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Results from the Usability Testing of the Spanish Language Version of the 2020 Census Barriers, Attitudes and Motivators Survey (CBAMS)[1]

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[1]The 2020 CBAMS is also known as the 2020 Census Planning Survey.

Abstract

In December 2017, researchers at the Center for Survey Measurement (CSM) conducted usability testing of the new Web version of the 2020 Census Barriers, Attitudes, and Motivators Survey (CBAMS). CSM researchers interviewed five Spanish-speaking usability participants using mobile devices and a laptop computer. The purpose of the testing was to determine how well participants were able to complete the survey online, including logging in and out of the survey, answering the questions, and submitting the survey. The major findings were as follows. First, Spanish speakers had difficulty beginning the survey. Specifically, participants had trouble entering the URL from the introduction letter and following the instruction to use an eight-digit user ID to log into the survey. Second, one participant was permanently locked out of the system because he or she did not select a security question and did not know his/her PIN. Third, several participants had trouble figuring out where to enter their user ID numbers on the Splash Page. Fourth, one participant on a mobile device did not see one of the questions due to poor spacing on the mobile rendering of the question. Additional medium and low priority usability issues are reported, as well as comprehension issues regarding the questions themselves. One notable cognitive finding was that none of the five participants could accurately explain the purpose of the survey, tending to conflate the CBAMS with the census questionnaire. The 2020 CBAMS team implemented all the recommendations included in this report in order to improve the usability of the survey for Spanish-speaking respondents[2].

Keywords: Keywords: usability testing Spanish public opinion

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[2] The 2020 CBAMS questionnaire and additional research reports can be found at https://www.census.gov/programs-surveys/decennial-census/2020-census/research-testing/communications-research.html

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Executive Summary

In December 2017, researchers at the Center for Survey Measurement (CSM) conducted usability testing of the new Web version of the 2020 Census Barriers, Attitudes, and Motivators Survey (CBAMS)[3]. This survey collects information about respondents' attitudes about the decennial census, their knowledge about the census, and their likelihood of responding to the census, among other demographic characteristics and attitudinal indicators. CSM conducted both English and Spanish usability testing. This report presents only the findings from the usability study conducted in Spanish.[4]

CSM researchers interviewed five Spanish-speaking usability participants using mobile devices and a laptop computer. The purpose of the testing was to determine how well participants were able to complete the survey online, including logging in and out of the survey, answering the questions, and submitting the survey.

The major findings were as follows. First, Spanish speakers had difficulty beginning the survey. Specifically, participants had trouble entering the URL from the introduction letter and following the instruction to use an eight-digit user ID to log into the survey. Second, one participant was permanently locked out of the system because he or she did not select a security question and did not know his/her PIN. Third, several participants had trouble figuring out where to enter their user ID numbers on the Splash Page. Fourth, one participant on a mobile device did not see one of the questions due to poor spacing on the mobile rendering of the question.

Additional medium and low priority usability issues are reported, as well as comprehension issues regarding the questions themselves. One notable cognitive finding was that none of the five participants could accurately explain the purpose of the survey, tending to conflate the CBAMS with the census questionnaire. Satisfaction ratings, which were generally high among the participants, are also reported.

[3] Note that on the public-facing survey, the CBAMS is referred to as the "2020 Census Planning Survey" to be more understandable.

[4] For results from the English usability testing, see: Falcone, Brian, Rodney L. Terry, and Lawrence Malakhof. "Usability and Accessibility Evaluation – 2020 Census Barriers, Attitudes and Motivators Survey (English online survey)." https://www.census.gov/content/dam/Census/library/working-papers/2018/adrm/rsm2018-12.pdf

INTRODUCTION

The 2020 Census Barriers, Attitudes, and Motivators Study Survey (2020 CBAMS) is a self-administered mail and internet data collection covering a range of topics related to respondents' knowledge of and attitudes toward the 2020 Census. The design of this survey aims to understand mindsets, attitudes and barriers that relate to census participation. Results will compare "barriers, attitudes, and motivators" related to 2020 Census participation across demographic subgroups such Asian, Black, Hispanic and White. The survey will be conducted in English and Spanish. The survey results will be used to develop targeted messaging for the 2020 Census and as the basis of analysis for a mindset classification for the advertisement campaign. In 2010 variables such as attitudes toward the census and knowledge about the census help to develop a communications campaign design to increase awareness and participation in the Census. The 2010 census' communications campaign used public opinion data from the Census Barriers, Attitudes and Motivators Survey to help understand and classify attitudinal segments or "messaging" mindsets of the U.S. population as they pertain to participation in the census. The mindsets aim to uncover sociodemographic characteristics, motivators and barriers toward the census and people's likelihood to respond to the census (Williams, Bates, Lotti and Wroblewski 2015).

The 2020 CBAMS follows the efforts of two previous surveys that were conducted in 2008 (CBAMS I) and 2011 (CBAMS II) as part of the research to encourage Census participation and evaluate self-response of the decennial census in 2010. The 2020 Census Integrated Partnership and Communications team (IPC) will use a research-based approach to empower an efficient communications campaign and to encourage self-response in the 2020 census. The Census Bureau's Communications Research and Analytics Team (CRAT) is in the process of collecting data from the 2020 CBAMS Survey in February 2017.

The 2020 CBAMS includes 61 questions developed from CBAMS I (2008) and II (2011) (Conrey, ZuWallack, and Locke, 2012; Bates et al. 2009). Topics include:

- awareness and familiarity with the 2020 Census.
- intention to participate in the 2020 Census.
- media use (e.g., internet use).
- knowledge and importance of 2020 Census uses.
- importance of public services whose funding is affected by Census results (could be used in 2020 Census messaging).
- importance of potential 2020 Census messaging "frames" – that is, rationales for participating in the census [or something – to explain a little?]
- trust in and attitudes toward the government.
- attitudes toward data confidentiality.
- civic participation.
- demographic information.

The Census Bureau's Center for Survey Measurement (CSM) cognitively pretested the CBAMS instrument with ten English-speaking and ten Spanish-speaking respondents in June and July 2017, and the CRAT incorporated comments into the instrument from this round of testing. After making changes to the questionnaire based on the cognitive pretesting conducted in summer 2017, the improved questionnaire was programmed into a web survey. CSM performed usability testing on

the web version of the questionnaire with five Spanish-speaking participants and ten English speakers in December 2017.

This study tested usability and cognitive problems in the Spanish language version of the online version of the 2020 CBAMS. The CRAT requested this testing to ensure that it is effective, user-friendly, and understood by Spanish-speaking respondents. The objectives for Spanish usability testing of the online 2020 CBAMS were as follows:

1. Identify usability problems on PCs and mobile devices using qualitative data gathered from usability interviews with participants and assess satisfaction with the application using self-reported satisfaction questionnaires.
2. Assess participants' ability to log in and out of the application.
3. Identify cognitive problems stemming from language translation issues or other sources of misinterpretation using qualitative data gathered from usability interviews with participants.
4. Collect additional information about the purpose of the survey and the users' experiences completing it with several debriefing questions.

METHODS

Online Survey

When the official CBAMS is launched in February 2018, in order to access the online survey, either English or bilingual mail materials will be sent to randomly sampled addresses. The five-year American Community Survey (ACS) estimate will be used on the sampling process to identify the concentration of households estimated to have at least one adult (15 or older) who speaks Spanish and adults who do not speak English "very well." The letter sent to these households gives background information about the survey and provides a URL to complete the survey online. It also provides an eight-digit user ID number that online respondents must enter in order to access the survey.

The online survey Welcome Page, which serves as the landing page for respondents who enter the URL into a Web browser, invites the respondent to start the survey in either English or Spanish using large, blue links (see Figure 1). A language toggle is also available in the upper right-hand corner of the screen on all pages so the user can switch between English and Spanish at any time (For an example see Figure 2). After the Welcome Page, the respondent is asked for their eight-digit user ID number (from the mailed materials) to start the survey. This number uniquely identifies the sampled household and also allows the respondent to save their information, log out, and log back in later. A six-digit PIN is assigned by the system after the respondent enters a valid user ID number and displayed on the screen for the user to see. The PIN instructions encouraged the user to write down this PIN.

Throughout the survey, respondents can leave any answers blank. Answers are collected in a variety of formats, including radio buttons, checkboxes, and write-in text fields. Once the respondent signs in with their user ID, they have the option to log out of the survey at any time by using a "logout" button in the upper right-hand corner of the screen. These were the procedures

used in the actual CBAMS in February 2018. Below we describe how the usability testing mimicked these conditions for testing purposes.

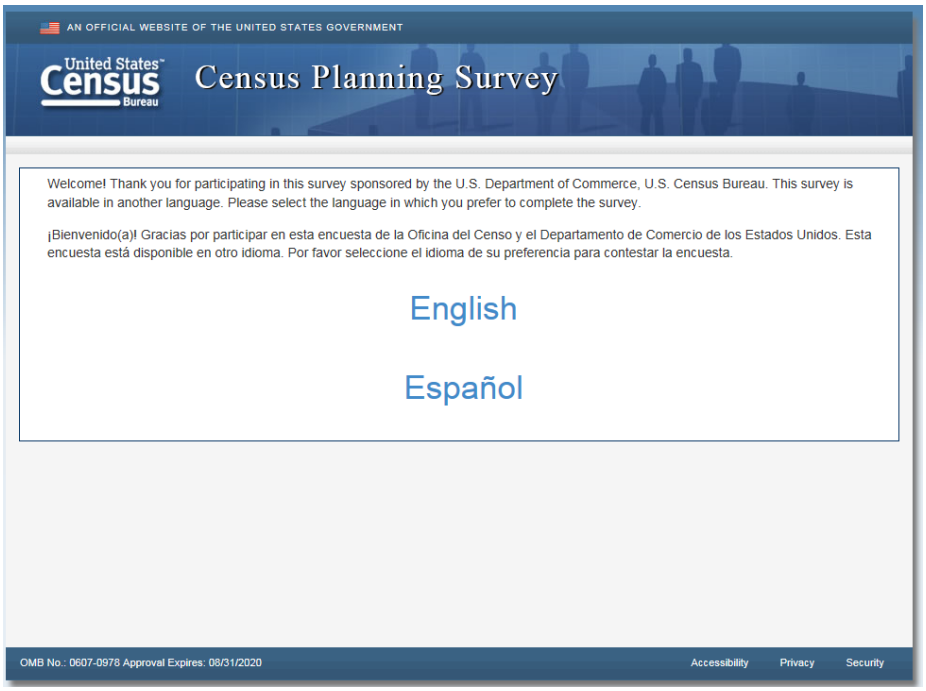

Figure 1. Welcome Page with links to begin survey in English or Spanish.

Participants

The Center for Survey Measurement (CSM) recruited five Spanish-speaking participants for the study. This sample size of five was selected based on common usability testing practices as this number reliably identifies most (85%) usability issues[5]. These participants were recruited using two sources: contacts from our existing recruitment database of potential participants screened for previous studies; and participants recruited onsite at one local community center in the Washington, DC metropolitan area that serves the local Latino community. Interviews took place at two community centers in the area.

In order to qualify to participate in the study, individuals had to meet the following criteria based on answers to a screener questionnaire:

1. Participants had to be 18 years of age or older.
2. Participants had to report being of Latino, Hispanic, or Spanish origin.
3. Participants had to report that Spanish was their native language and that they spoke Spanish better than or equally well as English.
4. Participants had to report at least one year of experience using the Internet.

The screener questionnaire was administered either over the telephone, or in person in the case of onsite recruits. Participant characteristics are summarized in Table 1. All reported having 2 years or more of internet experience. Each participant was given a $40 honorarium for their participation.

[5] See further information for usability testing practices and number of respondents here https://www.nngroup.com/articles/why-you-only-need-to-test-with-5-users/

Table 1. Participant Characteristics

Sample Size	N=5
Device Used for Testing	
PC	n=4
Mobile	n=1
Sex	
Female	4
Male	1
Age = Mean (SD), Range	42.4 (7.98), 33-55
Education	
Less than High School	1
Some College, No Degree	2
Bachelor's Degree	1
Post Bachelor's Degree	1
Race	
White or Caucasian	3
No response/refused	2
Region of Origin	
Central America	2
South America	2
Caribbean	1
Internet Use Frequency	
Everyday	4
Most Days	1
Smartphone Familiarity	
Somewhat familiar	1
Moderately familiar	2
Extremely familiar	2

Test devices

At the start of each session, the participant was asked whether they preferred to answer the survey on a laptop computer or using their mobile device. Participants were then invited to complete the survey using whichever device was more comfortable for them. Even when participants are comfortable using both laptops and smartphones, they were asked to select only one device to answer the survey:

1. **PC (laptop) -** Participants testing the survey were provided with a Census laptop and completed the application using the Internet Explorer browser.
2. **Smartphones –** Participants testing the survey using a smartphone used their own device. Only one participant selected this option and used an Android phone.

Procedure

A protocol was written and followed by test administrators (TA) to ensure that each session was conducted in exactly the same manner over the course of the usability study. The protocol and other test materials were first written in English, then were translated into Spanish.

Interviews began with the TA reading a scripted introduction before providing the participant with a consent form to sign before they could participate in the study. Once informed consent was obtained, the audio and device screen video recording was started. The participant then completed a demographic questionnaire and a smartphone and internet experience questionnaire.

This study used a think-aloud protocol, which required the participant to continually verbalize their thoughts and feelings as they worked through the online prototype application. Participants practiced the think-aloud method during the introduction by answering a question that was included for practicing purposes only, and the interviewer provided feedback to help guide the participant to understanding the method. The practice question asked the participant to think aloud while counting the windows in their house.

After this, the TA provided the participant with a mock letter, explaining that in real life, the letter would come to their house and invite them to participate in the survey. The TA instructed the participant to follow the instructions on the letter and complete the survey in either the mobile app or the PC exactly how they would if they were at home and as though the interviewer were not present. Sessions were in-person, with one interviewer, a note-taker, and a participant. All verbal and written communication during the interviews took place in Spanish.

During each session, toward the end of the survey there was a log out activity to determine whether or not the participant was aware of the option to save their data and log out of the survey. The survey had a log out button available in all the screens of the questionnaire. This log out button allowed users to stop the survey in case they need to exit the instrument and get back in later to finish the questionnaire. Users can log out from the survey at any time while answering the survey and not only at the end of the instrument. When the log out artificial activity started, the TA asked the participant to stop answering the survey and act as if they had to step away from the survey for a while.[6] The TA asked to the participant to describe what would he or she do in a situation where they are unable to complete the survey. If the participant did not notice the "logout" option, the TA prompted the participant to notice it and use it. The TA then observed whether or not the participant was able to successfully log back into the survey using their user ID and PIN number. Sessions lasted up to 90 minutes. If the participant had not completed the survey within approximately 75 minutes, the TA instructed the participant to stop with the survey in order to complete the satisfaction questionnaire and answer the debriefing questions.

Debriefing Questions

After the participant completed the survey (or, in the case of the respondent taking too long to complete the survey, toward the end of the interview), each participant was asked the following debriefing questions:

[6] Note that one participant did not complete this task due to time restrictions in the interview.

- En sus propias palabras, explíqueme el propósito de la encuesta. [In your own words, explain the purpose of the survey to me.]
- Mientras usted respondía a la encuesta, ¿llegó a pensar que necesitaba más información sobre alguna pregunta o sobre el propósito de la encuesta? [While you responded to the survey, at any point did you think you needed more information about any question or about the purpose of the survey?]
- ¿Tuvo alguna dificultad al responder a la encuesta? [Did you have any difficulty responding to the survey?]

FINDINGS AND RECOMMENDATIONS

Usability Results

In this first section, we report on findings of performance degradation, or issues that adversely affected performance The findings are classified into three groups: High Priority, Medium Priority, and Low Priority. The **High Priority** group includes issues that prevented the participant from completing tasks or that required assistance from the TA in order to progress, or caused response errors. The **Medium Priority** group includes issues that made it difficult for the participant to perform the tasks. The **Low Priority** group includes issues that affected the participant's satisfaction with task performance but not task completion.

Next we present issues related to comprehension of the questions (versus usability issues). Then we note programming bugs that were identified, and finally we present results from the satisfaction questionnaire.

High priority issues

1. Spanish speakers did not find the section of the Splash Page (landing page) to start the survey: Two Spanish speakers had difficulty figuring out where to start the survey on the splash page. The User ID entry fields are buried at the bottom of the page under a header that reads "A Partir de la Encuesta" [After the survey], which was not a meaningful translation for the English "Beginning the Survey" for Spanish speakers. One participant in particular expressed confusion about the wording in this header.The location of the User ID boxes is not salient for mobile users. See Figure 2.

   Number of participants: 2 (Mobile and PC)

   Recommendation: Reverse the user ID section with the top information box. Only include the text that gives the information "This is not the census" at the top, followed by the "Beginning the Survey" header and user ID entry boxes. This should move up the ID boxes into view for more mobile users. Change the translation for "Beginning the Survey" to "Comenzar la Encuesta" [Begin the survey].

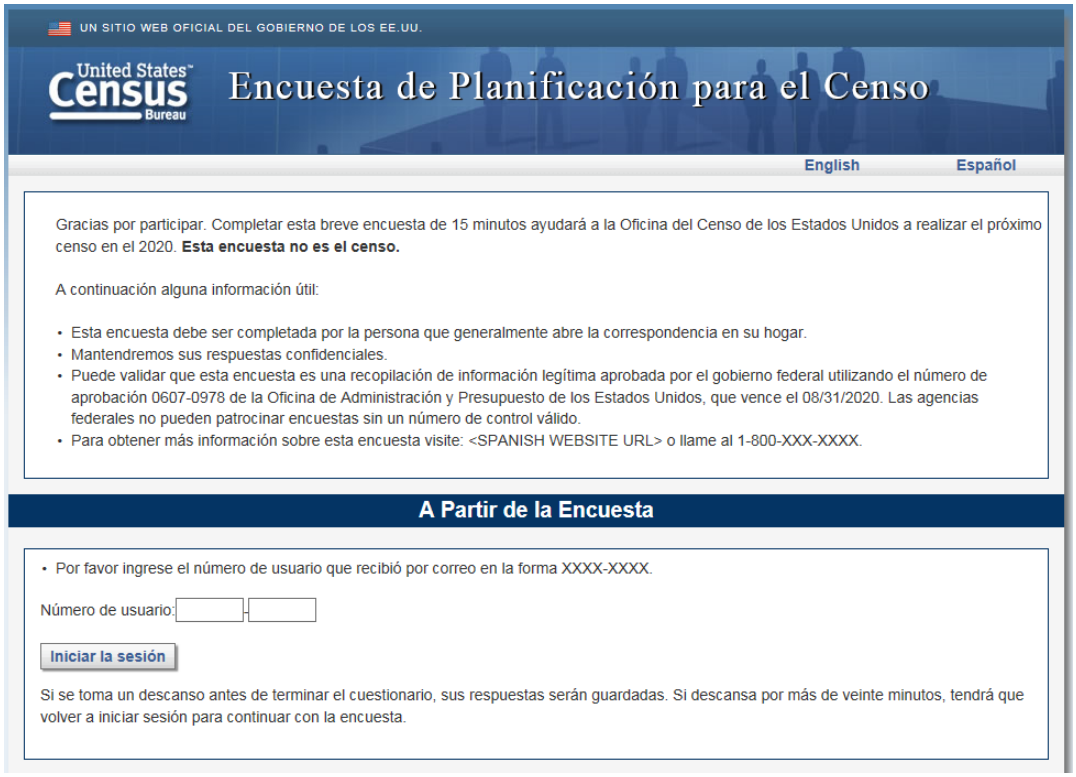

Figure 2. Splash Page of survey, including user ID entry fields at the bottom.

2. Locating a place to enter the URL is challenging: Two participants were not sure of where to enter a URL into a browser on a mobile device or a laptop. Both participants tried to enter the URL into a search function (e.g., Google search bar) rather than in the browser's URL field. Interviewer assistance was required in both cases to direct the participant to where the URL should be entered.

   Number of participants: 2 (Mobile and PC)

   Recommendation: The best possible solution would be to email respondents a direct link to click on to complete a survey; however, this is probably not possible for this survey. We suggest that the sponsor consider adding the instruction, "Vaya al navegador, por ejemplo Firefox o Chrome, y teclee [LINK]" [Go to the browser, for example Firefox or Chrome, and type in [LINK]" to the mailing materials to clarify what the respondent should do with the URL. However, this proposed wording has not been tested. Testing is recommended.

3. User locked out if security question not answered: One participant accidentally navigated backwards from the "Assign PIN" screen where a security question is selected and answered before he or she had a chance to answer the security question to recover the PIN number. Subsequently, this respondent was not able to reenter the survey because he or she did not know her PIN and was not able to reset it because he or she had not answered the security question. The participant kept getting an error message that read, "El PIN que usted ingresó no es válido" [The PIN you entered is not valid], which confused this user because he or she had not entered a PIN number and did not realize he or she had already been assigned one.

Number of participants: 1 (Mobile only)

Recommendation: Separate the PIN number and the security question task into two pages, which will help call attention to the PIN number and make respondents more likely to write it down. Bold or otherwise highlight the instruction to write down the PIN number. Additionally, we recommend that the sponsor research options with the development team that would allow a user to reenter the survey and reset a PIN number even if they did not select a security question previously.

4. Participant skipped question "participation3": One participant on a mobile device did not see the question "participation3," which asks respondents how long they think filling out the census will take. This respondent skipped the question with no comment. This is likely because there is no space above and below the question to make it look distinct from the other questions on the page on a mobile device. See Figure 3.

   Number of participants: 1 (Mobile only)

   Recommendation: Create space above and below this question so that it stands out clearly as a separate question.

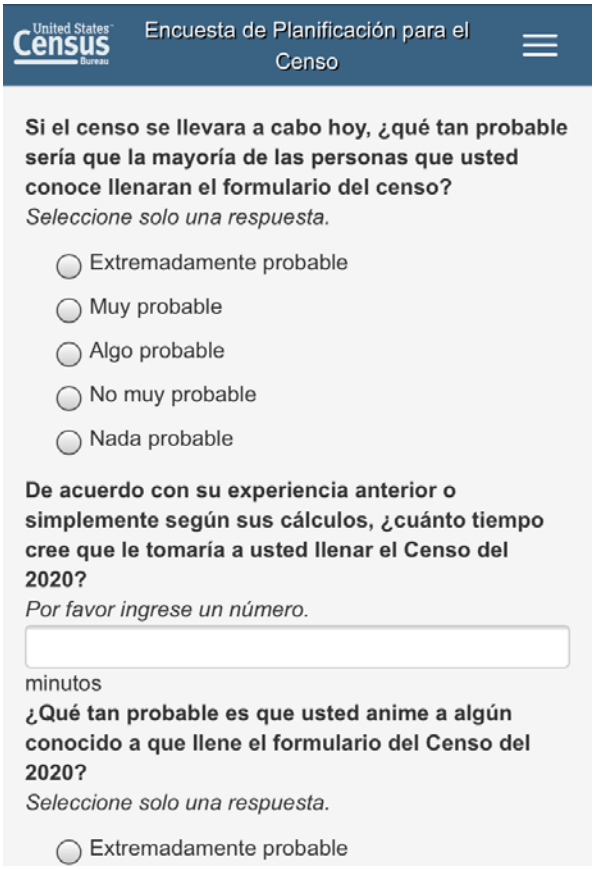

Figure 3. Spacing of question "participation3" on mobile device.

Medium priority issues

1. The survey link, which includes words in English, is long and difficult for Spanish speakers: Three Spanish speakers had trouble entering the survey link. They made many typos and struggled with finding the special characters (such as //) on the keyboard. See Figure 4 below for how the survey link was displayed on the letter for testing.

   Number of participants: 3 (Mobile and PC)

   Recommendation: Remove the "https://" from the beginning of the link on the mailing materials. It is not necessary for correct entry of the link and presents more characters for the respondent to enter into their browser.

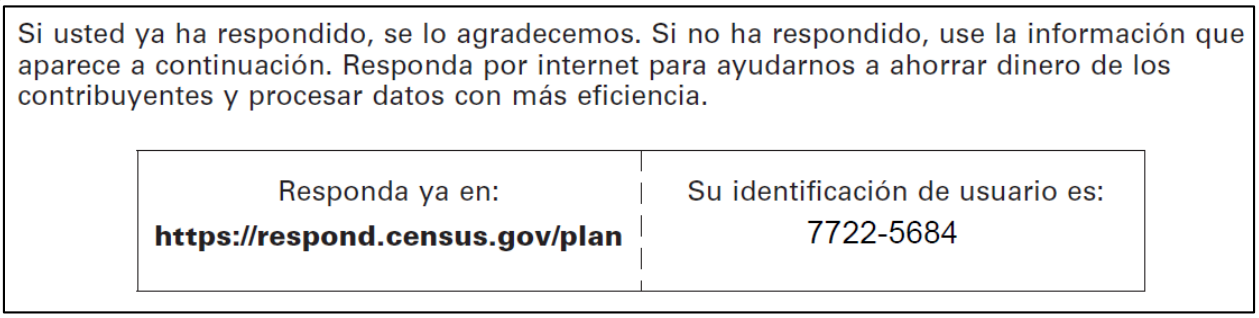

Figure 4. Display of survey link and dash in eight-digit user ID on introduction letter in mailing materials.

2. Users try to enter dash in user ID field on Splash Page: Multiple respondents tried to enter the dash ("-") that they saw on the mailing materials into the "User ID" entry field on the Splash Page. On the mailing materials, the user ID is recorded as an eight-digit number in the format 1234-5678. See Figure 4, above. All participants eventually realized their mistake in entering the dash into the user ID field.

   Number of participants: 3 (Mobile and PC)

   Recommendation: Remove the dash from the user ID on the letter that respondents receive. Include only a space to separate the eight digits in format 1234 5678. This will provide visual separation for easier readability without introducing an additional character (the dash).

3. Users do not write down PIN numbers: Two participants did not write down their PIN numbers. During debriefing, one of the two said that he did not realize he needed to write it down and suggested more clear instruction. He did not realize that he could reset his PIN. The other participant did not write down her PIN but was able to reset her PIN number without problem.

   Number of participants: 2 (PC only)

   Recommendation: We recommend bolding or otherwise highlighting the instruction to make a note of the PIN number. Currently, it is on the page with a large amount of other text (see Figure 5). Additionally, the current phrasing, "Haga el favor de anotar el siguiente PIN de 6 cifras" [Please make a note of the following six-digit PIN] is wordy and does not specify that

the user should write down the PIN. We recommend changing the instruction to "Escriba el PIN de 6 cifras que aparece abajo. Lo necesitará para accesar la encuesta en caso de que necesite salir de su sesión" [Write down the 6-digit PIN number below. You will need it to access the survey if you log out].

Additionally, we recommend that CRAT consider separating the PIN from the task of setting a security question. Currently they are on the same page, and the user may be distracted away from writing down the PIN by the task of selecting the security question.

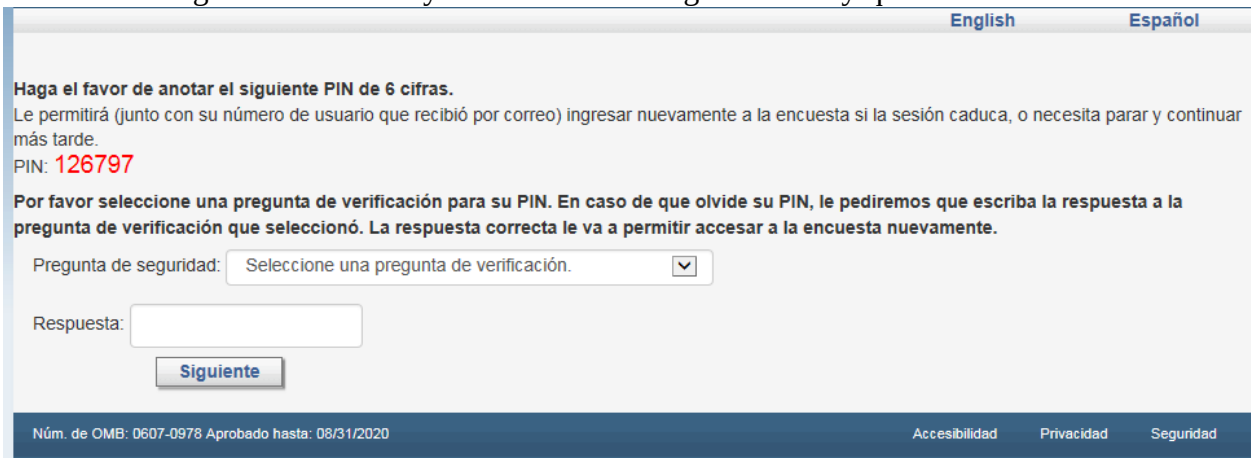

Figure 5. PIN assignment and security question selection page.

4. Participants not aware of logout option: During the test session, four of five participants were asked what they would do if they had to step away from the survey before completing it. The point of the task was to determine if they would use the logout option. Four of four participants did not use the logout function, which is currently a button in the upper right-hand corner on PC and an option in the main menu on mobile (the main menu symbol must be selected first in order to access the "Salir" [logout] option). See Figures 6 and 7 for PC and mobile versions. Two of the four looked for some way to save. One searched the navigation area at the top of the page and lingered on the "Salir" button, but said, "Eso no tiene nada que ver" [that doesn't have anything to do with it] and did not select it. Another participant explicitly mentioned that he or she did not see a button to save the survey. When the TA instructed her to select "Salir" and he or she received the message, "Se cerró la sesión" [The session was closed] (see Figure 8 below), he or she expressed confusion about what had happened.

   Number of participants: 4 (PC and mobile)

   Recommendation: Change the "logout" button to say "Guardar y salir" [save and logout] to make its purpose more clear. When a user selects this button, change the message that they receive to "Se cerró la sesión y se guardó su información" [The session was closed and your information was saved]. Consider also making the logout button on mobile devices separate from the main menu so that it is visible to users.

Figure 6. Logout option on PC.

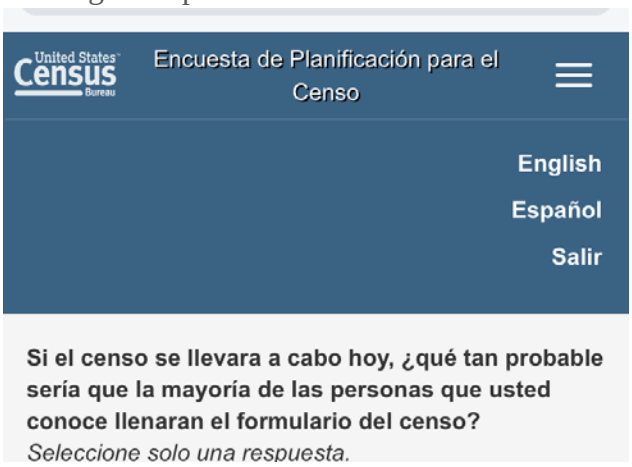

Figure 7. Logout option when main menu is already expanded (mobile device).

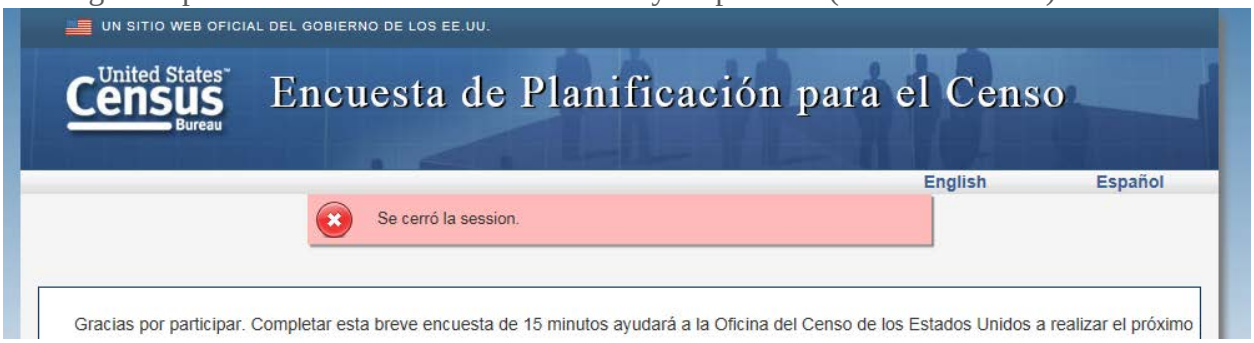

Figure 8. Session closed message after logging out.

Low priority issues

1. Participant confused by "additional information" text: One participant on a mobile device thought that the text "Click here for more information…" on the Splash Page was a link. This participant repeatedly tried to click it. This was likely exacerbated because this user could not see the actionable fields at the bottom of the page (the User ID entry fields) on the mobile device. This participant thought that he or she needed to click for more information in order to proceed with the survey. See Figure 9.

   Number of participants: 1 (Mobile only)

   Recommendation: Remove this final bullet point from the top of the Splash Page. This will decrease the amount of space taken up on the page before the user sees the user ID entry fields.

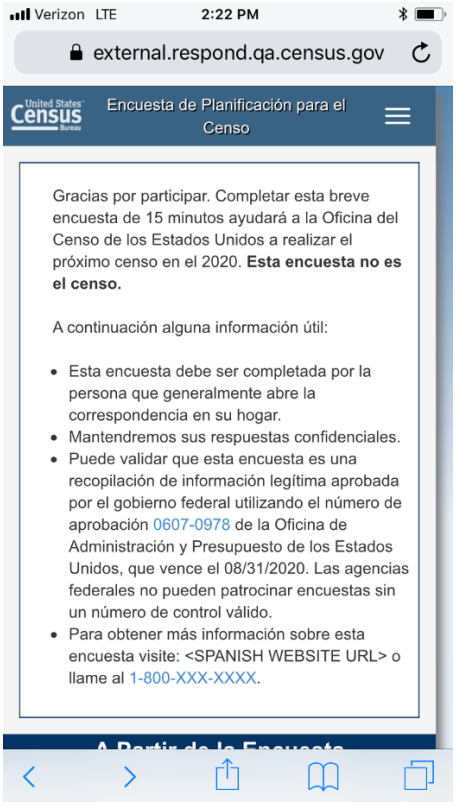

Figure 9. View of Splash Page on mobile device. User ID entry fields are not visible without scrolling.

2. Page refreshes when user enters user ID on second login: One participant had difficulty when her or she entered her user ID to log back into the survey after logging out: the page refreshed, and automatically navigated back to the top of the page. The participant then had trouble finding the PIN entry field.

   Number of participants: 1 (PC only)

   Recommendation: None

Cognitive Issues (Comprehension)

This section of the report details problems that participants had in understanding key concepts and Spanish translations in the online prototype application form. Usability testing does not focus on cognitive issues. However, during a think-aloud test session, cognitive issues sometimes arise as participants are reporting their thoughts and approaches to understanding and answering the questions.

1. Length of survey and survey questions: Some participants were not able to complete the full survey in the 90-minute test session. These participants visibly struggled with some of the questions being long or wordy and spent a long time trying to decide on answers to the questions. This finding is parallel to the findings from the cognitive testing of the CBAMS paper questionnaire. One of the participants commented, “Las preguntas no son fáciles” [the

questions are not easy] when deliberating over her answers and later said that the questions were "confusas" [confusing]. Another participant spent a very long time on the Census knowledge questions, thinking out loud and vacillating on his response for every answer.

Number of participants: 2

Recommendation: No changes at this time. However, if production data shows that Spanish speakers are breaking off during the survey, it may be the case that they are unable to complete the survey in a reasonable amount of time, indicating that future versions of the survey should perhaps be shorter.

2. Purpose of the 2020 CBAMS not understood: During debriefing, participants were asked what they thought the purpose of the survey was. None of the five participants expressed an understanding of the purpose of the survey. They conflated the purpose of the survey with the purpose of the census. This finding suggest that respondents conflated the 2020 CBAMS with the actual Census. For example, one participant said, "Es una ayuda de saber cuantas personas viven…ahí en El Salvador igual siempre pasaban todos los años" [It's an aid for knowing how many people live … there in El Salvador the same thing happened every year]. Another responded that the purpose was "saber como, cuantos hay, cuantos viven en la comunidad" [to know how, how many there are, how many live in the community].

   Number of participants: 5

   Recommendation: This is a known issue from the cognitive testing of the paper version of the survey as well. Consider reducing the amount of text on the Welcome Page and Splash Page to highlight only the purpose of the survey, avoiding other distractions.

3. Too many response options on some questions: One participant skipped many questions, particularly the questions with five or more response categories, because this respondent stated that there were too many options. He or shhe said they were overwhelming and he or she did not want to read them all. He or she additionally stated that lower education people would be particularly overwhelmed by all of the answer categories and would either skip the questions, or just start selecting the same answer over and over. See Figure 10 for an example of the questions this participant found to have too many options.

   Number of participants: 1

   Recommendation: No change recommended at this time. However, if production data shows that Spanish speakers are breaking off during the survey, it may be the case that respondents are experiencing burden with the number of options available on the questionnaire.

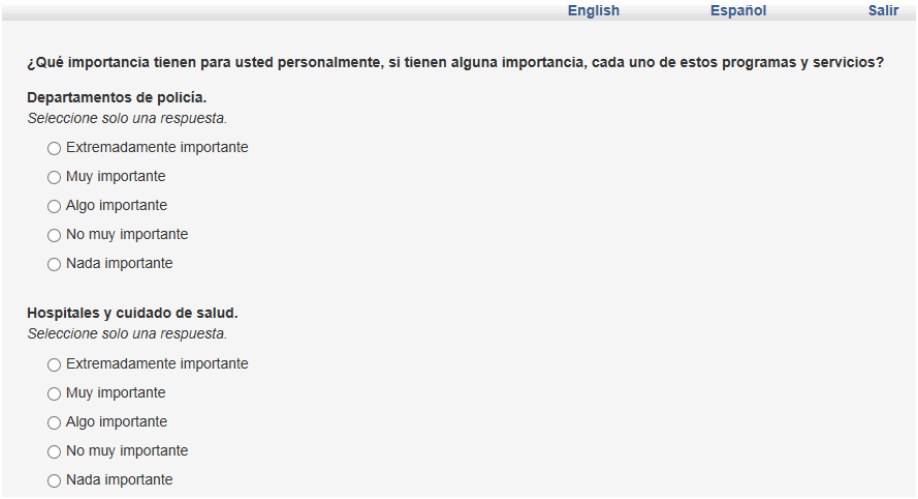

Figure 10. Example of questions that were skipped due to "too many options" for the response.

4. Reverse the order of the month and day for Spanish survey: One participant pointed out that on the Splash Page, the date format mm/dd/yyyy is not appropriate for Spanish speakers. See Figure 11.

   Number of participants: 1

   Recommendation: Change the date format so that the date is spelled out, e.g., "31 de agosto, 2020." Because some Spanish speakers who have lived in the U.S. for longer are familiar with the English mm/dd/yyyy format, whereas other Spanish speakers are not, spelling out the date reduces potential comprehension error.

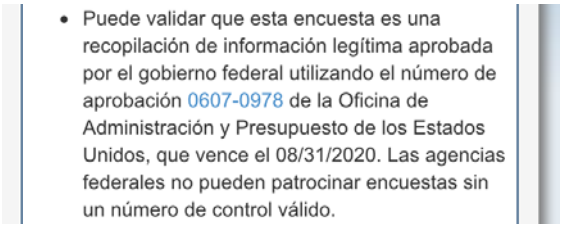

Figure 11. Date format in Spanish instrument.

Instrument Bugs

The "Enviar" [send] button to submit the survey is mislabeled in the Spanish version: The button to submit the survey is incorrectly labeled with the text "Salir de la encuesta" [exit the survey] on the Submit page. One participant commented on this – he or she stated that there needed to be a button to "enviar" [send]. This is a known defect (logged in sponsor defect tracker as issue #56).

Satisfaction

Participants rated their satisfaction with the online survey by filling out a paper questionnaire at the end of the usability test session. This questionnaire contained 12 different measures of

satisfaction for which participants rated their subjective experience on a 9-point Likert scale. For the purposes of this report, this section includes only the comprehensive measure of satisfaction: overall reaction to the application. The results of the other satisfaction measures can be found in Appendix A, which report ratings on more specific criteria (e.g. organization of text).

Figure 12 displays satisfaction reports for participants' overall reaction to the web survey. All responses were on the positive end of the scale, with most participants reporting the highest possible level of satisfaction.

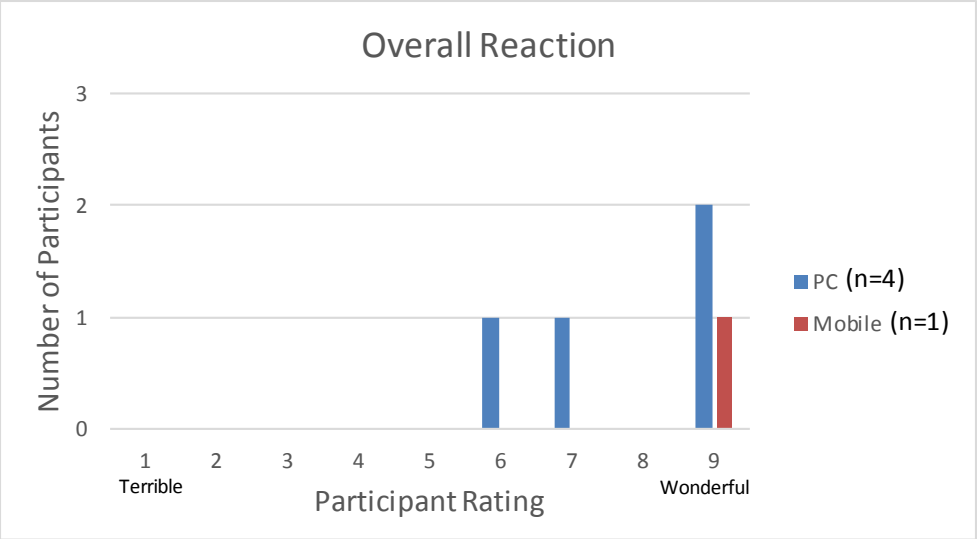

Figure 12. Overall reaction to the application.

Debriefing: See Appendix B

LIMITATIONS

This study had several limitations that should be noted. First, due to time restrictions with the project, the application was tested with five Spanish speaking users total for both PC and mobile when ideally there should have been five for each type of device in keeping with usability testing best practices. Second, the application was tested predominantly on PCs rather than mobile devices. Participants who came to the interview session with their own smartphones were given the option to choose whether they would prefer their own smartphone or the laptop that the research team provided, and most selected the laptop. The decision to allow for respondent choice of test device was made in order to hone in more clearly on usability issues, rather than on issues that might arise from users' lack of familiarity with filling forms out on a mobile device if that's not how they would be most comfortable completing the task. As a result, only one mobile case was completed.

Third, identifying participants who are native Spanish speakers, are Spanish-dominant to the point where they would prefer a survey in Spanish rather than English, *and* are familiar enough with a computer or using the internet on a mobile device can be a challenge in the context of the

continental U.S. In addition, in the case of Spanish-dominant U.S. participants, having experience using the Internet may not translate into the ability to complete an online survey (Trejo and Schoua-Glusberg 2017). Rather, Internet experience among this population may take the form of activities like texting on applications such as WhatsApp, using social media platforms, or playing games. These are distinctly different tasks from, for example, completing an online transaction, renewing a driver's license online, or conducting online banking. Filling out an online survey more closely resembles the latter activities. As a result, the participants in this study had a range of comfort and familiarity with online surveys. The one mobile device user in particular required TA assistance to complete the survey login. Another PC user also required assistance entering the URL into the browser (however, it should be noted that this participant described using her children's school's online portal for various tasks, including checking grades and sending messages to teachers, so this respondent likely represents the target audience for an online survey and would have succeeded if a survey link had been emailed to her).

However, a lack of literacy in computer and Internet-based tasks is a reality of designing surveys for some limited English proficiency populations such as Spanish speakers in the U.S. In English as well as in other language translations, a reasonable effort should be made to make surveys as simple and accessible as possible in order to address these barriers.

REFERENCES

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Conrey, Frederica, Randy Zuwallack ZuWallack & Robynne Locke. 2012. Census Barriers, Attitudes, and Motivators Survey II Final Report. 2010 Census Planning Memoranda Series, No. 205.

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Appendix A – Other Satisfaction Ratings

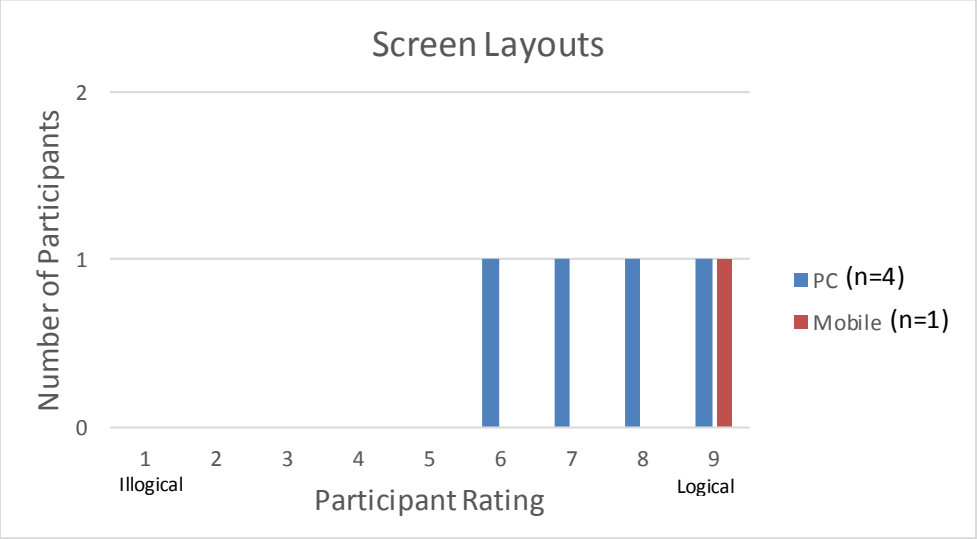

Figure 14. Rating of screen layouts.

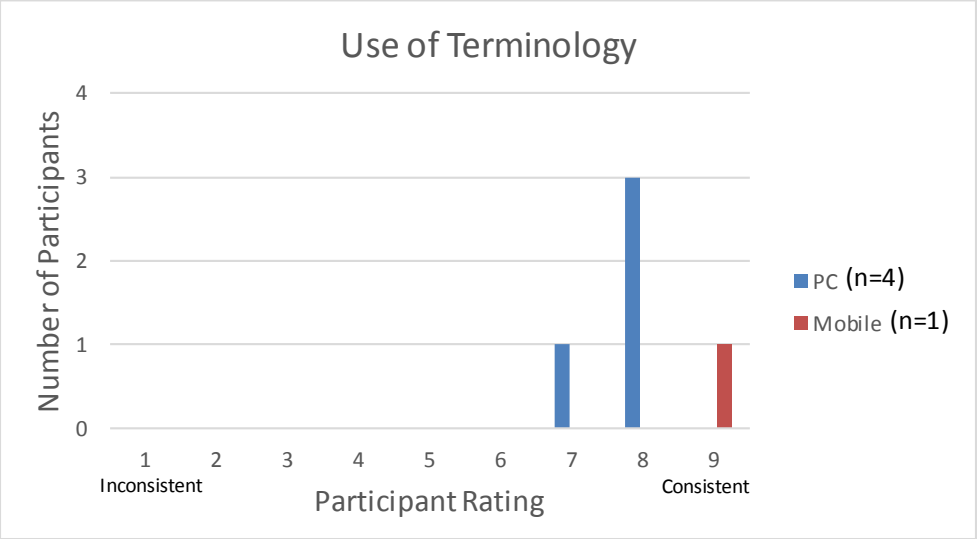

Figure 15. Rating of use of terminology.

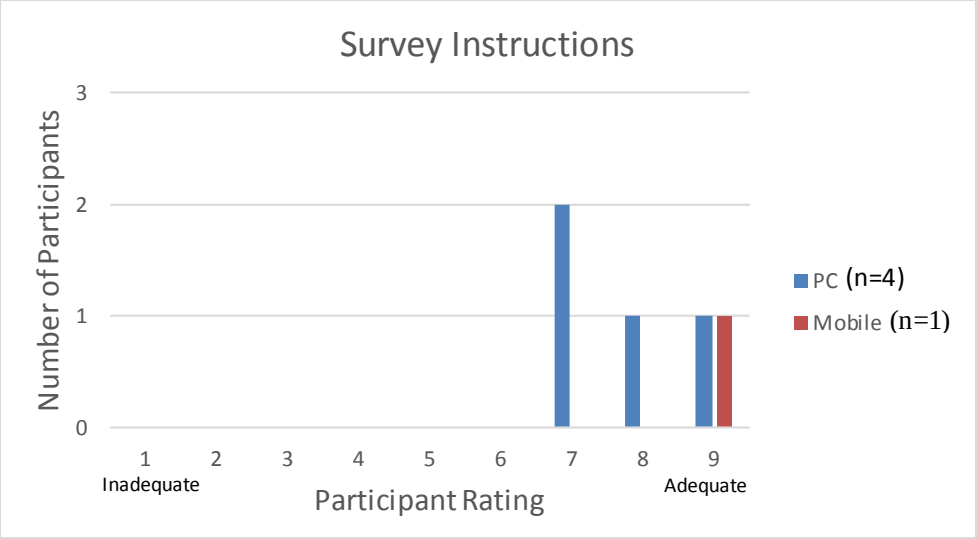

Figure 16. Rating of survey instructions.

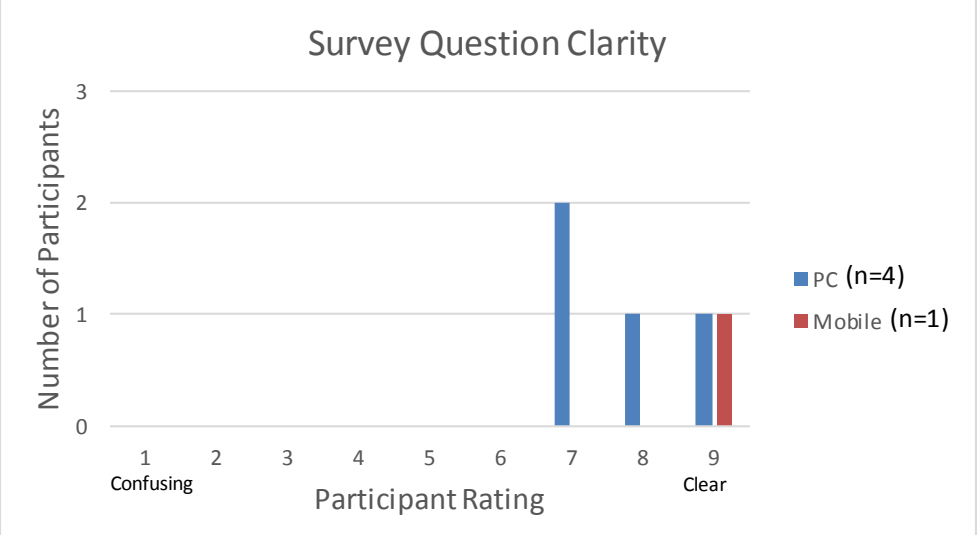

Figure 17. Rating of question clarity.

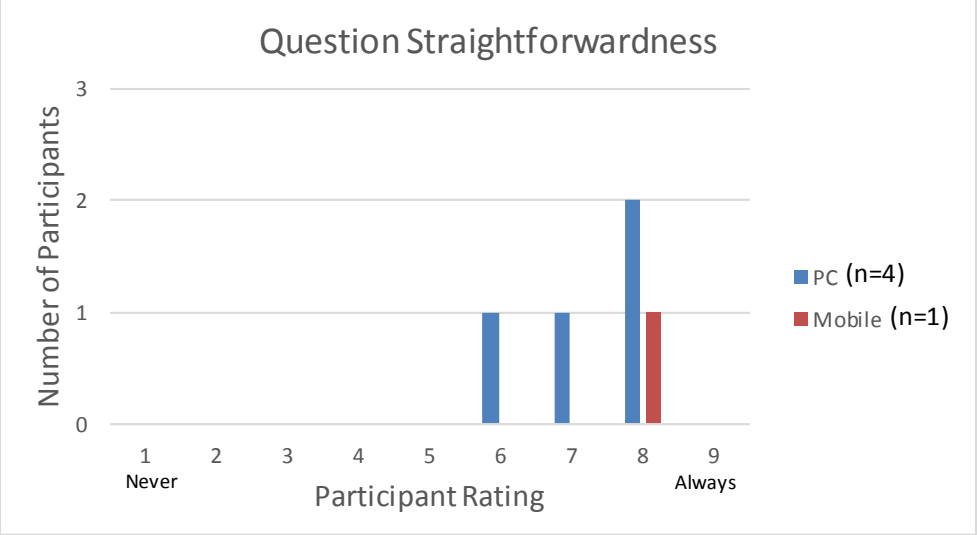

Figure 18. Rating of question straightforwardness.

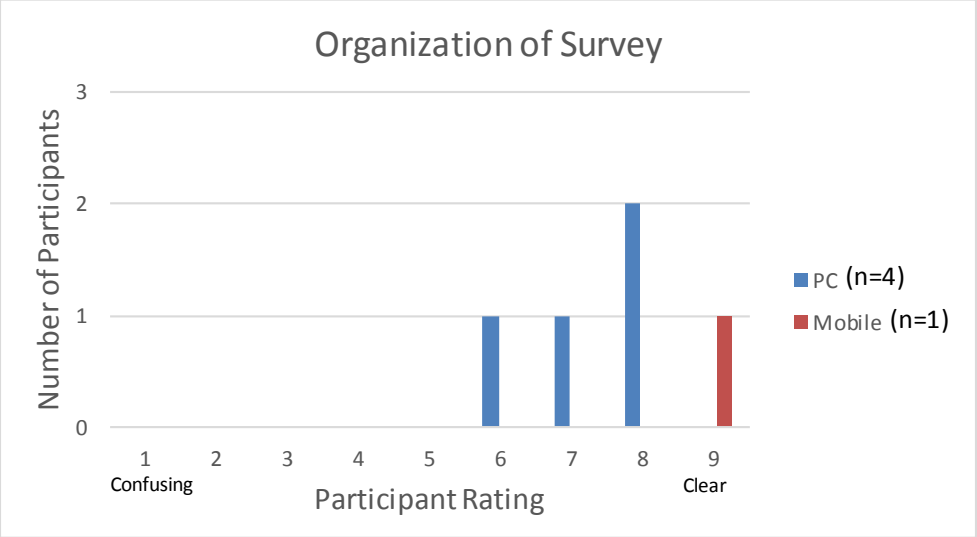

Figure 19. Rating of organization of survey.

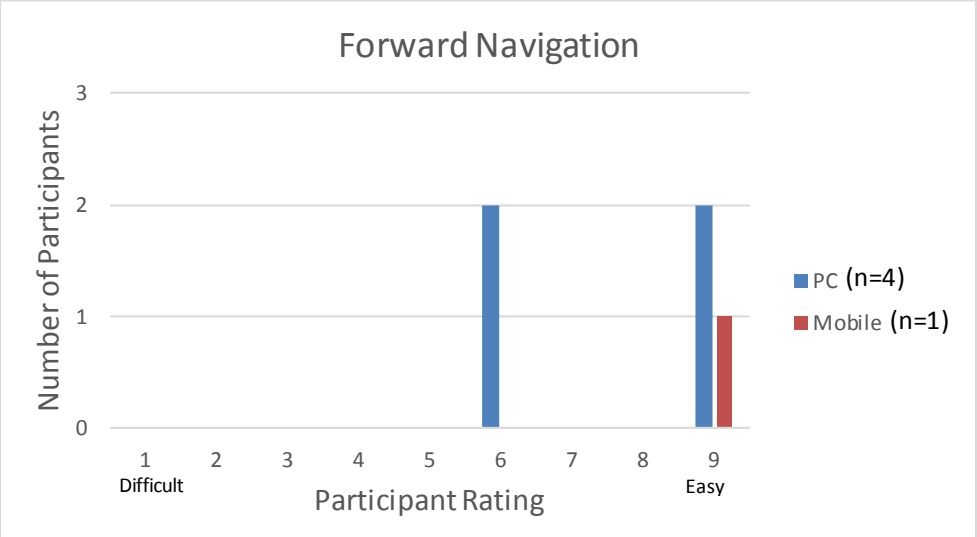

Figure 20. Rating of forward navigation.

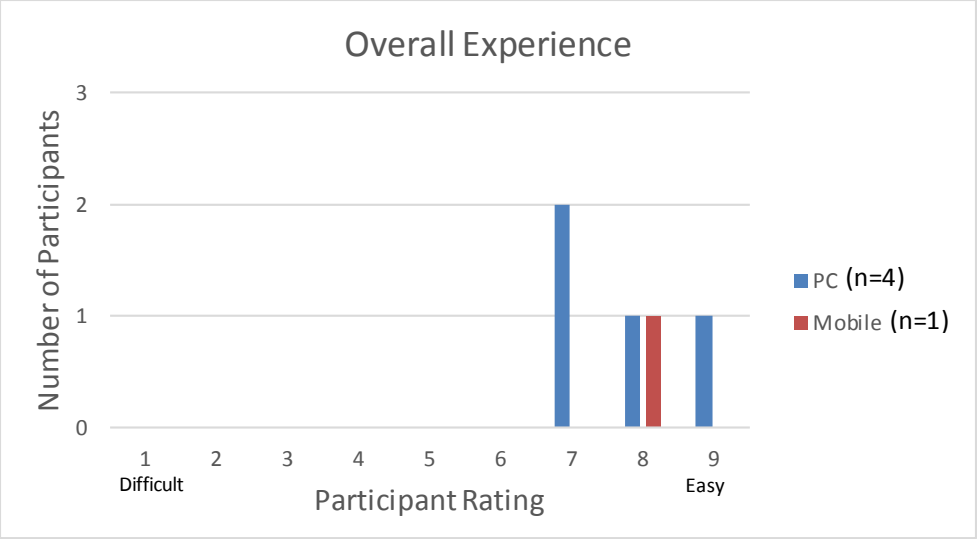

Figure 21. Overall experience rating.

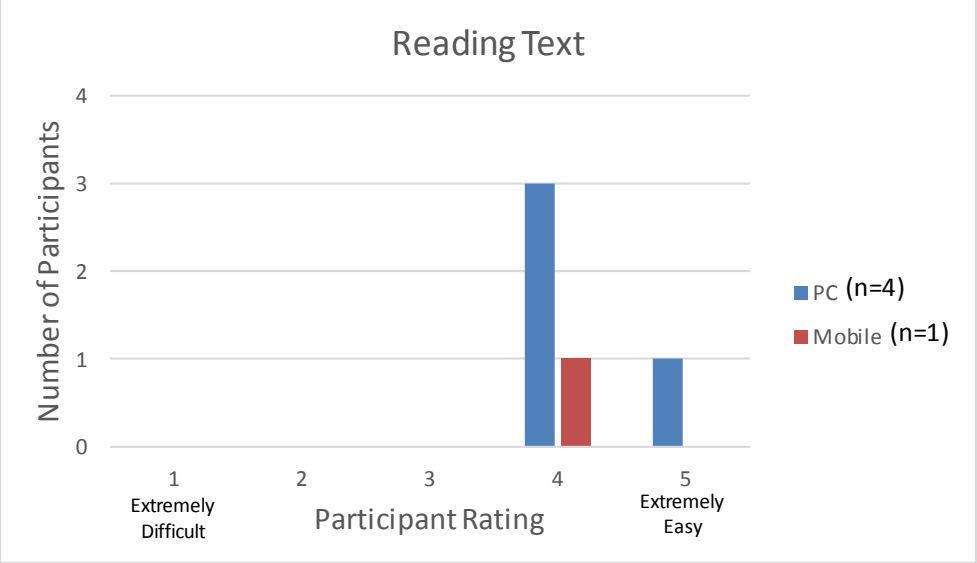

Figure 22. Rating of reading text.

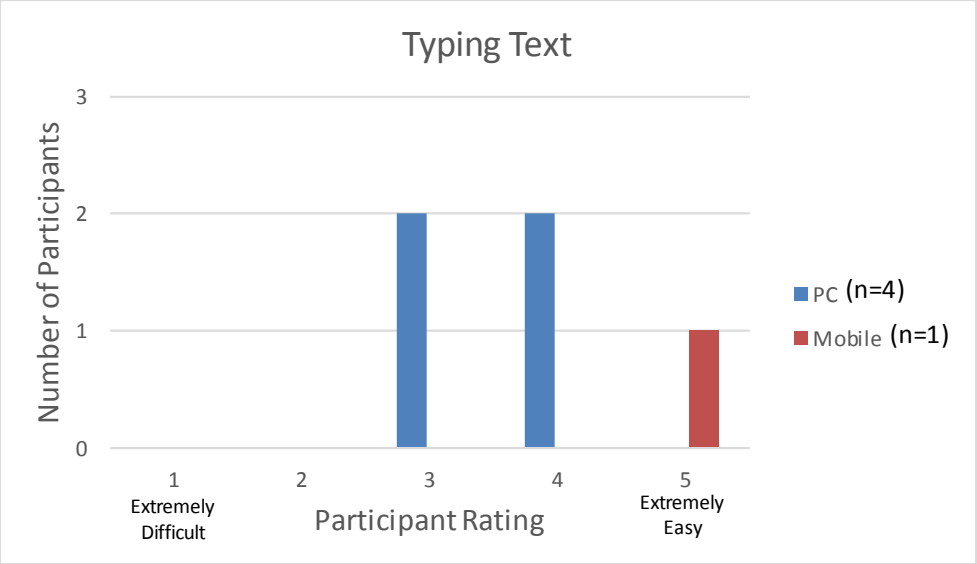

Figure 23. Ratings of typing text.

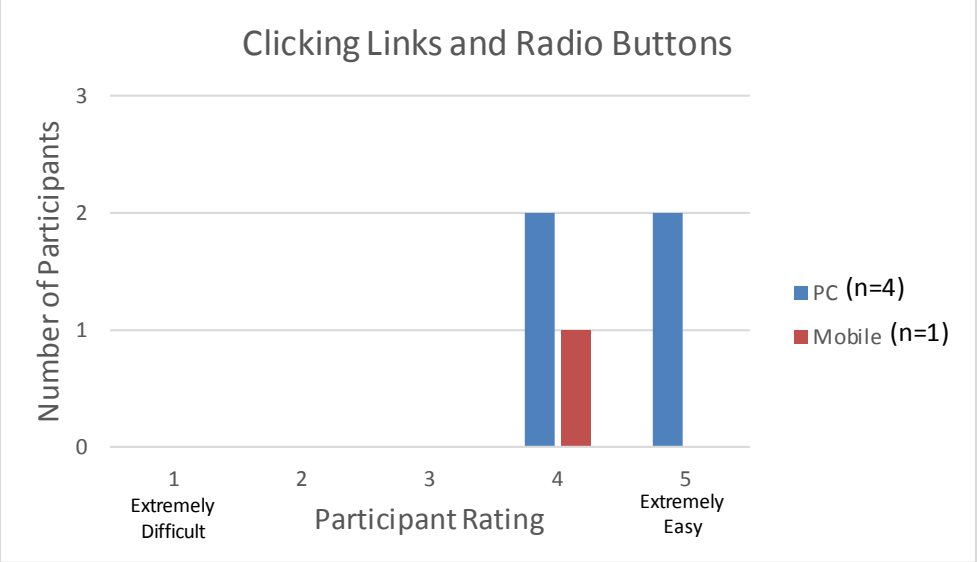

Figure 24. Ratings of clicking links and radio buttons.

Appendix B – Qualitative Results from Debriefing Questions

At the end of the test sessions, participants were asked four debriefing questions (see Methods section). The first question, regarding the purpose of the survey, demonstrated that none of the participants understood the purpose of the CBAMS and tended to conflate it with the purpose of the decennial census. This issue is explained in detail above, in the "Cognitive Issues (Comprehension)" section of this report.

Participants were also asked if they felt that they needed more information during the survey. All of the participants who made comments when asked this question seemed to be reflecting on the census knowledge questions that are asked in the CBAMS[7] and thinking about which questions they did not know the answers to. One participant said he would have liked more information about the census and what it's for. Another participant reflected on the question in the survey that asks whether or not the census is used to locate undocumented people living in the U.S. (see Figure 13). This respondent said that many people would like to know if the census is used for this, because this is a major reason people won't participate in the census. A third commented that he or she should learn more about the U.S. Constitution.

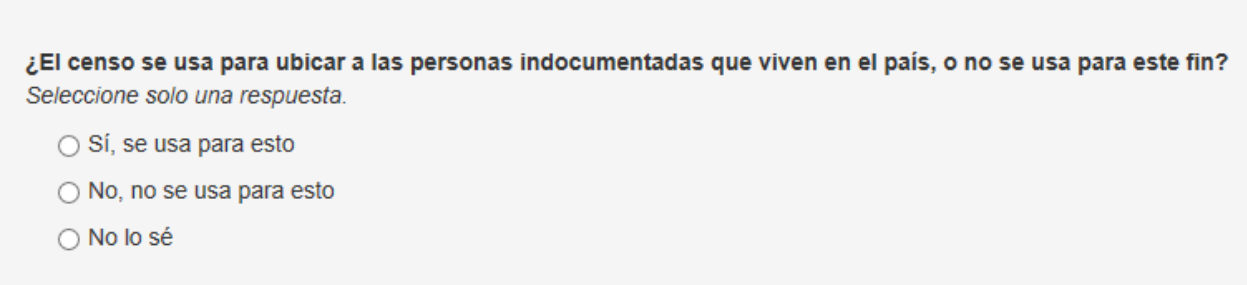

Figure 13. Census knowledge question about undocumented people living in the country.

When asked whether or not the survey was difficult, two participants answered that some of the questions were very repetitive. Specifically, the questions that use the phrasing: "Qué importancia tienen para usted, si tienen alguna importancia, cada una de las siguientes cosas?" [How important, if at all, is each of the following to you personally?] were perceived as repetitive by partcipants. They recommended removing the phrase "si tienen alguna importancia" [if they have any importance], which is used to translate the English phrase "if at all."

Additional Comments from the Satisfaction Questionnaire

Only one participant made additional comments on the satisfaction questionnaire, commenting that "This study makes the census easier for people who need a lot of help."

[7] These questions ask about the respondent's knowledge of the uses of the census and whether or not the census is mandated by the Constitution.