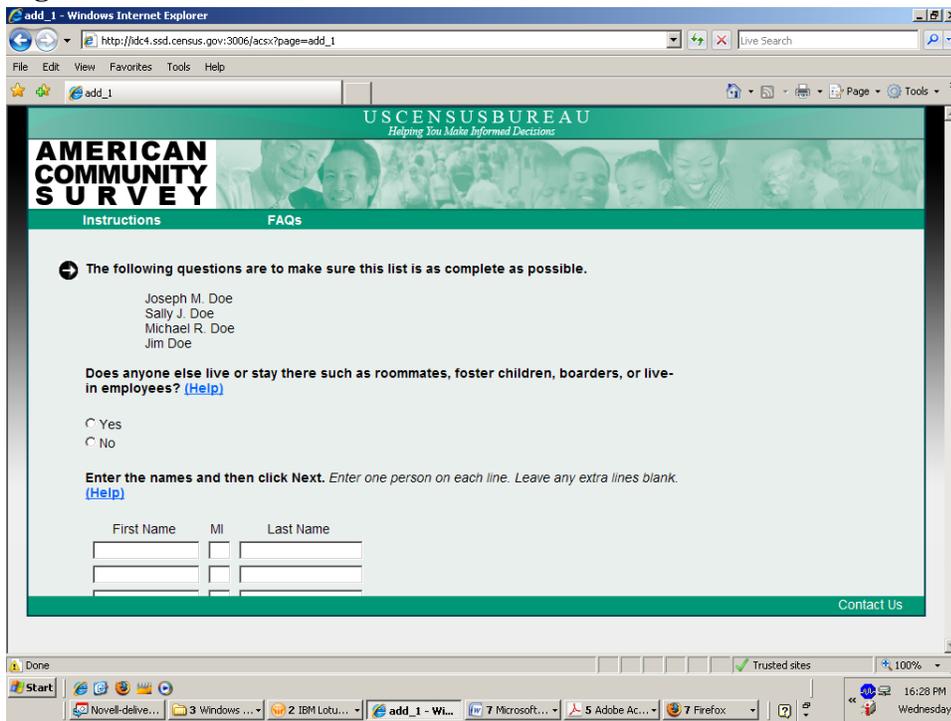


Figure A12 : Add 1 (if selected "Yes" radio button on the question)

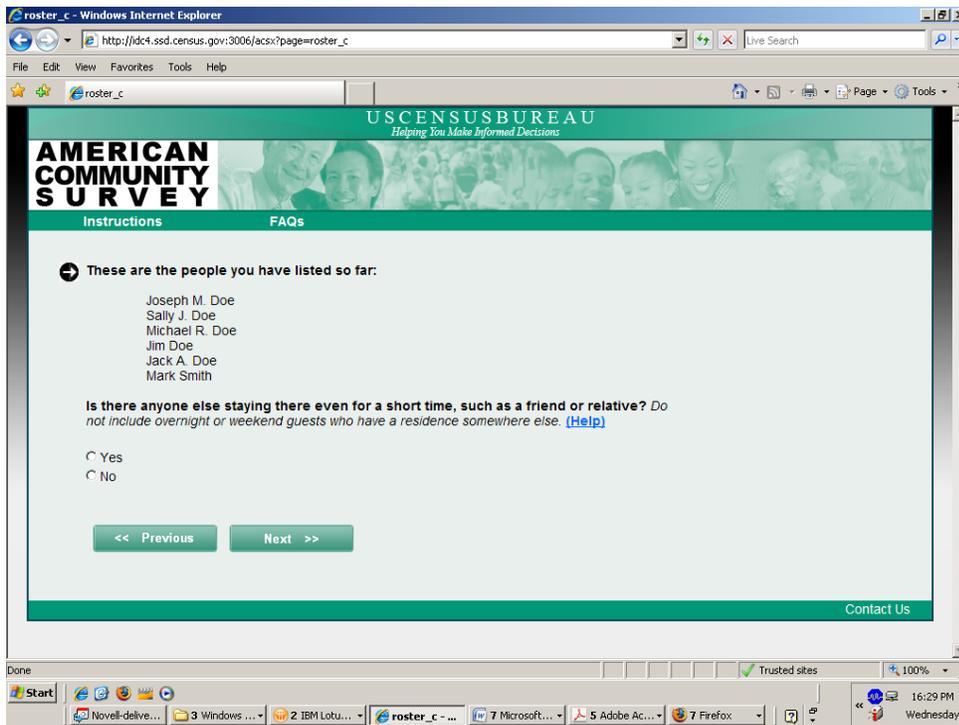


Figure A13 : Roster C

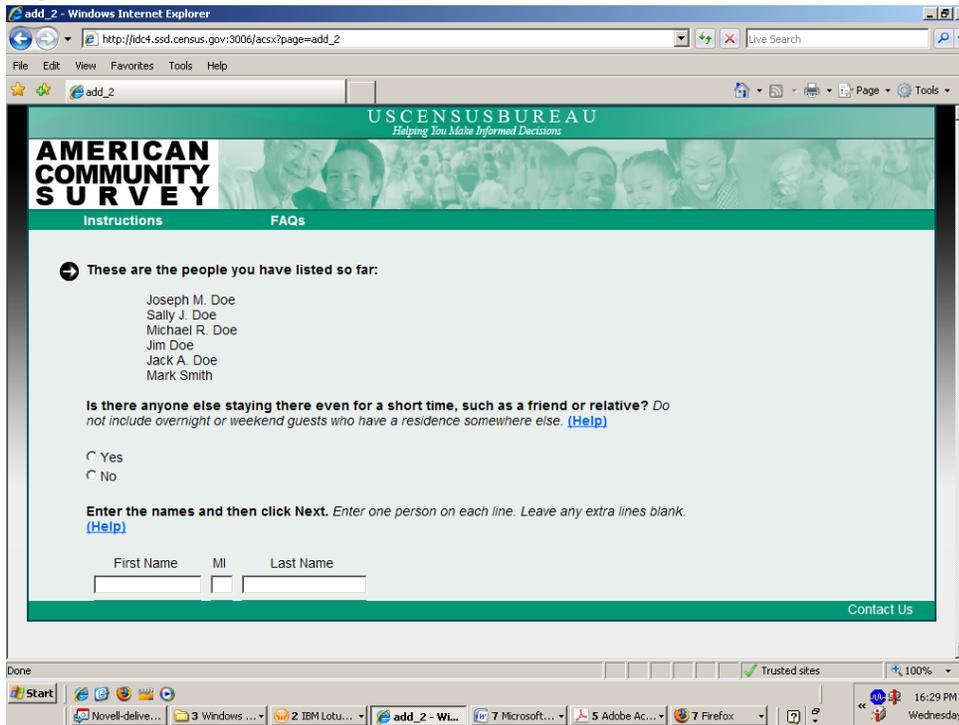


Figure A14 1: Add 2 (if selected "Yes" radio button on the question)

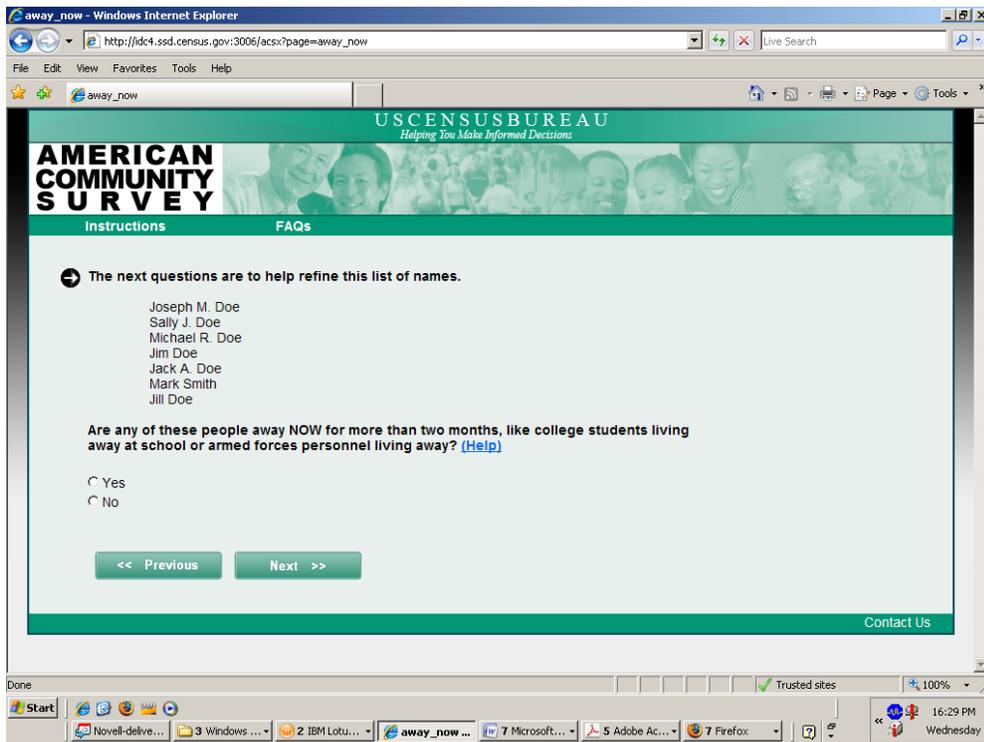


Figure A15: Away Now

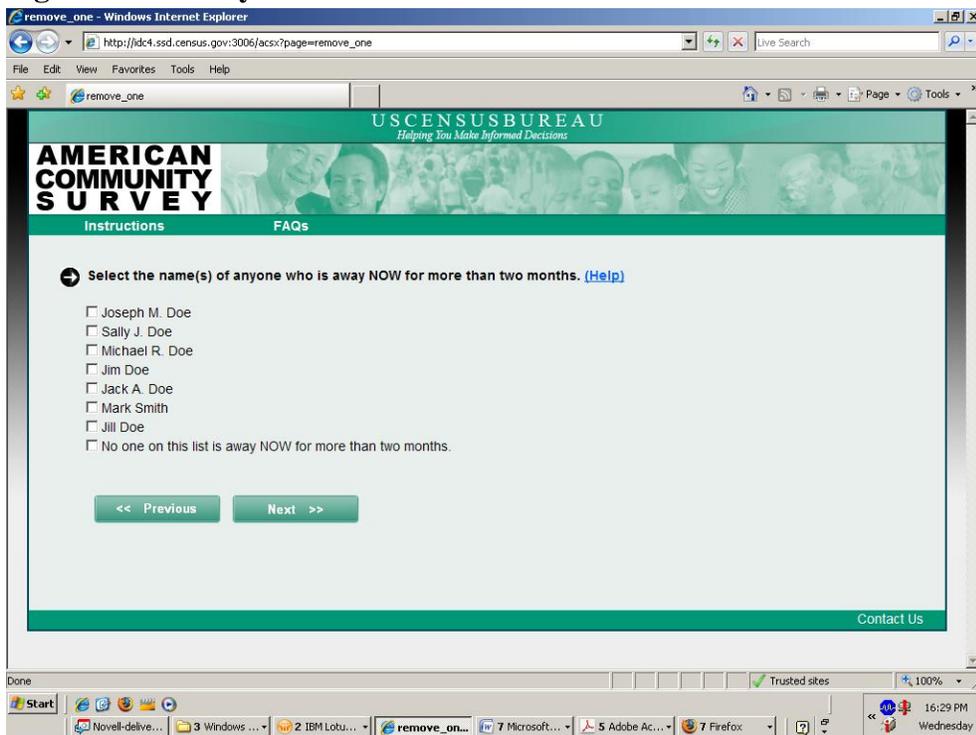


Figure A16: Remove One (If the respondent selects “Yes” to the Away Now screen)

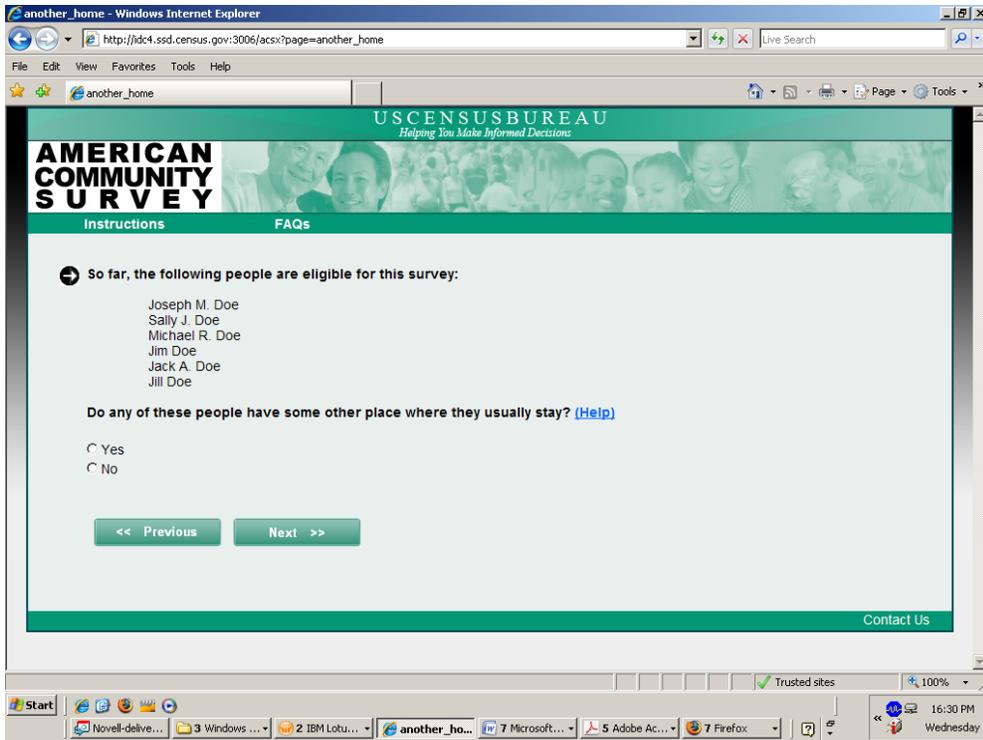


Figure A17: Another Home

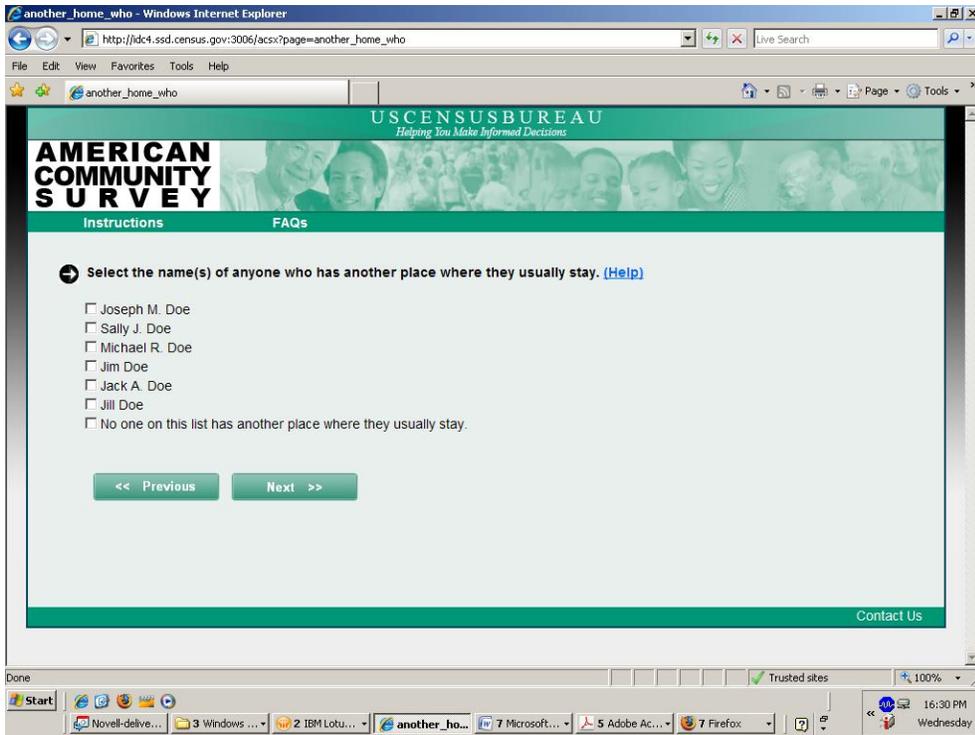


Figure A19 : Another Home Who (If the respondent selects “Yes” to Another Home screen)

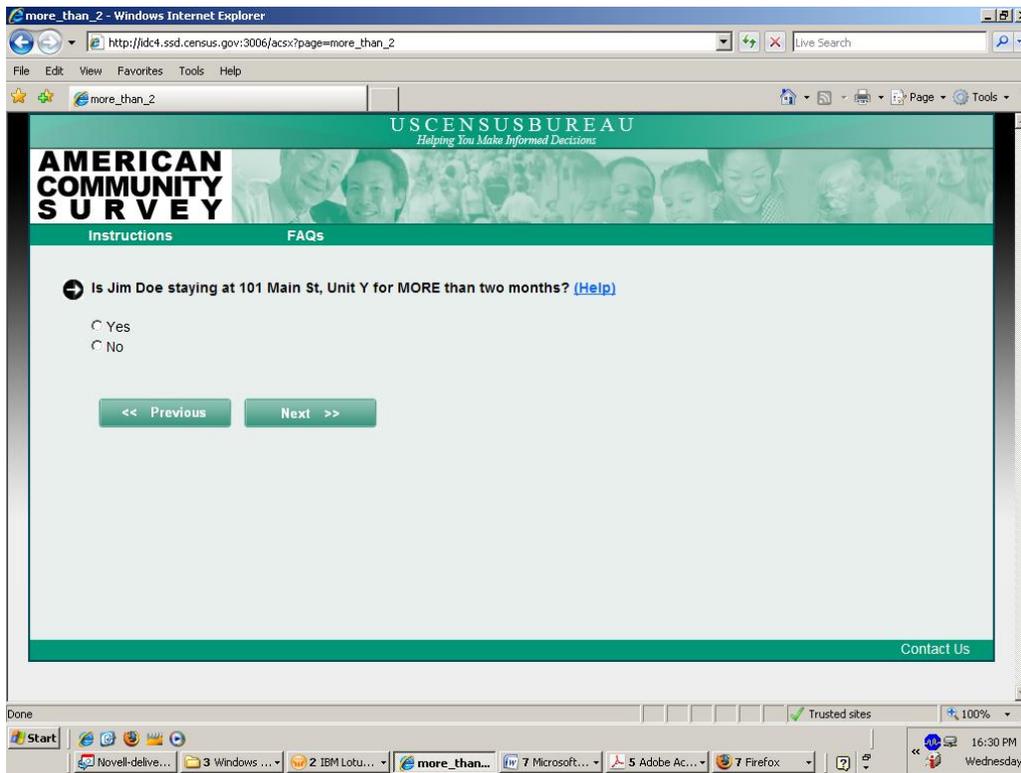


Figure A19 2: More Than Two (The respondent will get this question for each name they select in Another Home Who).

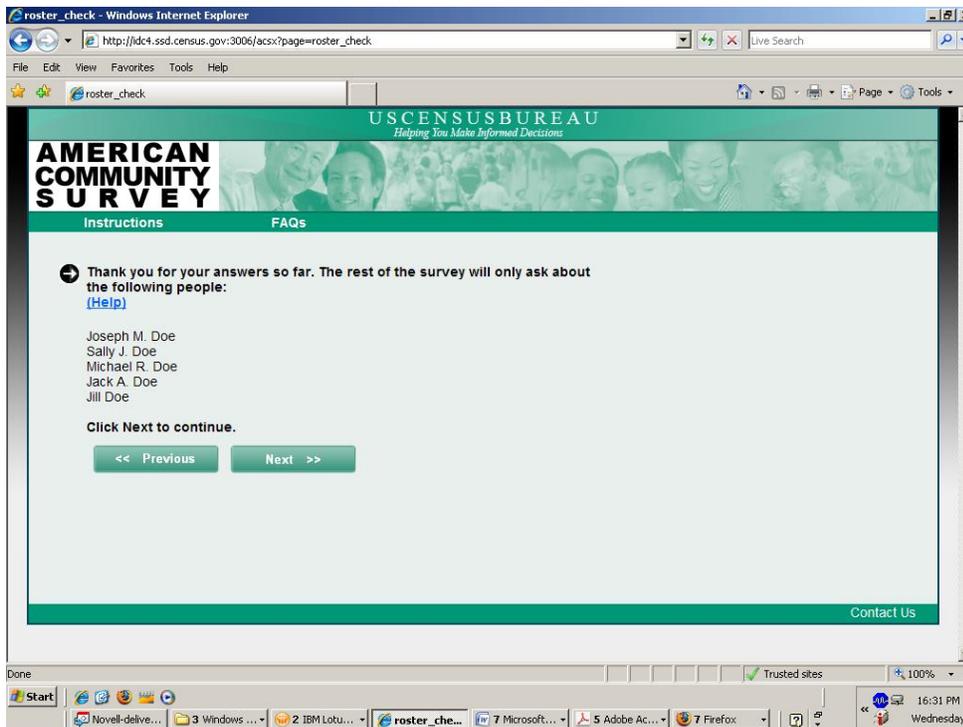


Figure A20: Roster Check



Figure A21: Reference Person

Appendix B: Round 3 Mailing Materials

B.1 Prominent Choice

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

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 (1-800-354-7271).

Thank you.

Sincerely,



Robert M. Groves
Director

Enclosures

ACS-13(LX)PIO (6-2010)

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

www.census.gov

Figure B1: Prominent Choice Initial Letter

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 1-800-354-7271.

Figure B2: Prominent Choice Instruction Card



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

THE American Community Survey



ACS 946 839 215 01 111 1103 08
SEQ004-49315 16259-12284



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



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 **1-800-354-7271**. 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 **1-877-833-5625**. 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/>

USCENSUSBUREAU

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)PINT(2010)KFI**
(03-02-2010)

OMB No. 0607-0810



Figure B2: Prominent Choice Questionnaire

B.2 Not Prominent Choice

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

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 call our toll-free number (1-800-354-7271).

Thank you.

Sincerely,



Robert M. Groves
Director

Enclosures

ACS-13(LX)NIO (1-2010)

USCENSUSBUREAU
Helping You Make Informed Decisions

www.census.gov

Figure B3: Not Prominent Choice Initial Letter



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

THE American Community Survey



ACS 946 839 215 01 111 1103 08
SE Q004-49315 15672-12284



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

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 **1-800-354-7271**. 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 **1-877-833-5625**. 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/>

USCENSUSBUREAU

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)(V1)KFI**
(09-26-2010)

OMB No. 0607-0810



Figure B4: Not Prominent Choice Questionnaire

B.3 Push Panels

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

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 (1-800-354-7271).

Thank you.

Sincerely,



Robert M. Groves
Director

Enclosures

ACS-13(LX)PS (3-2010)

USCENSUSBUREAU
Helping You Make Informed Decisions

www.census.gov

Figure B5: Push Panels Initial Letter

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 01 111 1103 08
SEQ004-49315 17392-12284



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

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 1-800-354-7271.

Figure B6: Push Panels Instruction Card

Appendix C: Testing Materials

Section C.1 : General Introduction:

American Community Survey Internet Instrument (Roster Test –Third Round)

Thank you for your time today. My name is XX and I work here with the Human Factors and Usability group and I will be working with you today. We will be evaluating the design of the online American Community Survey by having you complete it. Your experience with the survey is an essential part of our work. I did not create the survey, so please share both your positive and negative reactions to it. We are not evaluating you or your skills, but rather you are helping us see how well the survey works. The entire session should last about an hour. Your comments and feedback will be given to the developers of the survey and may be used to improve it.

First, I would like to ask you to read and sign this consent form. It explains the purpose of today's session and informs you of your rights as a participant. It also tells you that we would like to videotape the session, with your permission. Only those of us connected with the project will review the tape and any other data collected during the session; and it will be used solely for research purposes. We may also use clips from the tape to illustrate key points about the survey to the Web design team. In addition, there may also be observers from the project team observing this session in another room.

Hand the participant the consent form; give time to read and sign; sign own name and date if you have not already done so.

Start the tape.

While you are completing the survey, we will record the movements of your eyes with our eye-tracking monitor to get a record of where you are looking on the screen and we will record your mouse movements to see how you are interacting with the survey. I would like you to tell me your impressions and thoughts about the screens as you look at them. In other words, I would like you to "think aloud" and talk to me about your impressions. If you expect to see some piece of information or expect something to happen, tell me whether or not it was met.

Pull www.wtop.com in Firefox.

Before we get started, let's practice thinking aloud, since it's not something that you would normally do while working online. Pretend that you have a minute or two to kill at your desk at work or at home and talk me through your thought process as you try to find something interesting to read.

Ok, that's exactly what I would like for you to do throughout the session. If at any time during the session you get quiet, I may remind you to talk to me. This is not to interrupt your thought process, but simply to remind you to keep talking to me. Please focus on verbalizing what you are thinking as you complete the survey.

Do you have any questions about the think aloud technique that we just practiced? If you were to receive the survey at your home, the mailing materials would have your real address. Since we cannot replicate that for the lab setting, all participants will use the same address. For the purposes of this study, please pretend that your address is

198 Young Rd in Anytown MD.

Now I am going to calibrate your eyes for the eye-tracking.

Do Calibration

Now that we have your eyes calibrated, we are ready to begin. Please respond to the survey online as you would at home. You may answer the survey questions as they apply to you in your real life. Although the materials will give you an internet address, or URL, to enter to access the survey, you will not need to enter that because our testing software will open the survey for you.

I am going to go around to the other room to do a sound check. While I am doing that, please take a moment to complete this questionnaire.

[Hand Participant questionnaire on Computer experience and demographics]

I'm going to leave but we will still be able to communicate through a series of microphones and speakers. Do you have any questions before we begin?

Leave room. Once in control room do a sound check and Start the eye-tracking software: Tobii Studio. The mouse tracing software will start when Studio opens Internet Explorer. Encourage R to think aloud while completing the survey. Ask probe questions about what they are thinking if they are having trouble with any part of the survey.

IMPORTANT: IF the Participant enters more people for the Add_1 screen, make a note of it for the debriefing session.

Section C.2 : Consent Form

Consent Form



**Usability Study of the American Community Survey
Internet Form**

Each year, the Census Bureau conducts many different usability evaluations. For example, the Census Bureau routinely tests the wording, layout and behavior of products, such as Web sites, online surveys, and letters sent through the mail in order to obtain the best information possible from respondents.

You have volunteered to take part in a study to improve the usability of an online version of the American Community Survey (ACS) that is currently being developed. In order to have a complete record of your comments, your usability session will be videotaped. We plan to use the tapes to improve the design of the product. Staff directly involved in the usable design research project will have access to the tapes. We also plan to perform an eye-tracking analysis of your session. Your participation is voluntary and your answers will remain strictly confidential.

This usability study is being conducted under the authority of Title 13 USC. The OMB control number for this study is 0607-0725. This valid approval number legally certifies this information collection.

I have volunteered to participate in this Census Bureau usability study, and I give permission for my tapes to be used for the purposes stated above.

Participants Name: _____

Participants Signature: _____

Date: _____

Researcher's Name: _____

Researcher's Signature: _____

Date: _____

Section C.3 : Background Questionnaire

Questionnaire on Statistical Background, Computer Use, Internet Experience

YOUR ANSWERS ARE CONFIDENTIAL

Demographics

1. What is your age? _____
2. Are you male or female? _____
3. What is your level of education?
 - ___ grade school
 - ___ some high school
 - ___ high school degree
 - ___ some college
 - ___ 2-year college degree
 - ___ 4-year college degree
 - ___ some postgraduate study (e.g., M.A., M.B.A., J.D., Ph.D., M.D., programs)
 - ___ postgraduate degree (e.g., M.A., M.B.A., J.D., Ph.D., M.D.)

Computer Experience

1. Do you use a computer at home, at work, or both?
(Check all that apply.)
 - ___ Home
 - ___ Work
 - ___ Somewhere else, such as school, library, etc.
2. If you have a computer at home,
 - a. What kind of modem do you use at home?
 - ___ Dial-up
 - ___ Cable
 - ___ DSL
 - ___ Wireless (Wi-Fi)
 - ___ Other _____
 - ___ Don't know _____
 - b. Which browser do you typically use at home? Please indicate the version if you can recall it.
 - ___ Firefox
 - ___ Internet Explorer
 - ___ Netscape
 - ___ Other _____
 - ___ Don't know _____

c. What operating system does your home computer run in?

- MAC OS
- Windows 95
- Windows 2000
- Windows XP
- Windows Vista
- Other _____
- Don't know

3. On average, about how many hours do you spend on the Internet per day?

- 0 hours
- 1-3 hours
- 4-6 hours
- 7 or more hours

4. Please rate your overall experience with the following:

Circle one number.

	No experience					Very experienced			
Computers	1	2	3	4	5	6	7	8	9
Internet	1	2	4	5	5	6	7	8	9

5. What computer applications do you use?

Mark (X) for all that apply

- E-mail
- Internet
- Word processing (MS-Word, WordPerfect, etc.)
- Spreadsheets (Excel, Lotus, Quattro, etc.)
- Accounting or tax software
- Engineering, scientific, or statistical software
- Other applications, please specify _____

For the following questions, please circle one number.

	Comfortable			Not Comfortable	
6. How <i>comfortable</i> are you in learning to navigate new Web sites?	1	2	3	4	5

7. Computer windows can be minimized, resized, and scrolled through. How <i>comfortable</i> are you in manipulating a window?	1	2	3	4	5
8. How <i>comfortable</i> are you using, and navigating through the Internet?	1	2	3	4	5
	Never			Very Often	
9. How <i>often</i> do you work with any type of data through a computer?	1	2	3	4	5
10. How <i>often</i> do you perform complex analyses of data using a computer?	1	2	3	4	5
11. How <i>often</i> do you use the Internet or Web sites to find information? (e.g., printed reports, news articles, data tables, blogs, etc.)	1	2	3	4	5
	Not familiar			Very familiar	
12. How <i>familiar</i> are you with the Census (terms, data, etc.)?	1	2	3	4	5
13. How <i>familiar</i> are you with the current American Community Survey (ACS) and American FactFinder (AFF) sites (terms, data, etc.)?	1	2	3	4	5

Section C.4 : Satisfaction Questionnaire

Questionnaire for User Interaction Satisfaction (QUIS)

Please circle the numbers that most appropriately reflect your impressions about using the ACS Web survey.

- | | | | |
|---|-----------------------------------|-------------------|----------------|
| 1. Overall reaction to the Web Survey: | terrible
1 2 3 4 5 6 7 8 9 | wonderful
8 9 | not applicable |
| 2. Screen Layouts: | illogical
1 2 3 4 5 6 7 8 9 | logical
8 9 | not applicable |
| 3. Use of terminology throughout the survey: | inconsistent
1 2 3 4 5 6 7 8 9 | consistent
8 9 | not applicable |
| 4. Instructions displayed on the screens: | inadequate
1 2 3 4 5 6 7 8 9 | adequate
8 9 | not applicable |
| 5. Questions displayed on the screens: | confusing
1 2 3 4 5 6 7 8 9 | clear
8 9 | not applicable |
| 6. Questions can be answered in a straight-forward manner: | never
1 2 3 4 5 6 7 8 9 | always
8 9 | not applicable |
| 7. Organization of question, instructions, and response categories in the survey: | confusing
1 2 3 4 5 6 7 8 9 | clear
8 9 | not applicable |
| 8. Forward navigation: | difficult
1 2 3 4 5 6 7 8 9 | easy
8 9 | not applicable |
| 9. Overall experience of completing the survey: | difficult
1 2 3 4 5 6 7 8 9 | easy
8 9 | not applicable |
| 10. Additional Comments: | | | |

Section C.5 : Debriefing Questions

Debriefing Questions

Pull up each screen and allow the participant to look at each screen as you ask questions about it. FOR Debriefing, you will need to log back in using the User ID and PIN and then enter this URL to get back to the beginning of the survey:

<http://idc4.ssd.census.gov:3122/acsx/liveu>

Generate PIN Screen

Why did the survey generate this PIN for you?

Do you think there is a way to retrieve the PIN if you forget it?

Did you notice how long it would take to complete the survey?

Resp Name Screen

Why do you think we are asking for your name and telephone number?

If you received this survey and took it at home, would you be concerned about providing your telephone number? Why or why not?

If you received this survey and took it at home, would you be concerned about providing your name? Why or why not?

Roster a

Did you notice that your name was already entered on the first line?

Did you notice the link “Click here to add more people”?

What do you think would be displayed when you clicked it?

Roster b

Does anybody on the list above fit any of the categories listed in this question – roommate, foster child, boarder, live-in employee?

→ **Add 1** *They only get this if they said “yes” to roster_b so this may not be relevant to R.*

Did you notice that a follow-up question appeared at the bottom of the question that you just answered?

Was this confusing?

Did you read the question again?

If any names were entered on Roster b, ask: Why didn't you include this person/these people on the original list?

Roster c . *If any names were entered on the previous screen (Add_1), ask: Did you notice that the names you entered on the previous screen were added to the list?*

→ **Add 2** .*They only get this if they said “yes” to roster_b so this may not be relevant to R.*

Did you notice that a follow-up question appeared at the bottom of the question that you just answered? Was this confusing?

Did you read the question again?

If any names were entered, ask: Why didn't you include this person/these people on the original list?

Remove one

If any names were selected, ask: Why did you select this person/these people?)Was anything in this question confusing?

Another home

If any names were selected on the previous screen, ask: Did you notice that the names you selected on the previous screen are not on this list?

What do you think is meant by “another place where they usually stay”?

Roster check

In your own words, what is the text telling you?

Reference Person (if applicable)

Was this question confusing?

→ If YES, why?

Did you realize you could mark more than one person, if necessary?

Appendix D : Satisfaction Questionnaire Comments

Note: Participants' written comments on the satisfaction questionnaire are transcribed from paper to computer without corrections to spelling or grammar. Participant numbers have been removed for privacy reasons.

Participant A: The user I.D. can be made clearer on the form because without the computer showing me where it was I would have had to play a guessing game to find out where and what the 10 digit code was.

Participant B: Although I understand the purpose of making sure to identify all individuals within the household, I found the questions to be overly redundant and quite annoying often the 3rd time

Participant C: Don't think it's collecting information right. Questions asked are not straightforward and intuitive. May have been reading it too fast, but if at home wouldn't read it carefully. Liked aesthetic look, not a lot of text on page. Suggested adding a feature seen on other surveys where you can click enter to go to the next page.

Participant D: The survey was good but I do not think many people would be able to answer some questions. For example with English as a second language.

Participant E: It was straightforward

Participant F: Very quick survey. I was ready for more

Participant G: In my housing situation, I don't always know the plans of my roommates of the details of how they live. Maybe they are planning to move or they live in another residence; I don't know.

Participant H: The help button was what eventually helped me to answer how to define my living situation. I often think of a "help" button as computer tech support rather than what it ended up being. A place to go for further clarification. Had I realized what the help button actually was sooner, I would have completed the survey more quickly & confidentially.

Participant I: Maybe, at the beginning of the survey, when entering your bar-code information, the words should be in red!

Participant J: It's helpful if the term "boarders" could be more well defined.

Participant K: Thanks for having me. Have a great day

Participant L: Could not always see the "next" button/arrow when it was at the lower margin of the screen and had to scroll the screen downward to find it. Questions phrased as "always" were confusing because virtually nothing is "always" and it was unclear what action was derived as an alternative

Participant M: Overall, the survey was clearly understood

Appendix E : Vignette Description

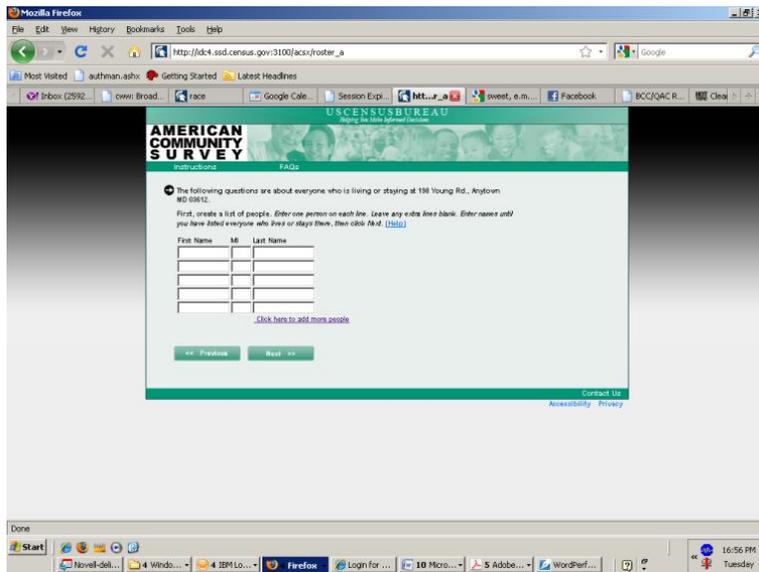
Section E.1 : Prototype Vignette¹

After the participant has completed the survey for their own household, have them complete the vignette. Mark the participants' responses to the roster questions on printouts of the screens for debriefing later.

Imagine that I am your neighbor who does not have Internet access and I ask you to help me fill out my ACS Internet form online. I do not want to fill out the paper form by hand and believe having you help me do it online will be the fastest and easiest way to complete part of it. It is a large household. *The experimenter will represent Maggie (Sam if male) and verbally provide this household information to the participant and also provide a printout of the household for reference. A similar procedure was used previously for the Census 2010 Internet usability testing.*

You do not know me very well and need to verify the personal information of my household members. I'll provide you with the relevant information about us as you go through the survey.

Roster A screen



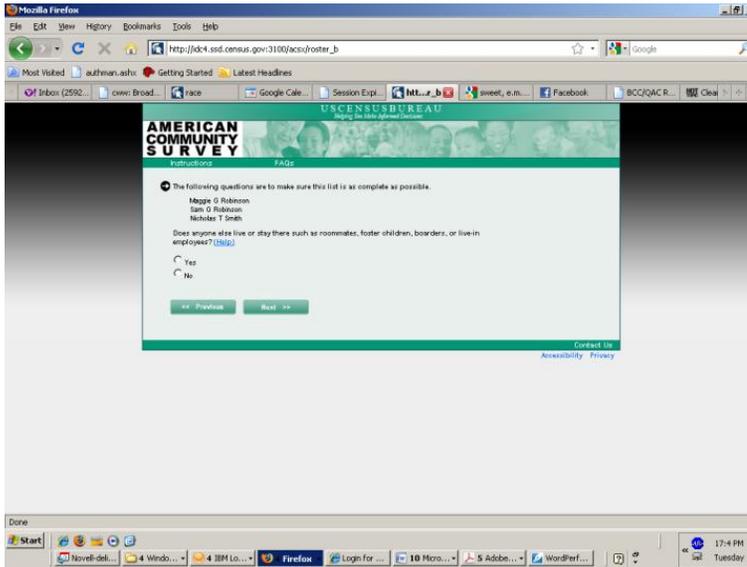
When you get to the Roster_a screen where they need to list the people that live at 198 Young Street, the participant should ask you the names of who lives there. If not, rephrase the question to be about who lives there.

¹ The main difference between the Prototype vignette and the All vignette was the change from Mary to Maria

Well, the people that are in my house today are me, my husband Sam, my daughter, Alice, my son Nicholas, and my sister Lucy. *When prompted, provide the full names-*

Maggie G. Robinson, Sam F. Robinson, Alice L. Robinson, Nicholas S. Smith, Lucy G. Jones.

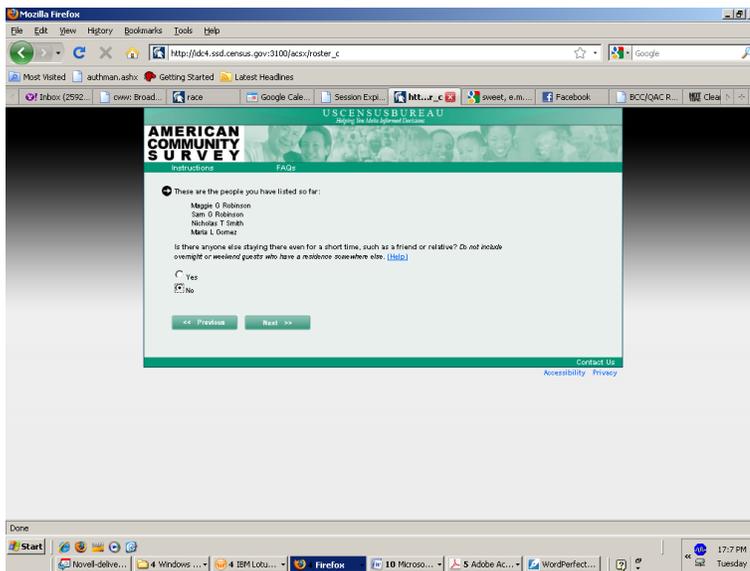
If the participant asks about custody, etc. or about Nicholas having a different last name than Maggie and Alice, then tell them about the custody situation with Nicholas.



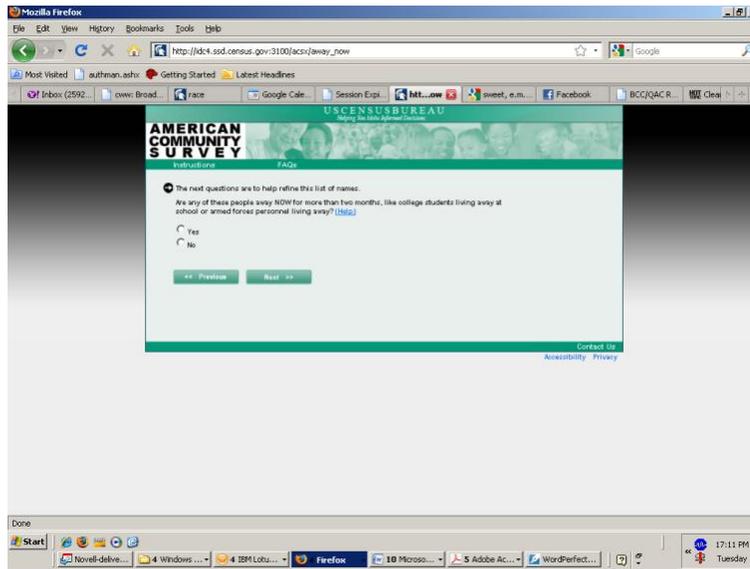
When you get to the Roster_b screen

We have a housekeeper, Mary, who stays with us during the week. She goes home to her apartment in Washington, D.C. with her family two nights a week for the weekends. . *When prompted, provide Mary's full name-Mary C. Davis.*

When you get to the Roster_c screen



When you get to the AWAY_NOW screen



After the roster A, B, and C screens, it should include all six people. If it does not, ask: Why they did not include the missing person(s)?

My daughter, Alice is currently attending boarding school away from home and has been away for the past 3 months.

(she still SHOULD BE included on the roster)

Make a note of whether they mark Alice or not on the next screen. If the participant asks you whether they should mark Alice or not:

I really don't know. You're better at this computer stuff than I am. What do you think should be the answer?

When you get to ANOTHER HOME:

For the past ten years, Sam has had a job in Philadelphia, so he stays with his sister in Philadelphia for five nights during the work week. He returns home to D.C. for the weekends two days a week.

Well, my son, Nicholas is from a previous relationship before Sam and usually stays with his father, but he is actually staying with me right now because we have shared custody.

My sister, Lucy, usually lives in a dorm at her college, but she stays with us during holidays and for summer break. She has also been home for the last two and a half months on break.

Our housekeeper, Mary, also has an apartment with her family in the city.

When you get to MORE THAN TWO:

Well, my husband has been staying at his sister's house for more than ten years for the work week. Is that what they mean?

Make a note of their response.

My daughter Alice has been staying at our house for more than two months, but she was at school before that. *Make a note of whether they ask if she was at school for more than two months, etc.*

The experimenter will then compare the final roster to the 'correct' roster, listed below:

Correct final roster Should include: **Maggie G. Robinson, Sam F. Robinson, and Nicholas S. Smith, Alice L. Robinson**

Should Exclude: **Lucy G. Robinson, Mary C. Davis²**

If the roster is fully correct, ask the following:

On a scale of 1 to 10 with 1 being very easy and 10 being very difficult, how easy or difficult were these questions to answer for Maggie's household?

If the roster is not correct, ask the following:

I'd like to ask you some questions about what you were thinking about at some of the screens.

If Maggie, Sam, or Nicholas are not on the roster, ask:

When you answered roster A/B/C, why did you/did you not include Maggie/Sam/Nicholas ?

When you answered AWAY NOW, why did you/did you not consider Maggie/Sam/Nicholas?

When you answered ANOTHER HOME, why did you/did you not consider Maggie/Sam//Nicholas?

When you answered MORE THAN TWO, why did you/did you not consider Maggie/Sam//Nicholas?

If Alice or Lucy are on the roster, ask:

When you answered roster A/B/C, why did you/did you not include Alice/Lucy ?

When you answered AWAY NOW, why did you/did you not consider Alice/ Lucy?

² Mary was later changed to Maria

When you answered ANOTHER HOME, why did you/did you not consider Alice/Lucy?
When you answered MORE THAN TWO, why did you/did you not consider Alice/Lucy?

For each person not correctly included (or correctly excluded), ask:

Why did you/did you not think that (person's name) should be listed as part of Maggie's household?

Was it clear how to answer the roster questions for boarding school students, children in shared custody, and commuters with more than one residence?

PROBE ABOUT HELP TEXT

Prominent Offer Additional Mail Postcard: Please read this postcard and talk to me about your impressions of it. In your own words, what is this postcard asking you to do and why?

Push Additional Mail Postcard: Please read this postcard and talk to me about your impressions of it. In your own words, what is this postcard asking you to do and why?

Summary of Vignette:

Maggie G. Robinson - Respondent/Neighbor - Asked for help filling out Internet form.

Sam F. Robinson - Respondent's Spouse – For the past ten years, has had a job in Philadelphia, so he stays with his sister in Philadelphia for five nights during the work week. He returns home to D.C. for the weekends two days a week.

Lucy G. Jones - Respondent's Sister - Attends college and currently lives in a dorm there and returns home for holidays and for the summer.

Alice L. Robinson – Respondent's daughter – Is currently attending boarding school away from home and has been away for the past 3 months.

Nicholas S. Smith – Respondent's son from a previous relationship- Is in a shared custody arrangement and stays with his father most of the time, but is staying at this address with his mother on the day this survey is filled out, which would be today.

Mary C. Davis³ - An employee of the respondent who stays at the house five days a week for work as a housekeeper, but stays with her family at their apartment in Washington, D.C. two days a week for the weekends.

³ Mary was later changed to Maria

Section E.2 : Boarding School Vignette

After the participant has completed the survey for their own household, have them complete the vignette. Mark the participants' responses to the roster questions on printouts of the screens for debriefing later.

I want you to complete the survey yourself and a child, a 10-year old daughter named Alice (*They can choose their own last name*). Alice has been attending boarding school away from home (198 Young Road) for some time now, although she returns home for school breaks. Alice is at boarding school today while you're filling out the survey.

Correct final roster

Should include: **PARTICIPANT, ALICE**

After the roster A, B, and C screens, it should include both people. If it does not, ask: Why they did not include the missing person(s)?

If the roster is fully correct, ask the following:

On a scale of 1 to 10 with 1 being very easy and 10 being very difficult, how easy or difficult was this question to answer for your household?

If the roster is not correct, ask the following:

I'd like to ask you some questions about what you were thinking about at some of the screens.

If the participant or Alice are not on the roster, ask:

When you answered roster A/B/C, why did you/did you not include yourself/Alice?

When you answered AWAY NOW, why did you/did you not consider yourself/Alice?

When you answered ANOTHER HOME, why did you/did you not consider yourself/Alice?

When you answered MORE THAN TWO, why did you/did you not consider yourself/Alice?

For each person not correctly included (or correctly excluded), ask:

Why did you/did you not think that (person's name) should be listed as part of your household?

Was it clear how to answer the roster questions for boarding school student situations like the one with Alice?

Section E.3 : Commuter Vignette

After the participant has completed the survey for their own household, have them complete the vignette. Mark the participants' responses to the roster questions on printouts of the screens for debriefing later.

I want you to complete the survey yourself and a spouse, a husband named Sam (or wife named Maggie. *They can make up their own last name.*). Sam (*Maggie*) has had a job in Philadelphia, so he (*she*) stays with his (*her*) sister in Philadelphia for five nights during the work week. He (*She*) returns home to D.C. for the weekends two days a week. He (*She*) has doing this for some time.

After the roster A, B, and C screens, it should include both people. If it does not, ask: Why they did not include the missing person(s)?

The experimenter will then compare the final roster to the 'correct' roster, listed below:

Correct final roster

Should include: **PARTICIPANT, Sam X. XXXXXXXXX (or Maggie)**

If the roster is fully correct, ask the following:

On a scale of 1 to 10 with 1 being very easy and 10 being very difficult, how easy or difficult was this question to answer for your household?

If the roster is not correct, ask the following:

I'd like to ask you some questions about what you were thinking about at some of the screens.

If the participant or spouse are not on the roster, ask:

When you answered roster A/B/C, why did you/did you not include yourself/Sam(*Maggie*)?

When you answered AWAY NOW, why did you/did you not consider yourself/Sam(*Maggie*)?

When you answered ANOTHER HOME, why did you/did you not consider yourself/Sam(*Maggie*)?

When you answered MORE THAN TWO, why did you/did you not consider yourself/Sam(*Maggie*)?

For each person not correctly included (or correctly excluded), ask:

Why did you/did you not think that (person's name) should be listed as part of your household?

Was it clear how to answer the roster questions for commuters with more than one residence like your husband Sam (*wife Maggie*)?

For each person not correctly included (or correctly excluded), ask:

Why did you/did you not think that (person's name) should be listed as part of your household?

Was it clear how to answer the roster questions for commuters with more than one residence like your husband Sam?

Section E.4 : Custody 1 Vignette

After the participant has completed the survey for their own household, have them complete the vignette. Mark the participants' responses to the roster questions on printouts of the screens for debriefing later.

I want you to complete the survey yourself and a child, a son named Nicholas (*They can choose their own last name*). Nicholas is in a shared custody situation and usually stays with his mother/father, who lives in another city. You typically get your son every other weekend, but today he is staying at your house (198 Young Road) when you fill out this survey.

Correct final roster

Should include: **PARTICIPANT, Nicholas**

After the roster A, B, and C screens, it should include both people. If it does not, ask: Why they did not include the missing person(s)?

If the roster is fully correct, ask the following:

On a scale of 1 to 10 with 1 being very easy and 10 being very difficult, how easy or difficult was this question to answer for your household?

If the roster is not correct, ask the following:

I'd like to ask you some questions about what you were thinking about at some of the screens.

If the participant or Nicholas are not on the roster, ask:

When you answered roster A/B/C, why did you/did you not include yourself/Nicholas?

When you answered AWAY NOW, why did you/did you not consider yourself/Nicholas?

When you answered ANOTHER HOME, why did you/did you not consider yourself/Nicholas?

When you answered MORE THAN TWO, why did you/did you not consider yourself/Nicholas?

For each person not correctly included (or correctly excluded), ask:

Why did you/did you not think that (person's name) should be listed as part of your household?

Was it clear how to answer the roster questions for shared custody situations like the one with Nicholas?

Section E.5 : Custody 2 Vignette

After the participant has completed the survey for their own household, have them complete the vignette. Mark the participants' responses to the roster questions on printouts of the screens for debriefing later.

I want you to complete the survey yourself and a child, a son named Nicholas (*They can choose their own last name*). Nicholas is in a shared custody situation and usually stays with you at your house (198 Young Road). Nicholas typically spends every other weekend with his father (mother), who lives in another city, but today he is staying at his father's (mother's) house while you are filling out the survey.

Correct final roster

Should include: **PARTICIPANT**

After the roster A, B, and C screens, it should include both people. If it does not, ask: Why they did not include the missing person(s)?

If the roster is fully correct, ask the following:

On a scale of 1 to 10 with 1 being very easy and 10 being very difficult, how easy or difficult was this question to answer for your household?

If the roster is not correct, ask the following:

I'd like to ask you some questions about what you were thinking about at some of the screens.

If the participant or Nicholas are not on the roster, ask:

When you answered roster A/B/C, why did you/did you not include yourself/Nicholas?

When you answered AWAY NOW, why did you/did you not consider yourself/Nicholas?

When you answered ANOTHER HOME, why did you/did you not consider yourself/Nicholas?

When you answered MORE THAN TWO, why did you/did you not consider yourself/Nicholas?

For each person not correctly included (or correctly excluded), ask:

Why did you/did you not think that (person's name) should be listed as part of your household?

Was it clear how to answer the roster questions for shared custody situations like the one with Nicholas?