

Usability Studies of the American FactFinder Web Site: Baseline compared with Follow-Up

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ABSTRACT

At the end of 2008 and the beginning of 2009, the U.S. Census Bureau's Human Factors and Usability Research group conducted a baseline usability evaluation of the legacy version of the American FactFinder (AFF). In June of 2011 and June-July of 2012, follow-up to the baseline usability studies were conducted on the new redesigned AFF. Tasks were developed to gain an understanding of whether users understood the Web site's search and navigation capabilities as well as some table and map functions. Results highlight that performance and satisfaction for novice users decreased when on the new redesigned AFF as compared to the legacy site. Performance for experts was about the same on the legacy and on the new redesigned AFF, though satisfaction decreased on the new site. Usability problems are described for each study, and include user issues with the search capabilities of both the legacy and the new redesigned AFF site. This report provides a complete summary of the baseline and follows up usability evaluations, including methods, findings, and comparisons of the three designs of the AFF Web site interface: the legacy version, and the evolving interface of the new AFF. The report also includes suggestions for improving the new site and the team response.

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

Executive Summary

At the end of 2008 and the beginning of 2009, the U.S. Census Bureau's Human Factors and Usability Research group conducted a baseline usability evaluation of the legacy version of the American FactFinder (AFF). In June of 2011 and June-July of 2012, follow-up to the baseline usability studies were conducted on the new redesigned AFF. The testing evaluated the success, efficiency and satisfaction of novice and expert users with the legacy and the newly designed AFF Web site. Testing took place at the Census Bureau's Usability Laboratory in Suitland, MD.

Purpose: The purpose of the baseline and follow up studies was to discover how the new AFF site performed for users as compared to the legacy site.

Method: Twenty-three (10 novice 13 expert) individuals were recruited to participate in the baseline usability study, 10 novices were recruited to participate in the first follow up (June 2011) to the baseline and 18 individuals (10 novice 8 expert) were recruited to participate in the second follow up to the baseline (June-July 2012). Participants were recruited from State Data Center conference attendees that took place at the Census Bureau Headquarters, by referral, or through a participant database maintained by the Usability Lab. All participants had at least one year of experience navigating Web sites and using a computer. Each participant sat in a small room, facing one-way glass and a wall camera, in front of an LCD monitor equipped with an eye-tracking machine. After finishing the tasks, all participants completed a satisfaction questionnaire and answered debriefing questions. Members from the AFF design team, composed of members from the Data Access and Dissemination Systems Office (DADSO) and IBM, observed several sessions from a television screen and monitor in a separate room.

Participants completed the same tasks in each round of testing so that comparisons could be made. Some tasks assessed how participants would locate information on the Web site, some assessed how participants manipulated data tables, and some assessed how they manipulated maps. While they worked, participants described their actions and expectations aloud while the test administrator observed and communicated from another room.

High-Priority Results:

In general, user performance, with respect to accuracy, efficiency and subjective satisfaction decreased with the new AFF Web site, as compared to the legacy Web site. Novices' accuracy, efficiency, and satisfaction decreased for the majority of tasks in 2011 and 2012. Experts' accuracy and efficiency on tasks in 2012 increased, but satisfaction decreased from the 2008 baseline. Usability issues include difficulties with the how to get started (new AFF) difficulties with search (legacy and new AFF), difficulties with the overlays and understanding how the site functions with the "Your Selections" and the "Search Results" areas (new AFF). A complete list of usability issues and suggested recommendations are included in the results section of the report.

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Usability Studies on the American FactFinder: Baseline and Two Annual Follow-Up to the Baseline Studies

1.0. Introduction & Background

The user interface is an important element to the design of a Web site (Nielsen, 1999; Krug, 2006) For a Web site to be successful, the user interface must be able to meet the needs of users in an efficient, effective, and satisfying way. It is the job of the user interface to provide cues and affordances that allow users to get started quickly and to find what they are looking for with ease.

This report specifies the methods, materials, that the Center for Survey Measurement (CSM) Usability Laboratory used to evaluate the usability of the American Fact Finder (AFF) Legacy site (Baseline, shown in Figure 1), the newly launched (2011 Follow-Up, shown in Figure 2) and the live site after some tweaks had been made to the interface (2012 Follow up, shown in Figure 3). The report also provides results of user performance metrics, identifies usability problems and recommendations to improve the evolving user interface of the Web site.

AFF is a free online tool that allows users to find, customize and download Census Bureau data on the population and economy of the United States. AFF is available to the public, and a multitude of diverse users search the site for a vast range of information. AFF underwent a major redesign, and a series of usability tests assessed successive iterations of the Web site (see Romano Bergstrom, Olmsted-Hawala, Chen & Murphy, 2011 for a review). We gathered baseline usability data on the legacy AFF site and conducted a follow-up test when the new site was launched, and then a year later once some design tweaks had been implemented. This paper reports the findings from the baseline 2008 study and compares it with the results from the two follow-up usability studies (conducted in mid 2011 and mid 2012). Where available, the paper highlights the responses from our sponsor, Data Access and Dissemination System Office (DADSO), and IBM (henceforth referred to as the Design Team) to the findings.

U.S. Census Bureau

American FactFinder

Main Search Feedback FAQs Glossary Site Map Help

Your source for population, housing, economic, and geographic data

POPULATION FINDER

FACT SHEET

PEOPLE

HOUSING

BUSINESS AND GOVERNMENT

ABOUT THE DATA

DATA SETS

DOWNLOAD CENTER

MAPS

TOOLS AND REFERENCES

Fast Access to Information

Get a **Fact Sheet** for your community...

city/town, county, or zip

state -- select a state --

[or select a state using a map >](#)

Getting Detailed Data

Decennial Census - taken every 10 years to collect information about the people and housing of the United States
[learn more](#) | [get data](#)

See the [Count Question Resolution Program](#) for information on Census 2000 count corrections.

American Community Survey - an ongoing survey that provides data about your community every year
[learn more](#) | [get data](#)

Puerto Rico Community Survey - the equivalent of the American Community Survey for Puerto Rico
[learn more](#) | [get data](#) | [en español](#)

Population Estimates Program - population numbers between censuses
[learn more](#) | [get data](#)

Economic Census - profiles the U.S. economy every 5 years
[learn more](#) | [get data](#)

Annual Economic Surveys - data from the Annual Survey of Manufactures, County Business Patterns and Nonemployer Statistics
[learn more](#) | [get data](#)

Special Interest

 La Encuesta sobre la Comunidad de Puerto Rico y Censo 2000 Puerto Rico [en español](#)

[American Indian and Alaska Native data and links](#)

[FastFacts for Congress](#) - Demographic and economic data for Congressional Districts

[Kids' Corner](#) - Learn fun facts about your state and take a quiz

Information on [Religion](#) and [Genealogy](#)

Population Data

Population Finder

Use the [Population Finder](#) to view population trends for your community.

U.S. Population Clock

22:40 GMT (EST+5) Jan 08, 2009

305,577,974

[more population clocks >](#)

What's New

 **Updates to American FactFinder** released December 9, 2008. [more >](#)

2005-2007 American Community Survey 3-Year Estimates are now available for cities, counties and other areas with populations of 20,000 or more from the [Data Sets page](#).

2007 Commodity Flow Survey data are now available from the Economic Census [Data Sets page](#).

2006 Annual Survey of Manufactures has been [updated](#). New data are now available from the [Data Sets page](#).

2007 Population Estimates for housing units are now available from the [Data Sets page](#).

2006 County Business Patterns Quick Reports and Thematic Maps and ZIP Code Business Patterns data are now available from the [Data Sets page](#).

2006 Nonemployer Statistics data are now available from the [Data Sets page](#).

Census 2000 State Legislative District Summary Files (Sample and 100-Percent) Data from the Census 2000 Summary Files 1 and 3 retabulated using updated State Legislative District boundaries. [more >](#)

[archive >](#)

Also see the Bureau's [latest news releases](#) and [The Broadcast Zone](#).

Census Bureau Links: Home • Search • Subjects A-Z • FAQs • Data Tools • Catalog • Census 2000 • Quality • Privacy Policy • Contact Us

U.S. CENSUS BUREAU
Helping You Make Informed Decisions

Figure 1: Screen shot of Baseline American FactFinder Web site.

U.S. Census Bureau

AMERICAN FactFinder

Feedback | FAQs | Glossary | Help

MAIL | SEARCH | WHAT WE PROVIDE | USING FACTFINDER | English | Español

Your Selections
"Your Selections" is empty

Topics ?

Geographies
(states, counties, places, ...)

Population Groups
(race, ancestry, ...)

Industry Codes
(NAICS, ...)

Legacy American FactFinder
The following data are available on the legacy American FactFinder System:

- 2007 Economic Census
- 2009 American Community Survey
- 2009 Population Estimates

Load Query
Use Load Query to restore a previously saved query

LOAD QUERY

Your source for population, housing, economic, and geographic data

View the **2010 Census Summary File 1** for detailed data on age, sex, households, families, the population in group quarters, and housing units. Also included are counts for many race and Hispanic or Latino categories. Data will be released on a state by state basis. [more »](#)

View **video tutorials** to help you get started using the NEW American FactFinder.

Quick Start

Enter search term(s) and click 'GO' ?

topic or table name for geography (optional) **GO**

topics population groups industries

Or use the options on the left to begin your search

U.S. Population Clock
22:18 UTC (EST+5) Sep 14, 2011
312,214,224
[more population clocks](#)

Reference Maps
Reference Maps show selected geographic boundaries for an area along with orienting features, such as roads.
United States **GO**

Address Search
Find Census data by entering a street address.

Did you know?
Each year, U.S. presidents proclaim February as National African-American History Month.

News and Notes **GET EMAIL UPDATES**

Aug 31, 2011
The U.S. Census Bureau released the 2010 Census population counts for the U.S. Virgin Islands. As of April 1, 2010, the population decreased by 2.0 percent to 106,405. Click the more link to see population changes and to view custom maps for the U.S. Virgin Islands as well as several lower-level geographies. [more »](#)

Aug 31, 2011
The Commonwealth of the Northern Mariana Islands Census population counts for 2010 has been released. On April 1, 2010, the population was 53,883, a 22.2 percent decrease from the 2000 Census population. Click the more link to see population changes and to view custom maps for the Commonwealth of the Northern Mariana Islands as well as several lower-level geographies. [more »](#)

Aug 31, 2011
As of April 1, 2010, the population for Guam was 159,358, a 2.9 percent increase from the 2000 Census. Click the more link to see population changes and to view custom maps for Guam as well as several lower-level geographies. [more »](#)

Aug 31, 2011
The population for American Samoa on April 1, 2010, was 55,519, a decrease of [more »](#)
[Census Newsroom >>](#)

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Source: U.S. Census Bureau | American FactFinder

Figure 2: Screen shot of First Follow-Up American FactFinder Web site (June 2011).

U.S. Census Bureau

AMERICAN FactFinder

Feedback FAQs Glossary Help

MAIN SEARCH WHAT WE PROVIDE USING FACTFINDER English Español

Your Selections
"Your Selections" is empty

Search using the options below:

Topics (age, income, year, dataset, ...)

Geographies (states, counties, places, ...)

Race and Ethnic Groups (race, ancestry, tribe)

Industry Codes (NAICS industry, ...)

Quick Facts
Quick, easy access to facts about people, business, and geography.
Select the U.S. or a state to begin:
United States GO

Popular Searches

- Decennial Census
- Population
- Poverty
- Housing
- Income

Your source for population, housing, economic, and geographic information

Quick Start
Enter search term(s) and click 'GO'
topic or table name for state, county or place (optional)
GO
Topics Race/ancestry Industries

Or use the options on the left to begin your search

News and Notes GET EMAIL UPDATES

Jul 17, 2012
2010 County Business Patterns data are now available! These data provide the only detailed annual information on the number of establishments, employees, and first-quarter and annual payroll for most of the 1,100 industries covered at the national, state, and county levels. Also, County Business Patterns includes economic data for Puerto Rico and the Island Areas (American Samoa, Guam, the Commonwealth of the Northern Mariana Islands, and the U.S. Virgin Islands). more »

May 24, 2012
The 2006-2010 American Community Survey (ACS) Selected Population Tables (SPT) are now available for the U.S., states, the District of Columbia, Puerto Rico and many smaller geographic areas, including census tracts. This dataset provides detailed data on social, economic, demographic and housing for up to 392 race, Hispanic, tribal, and ancestry groups. Availability of SPT tables for a population group is limited to population groups with at least 50 unweighted sample cases in a particular geographic area. This dataset provides many estimates that were previously available in the Census Newsroom »

Getting Detailed Data
The following data are available on American FactFinder:

- Decennial Census
Taken every 10 years to collect information about the people and housing of the United States
- American Community Survey
An ongoing survey that provides data about your community every year
- Puerto Rico Community Survey
The equivalent of the American Community Survey for Puerto Rico
- Economic Census
Profile the U.S. economy every 5 years

Address Search
Find Census data by entering a street address.

View the American FactFinder Data Release Schedule

Download large volume data from the Census Bureau's FTP Site

Reference Maps
Reference Maps show selected geographic boundaries for an area along with orienting features, such as roads.
United States GO

Load Query
Use Load Query to restore a previously saved query
LOAD QUERY

Figure 3: Screen shot of Second Follow-Up American FactFinder Web site (June 2012).

2.0. Method

Working collaboratively, members of the Design Team and the Usability Team created the tasks, which were designed to capture the participant's interaction with and reactions to the design and functionality of the AFF Web site. Each task established a target outcome for the user but did not tell the user how to reach the target. We designed the tasks with the goal of using them throughout the series of iterative tests (Romano Bergstrom et al., 2011), as well as throughout the follow-up tests. See [Appendix A](#) for the tasks.

2.2 Participants and Observers

Baseline: We conducted usability testing on the baseline AFF Web site from November 25 to December 8, 2008 with ten novice participants. Participants were recruited through a database maintained by the Usability Lab. One participant was removed from the analysis due to inexperience navigating the Internet, as observed during the usability test. The remaining nine novice participants were considered knowledgeable in navigating the Internet and using a computer. The mean age for novice participants was 37.22 years (range 18-60), and the mean education level was 15.22 years of schooling (range 10-18 years). All novice participants were unfamiliar with the AFF Web site. The baseline study of the experts was conducted at two different time periods, however the data and the interface did not change during that time. The first five expert usability sessions were conducted in February of 2009. The remaining seven expert sessions were conducted in October 2009 when the State Data Centers (SDC) and the Census Information

Centers (CIC) personnel were in town for the annual conference at the Census Bureau. All expert participants were SDC or CIC members and all were experienced in using the Internet and the American FactFinder Web site. One participant was removed because the power went out and the session could not go forward, thus the analysis is on the twelve expert users. The mean age for expert participants was 46.5 years (range 31-61), and the mean educational level was 18.16 years of schooling (range 16-22).

2011 Follow Up: We conducted usability testing of the 2011 Follow-Up AFF Web site, solely with novice users from June 8 to June 17, 2011. Eight novice-level participants were recruited through our database, and two participants were new interns that fit our novice criteria. One participant was removed from the analysis due to low education level, and we wanted these results to be comparable to the Baseline test results. The remaining nine participants were considered knowledgeable in navigating the Internet and using a computer. The mean age for participants was 38.56 years (range 21-73), and the mean education level was 16.22 years of schooling (range 10-18 years). All participants were unfamiliar with the AFF Web site.

2012 Baseline Follow Up: We conducted usability testing of the 2012 Follow-Up AFF Web site with novice and expert users from June 7 to July 17, 2012. Ten novice-level participants were recruited through our database, and ten expert-level participants were recruited from a combination of State Data conference attendees, emails targeting expert users, our database, and a few internal employees who use AFF in their daily work. All novice participants were unfamiliar with the AFF Web site. The mean age¹ for novice participants was 42 (range 16 – 72), and the mean education level was 14.9 years of schooling (range 11-18 years). All expert participants were either familiar with the AFF Web site or other similar statistical data sites. The mean age for expert participants was 44.6 years (range 28-57), and the mean education level was 18 years of schooling (range 16-22 years). See [Appendix B](#) for participants' self-reported computer and Internet experience.

2.3 Facilities and Equipment

Testing took place in the Usability Lab (Room 5K502) at the U.S. Census Bureau in Suitland, MD.

2.3.1 Testing Facilities

The participant sat in a 10' x 12' room, facing one-way glass and a wall camera, in front of a standard monitor that was on a table at standard desktop height. During the usability test, the test administrator (TA) sat in the control room on the other side of the one-way glass. The TA and the participant communicated via microphones and speakers.

2.3.2 Computing Environment

The participant's workstation consisted of a Dell personal computer with a Windows XP operating system, a standard keyboard, and a standard mouse with a wheel. The screen resolution was set to 1024 x 768 pixels, and participants used the Firefox browser.

2.3.3 Audio and Video Recording

Video of the application on the test participant's monitor was fed through a PC Video Hyperconverter Gold Scan Converter, mixed in a picture-in-picture format with the camera video, and recorded via a Sony DSR-20 Digital Videocassette Recorder on 124-minute, Sony PDV metal-evaporated digital videocassette tape. One desk and one ceiling microphone near the participant captured the audio recording for the videotape.

¹ One participant was a high school student who had not yet graduated from high school, but due to homework assignments, would have reason to use the Census.gov Web site.

The audio sources were mixed in a Shure audio system, eliminating feedback, and were then fed to the videocassette recorder.

2.4 Materials

2.4.1 Script for Usability Session

The TA read some background material and explained several key points about the session. See [Appendix C](#).

2.4.2 Consent Form

Prior to beginning the usability test, the participant completed a consent form. See [Appendix D](#).

2.4.3 Questionnaire on Computer and Internet Experience and Demographics

Prior to the usability test, the participant completed a questionnaire on his/her computer and Internet experience and demographics. See [Appendix E](#).

2.4.4 Tasks

In the Baseline study, novice participants performed 10 pre-determined tasks on the Web site ([Appendix A](#)). The tasks were developed by members of the Design Team and the Usability Team to assess the ease of use and accuracy of finding information on the AFF Web site. Seven of the tasks were considered “simple,” and three were considered “complex”. Expert participants performed six pre-determined tasks on the Web site. All expert tasks were more complex than the novice tasks.

In the First Follow-Up study (mid 2011), novice participants performed six pre-determined tasks on the Web site. These tasks were originally developed for the Baseline study with the intention that we would reuse them in subsequent Follow-Up studies. However, the tasks were modified slightly to reflect content that was available on the site. For example, a year range was modified from 2000 to 2010 because 2010 data had been loaded into the site but 2000 data had not. Four of the tasks were considered “simple,” and two were considered “complex.” In the First Follow-Up study we did not have expert users.

In the Second Follow-Up study (mid 2012), novice participants performed 10 pre-determined tasks on the Web site, however due to the increased amount of time that it was taking to complete the tasks, not all participants were able to complete all 10 tasks. The tasks were slightly modified to reflect content that was available on the site. Expert participants performed the same (with minor changes) six tasks that had been used in the 2008 Baseline study.

Tasks used in the Follow-Up studies of 2011 and 2012 are comparable with the tasks used in the original 2008 Baseline study, where the tasks differ it is noted in [Appendix A](#).

2.4.5 Satisfaction Questionnaire

Members of the Usability Lab created the Satisfaction Questionnaire, which is loosely based on the Questionnaire for User Interaction Satisfaction (QUIS, Chin, Diehl, & Norman, 1988). In typical usability tests at the Census Bureau, we use satisfaction items that are tailored to the particular user interface we are evaluating. In the first two studies, the Satisfaction Questionnaire included 10 items worded for the AFF

Web site, in the 2012 Follow-Up study, the satisfaction questionnaire had been modified slightly. See [Appendix F](#) for the questionnaires.

2.4.6 Debriefing Questions

After completing all tasks, the participant answered debriefing questions about his/her experience using the AFF Web site. See [Appendix G](#).

2.5 Procedure

Following security procedures, external participants individually reported to the visitor's entrance at the U.S. Census Bureau Headquarters and were escorted to the Usability Lab. Internal participants met the TA at the Usability Lab. Upon arriving, each participant was seated in the testing room. The TA greeted the participant and read the general introduction. Next, the participant read and signed the consent form. After signing the consent form, the participant completed the Questionnaire on Computer and Internet Experience and Demographics. The TA left the Satisfaction Questionnaire on the desk beside the participant and left the testing room. While the TA went to the control room to perform a sound check, the participant completed the Questionnaire on Computer and Internet Experience and Demographics. The TA then began the video recording. The Internet browser was pre-set to the AFF Web site (<http://factfinder.census.gov> for the Baseline and <http://factfinder2.census.gov> for the Follow-Up studies). The TA instructed the participant to begin by reading the first task aloud and to proceed.

While completing the tasks, the TA encouraged the participants to think aloud and to share their thoughts about the Web site following a traditional or speech communication think-aloud protocol (Olmsted-Hawala, Murphy, Hawala, & Ashenfelter, 2010). The participant's narrative allowed us to gain a greater understanding of how the participant used the Web site and to identify issues with the site. If at any time the participant became quiet, the TA reminded the participant to think aloud, using prompts such as "Keep talking," and "Um hum?" During the sessions, the TA noted any behaviors that indicated confusion, such as hesitation, backtracking, and comments. After survey completion, the TA asked the participant to complete the Satisfaction Questionnaire.

While the participant completed the Satisfaction Questionnaire, the TA met with the observers to see if they had any additional questions for the participant. The TA then returned to the testing room to ask debriefing questions ([Appendix G](#)). This debriefing provided an opportunity for a conversational exchange with participants. The TA remained neutral during this time to ensure that they did not influence the participants' reactions to the Web site. At the conclusion of the debriefing, the TA stopped the video recording. Overall, each usability session lasted approximately 60 minutes. Participants who were not government employees were given \$40 each.

Typically, goals are defined prior to usability testing. However, since these tests were a baseline and follow-up to the baseline, the goal was to see how well the evolving new site performed compared to the legacy site (as tested in the baseline). Thus, no usability goals were set. Instead, we make performance comparisons between the sites in terms of participant accuracy, efficiency and subjective satisfaction, and we identify areas of the AFF Web site that were problematic and frustrating to participants.

2.6 Performance Measurement Methods

For the baseline (2008) and Follow-Up usability studies (2011 & 2012) the performance measurements consisted of task accuracy, task efficiency and subjective satisfaction.

2.6.1 Accuracy

After each participant completed a task, the TA rated it as a success or a failure. In usability testing, successful completion of a task means that the design supported the user in reaching a goal. Failure means that the design did not support task completion.

2.6.2 Efficiency

After all usability tests were complete, the TA calculated the average time taken to complete each task. Average times were calculated across all participants for each task and across all tasks for each participant.

2.6.3 Satisfaction

After completing the usability session, each participant completed the tailored ten-item satisfaction questionnaire. Participants were asked to rate their overall reaction to the site by circling a number from 1 to 9, with 1 being the lowest possible rating and 9 the highest possible rating. Other items on the questionnaire included assessing the screen layouts, the use of terminology on the Web site, the arrangement of information on screens, ease of navigation, and the overall experience of finding information. See [Appendix E](#). The Usability Team calculated ranges and means for the various rated attributes of the Web site.

2.7 Identifying and Prioritizing Usability Problems

To identify design elements that caused participants to have problems using the Web site, the TA recorded detailed notes during the usability session. When notes were not conclusive, the TA used the videotape recordings from each session to confirm or disconfirm findings. By noting participant behavior and comments, the Usability Team inferred the likely design element(s) that caused participants to experience difficulties. The team then grouped the usability issues into categories based on severity and assigned each problem a priority code, based on its effect on performance. The codes are as follows:

- *High Priority* – These problems have the potential to bring most users to a standstill. Most participants could not complete the task.
- *Medium Priority* – These problems caused some difficulty or confusion, but most participants were able to successfully complete the task.
- *Low Priority* – These problems caused minor annoyances but did not interfere with the tasks.

3.0 Results

In this section, we discuss the findings from the usability studies. We present the qualitative and quantitative data, usability issues, and possible future directions based on the Design Team's responses to the findings.

3.1 Participant Accuracy

Participant accuracy is divided up into novice accuracy scores and expert accuracy scores.

3.1a Novice

In the Baseline study, the overall accuracy score for novice participants on the simple tasks was 55% and the overall accuracy score for novice participants on the complex tasks was 27%. Accuracy scores for simple tasks ranged from 29% to 100% across participants, and accuracy scores for complex tasks ranged from 0 to 100% across participants. For simple tasks, accuracy scores ranged from 22% to 89% across tasks, and for complex tasks, accuracy scores ranged from 22% to 38% across tasks. Accuracy scores for complex tasks were low compared to typical usability studies (we generally aim for an 80% accuracy goal). It appears that participants struggled the most with the complex tasks. Almost half of the participants (44%; 4 out of 9) did not complete the complex tasks correctly.

In the 2011 Follow-Up study, the overall accuracy score for novice participants on the simple tasks was 29%, and the overall accuracy for complex tasks was 28%. Accuracy scores for simple tasks ranged from 0 to 94% across participants, and accuracy scores for complex tasks ranged from 0 to 100% across participants. For simple tasks, accuracy scores ranged from 11% to 44% across participants, and for complex tasks, accuracy scores ranged from 11% to 44% across participants. Accuracy scores for simple tasks mostly decreased from the baseline to the 2011 Follow-Up; however, there was one simple task that showed a slight increase in performance. For the two complex tasks tested in the Baseline, one showed an increase in accuracy, and one showed a decrease in the 2011 study.

In the 2012 Follow-Up study, the overall accuracy score for novice participants on the simple tasks was 14%, and the overall accuracy for novice complex tasks was 54%. Accuracy scores for simple tasks ranged from 0% to 68.8%, and accuracy scores for novice complex tasks ranged from 0% to 100% across participants. For simple tasks, accuracy scores ranged from 0% to 80% across participants, and for novice complex tasks, accuracy scores ranged from 16.7% to 90% across participants. Accuracy scores for the simple tasks decreased from the baseline. One complex task improved in the 2012 testing, because the Quick Start feature worked effectively for participants.

Table 1 and Figure 4 illustrate the comparison of accuracy scores across the three studies (e.g., Baseline, 2011 and 2012 Follow-Up studies). As can be seen in the visuals, participants in both the 2011 and 2012 studies had more difficulties with the simple tasks than participants in the Baseline. This highlights a need for a simple route into data for novice participants. See [Appendix A](#) for the tasks and [Appendix H](#) for accuracy by participant.

3.1b Expert

In the Baseline study, the overall accuracy score for expert participants was 47%. Accuracy scores ranged from 0% to 100% across participants, and from 36 to 69% across tasks.

No testing was done with experts on the 2011 Follow-Up study since resources were re-focused on iterative usability tests aimed at improving the design of the new AFF interface.

In the 2012 Follow-Up study, the overall accuracy score for expert participants on the tasks was 49.22%. Accuracy scores ranged from 0 to 100%, across participants. And from 37.50% to 72.20% across tasks.

Accuracy scores appear to have increased from Baseline to 2012 Follow-Up, although the increase may not be statistically significant. The wide range of performance by participants seems to indicate that success with American FactFinder can be improved with more extensive use of the site, as the SDC and CIC participants who have been using the interface on a more constant basis outperformed other expert users.

See Table 8 and Figure 6 for accuracy score comparisons from Baseline to 2012 Follow Up. See [Appendix A](#) for the tasks and [Appendix H](#) for detailed accuracy by participant.

3.2 Participant Efficiency

Participant efficiency is separated into novice efficiency scores and expert efficiency scores.

3.2a Novice

In the Baseline study, the average time for novice participants to complete simple tasks (for correctly completed tasks only) was 3 minutes 45 seconds, and the average time novice participants took to complete complex tasks was 5 minutes 55 seconds. Time to complete simple tasks ranged from 28 seconds to 14 minutes 30 seconds, and time to complete complex tasks ranged from 1 minute 38 seconds to 13 minutes 56 seconds, across participants. This timing calculation was based on 44 simple-task responses (79%) and 9 complex-task responses (35%) that were answered correctly. The task failures were not included in the efficiency scores.

In the 2011 Follow-Up study, the average time to complete simple tasks (for correctly completed tasks only) was 6 minutes 46 seconds, and the average time to complete complex tasks was 4 minutes 37 seconds. Time to successfully complete simple tasks ranged from 45 seconds to 14 minutes 29 seconds, and time to successfully complete complex tasks ranged from 2 minute 9 seconds to 10 minutes 54 seconds, across users.

In the 2012 Follow-Up study, the average time for novice participants to complete simple tasks (for correctly completed tasks only) was 6 minutes 46 seconds, and the average time novice participants took to complete complex tasks was 6 minutes 15 seconds. Time to successfully complete simple tasks ranged from 1 minute 10 seconds to 9 minutes 58 seconds, and time to successfully complete complex tasks ranged from 2 minutes 42 seconds to 8 minutes, across participants.

Time to complete tasks took longer for the simple tasks in both the 2011 and 2012 Follow-Up studies than they did in the Baseline study. For the 2011 Follow-Up study, of the two complex tasks tested, one showed an increase in time and the other showed a decrease in the amount of time it took to complete the task². Time to complete complex tasks also took longer in the 2012 Follow-up study than in the Baseline.

See Table 3 and Table 5 for comparison of efficiency scores across the three studies and [Appendix I](#) for detailed participant efficiency scores.

3.2b Expert

In the Baseline study, the average time for expert participants to complete tasks (for correctly completed tasks only) was 9 minutes 02 seconds. Time to successfully complete tasks ranged from 3 minutes, 38 seconds to 23 minutes 3 seconds.

In the 2012 Follow-Up study³, the average time for expert participants to complete tasks (for correctly completed tasks only) was 6 minutes 13 seconds. Time to successfully complete tasks ranged from 2 minutes 24 seconds to 14 minutes 25 seconds. Compared to the legacy site tested in the 2008 Baseline, the new site, tested in the 2012 Follow-up study proved quicker for participants who were successful in completing their tasks.

See Table 9 and Table 10 for comparison of efficiency scores across novice participants in the Baseline and 2012 Follow-Up study and [Appendix I](#) for detailed participant efficiency scores.

² Accuracy for complex tasks was low in the 2011 Follow-Up study such that the efficiency calculation was only based on five out of 18 possible complex task responses.

³ There were no expert participants run in the 2011 Follow-Up study.

3.3 Participant Satisfaction

Participant satisfaction below is separate by novice and expert satisfaction ratings.

3.3a Novice

In the Baseline study, the average satisfaction score of novice participants' overall reaction to the site was 6.22 out of 9, which is above the median point on the scale. The highest mean rating was 6.78 on forward navigation (range: impossible - easy). Fifteen percent of the individual participant mean ratings were below the 5-point median. Ratings below the mid-point of the scale indicate issues that may affect many users.

In the 2011 Follow-Up study, the average satisfaction score of participants' overall reaction to the site was 3.33 out of 9, which is below the median and lower than participants' satisfaction in the Baseline study. Consistent with the Baseline study, the highest rating was for forward navigation, with an average rating of 6.13 out of 9. The lowest rating of 2.11 out of 9 was on the overall ease or difficulty of finding information on the site.

In the 2012 Follow-Up study, the average satisfaction score of novice participants' overall reaction to the site was 3.20 out of 9, which is below the median; lower than participants' satisfaction in the Baseline study and only slightly lower than the 2011 Follow-Up. The highest rating was for arrangement of information on the screens at 6.10. The lowest rating of 1.60 out of 9 was on the overall ease or difficulty of finding information on the site.

For the 2011 Follow-Up study participants' self-rated satisfaction decreased for all satisfaction questionnaire items when compared to the Baseline. It was much the same with the 2012 Follow-Up study with the exception of "arrangement of information on the screen" which was higher in 2012 than in Baseline. When compared to the 2011 Follow-Up study some participants were more satisfied with the 2012 version when it came to "information displayed on the screens" and "arrangement of information on the screens". For other items such as "overall reaction to the web site," ratings across both Follow Up studies were similar (3.33 in 2011 and 3.20 in 2012). In general, these lower satisfaction scores in both Follow-Up studies, indicate a greater sense of dissatisfaction with the new AFF Web as opposed to the Legacy site. Further, these scores indicate that there are some ongoing frustrations with the new design of the AFF Web site.

See Table 7 and Figure 5 for a comparison of novice satisfaction scores from Baseline to the Follow-Up studies. See [Appendix J](#) for detailed user satisfaction results.

3.3b Expert

In the Baseline study, the average satisfaction score of expert participants' overall reaction to the site was 6.5 out of 9, which is above the median point of the scale. The highest mean rating was 6.92 out of 9 on information displayed on a screen (range Inadequate to Adequate). The lowest rating was 5.17 out of 9 on whether tasks can be performed in a straight-forward manner (range Never to Always).

In the 2012⁴ Follow Up, the average satisfaction score for expert participants' overall reaction to the site was 4.60 out of 9, which is lower than the median and lower than participants' satisfaction in the Baseline study. The highest mean rating was 5.50 out of 9, for forward navigation. This was a decrease from 6.42 from the Baseline. The lowest mean rating was a 3.80. This was a decrease from 5.17 in the Baseline.

⁴ In 2011 there were no sessions with expert participants.

In the 2012 Follow-Up study, participants' self-rated satisfaction decreased for all satisfaction questionnaire items. This indicates a lingering sense of dissatisfaction with the new site, even though expert performance from Baseline to 2012 Follow Up appears to have increased in 4 out of 6 tasks.

See Table 11 and Figure 7 for comparison of satisfaction scores from Baseline to 2012 Follow Up. See [Appendix J](#) for detailed user satisfaction results.

DRAFT

Novice Tables and Figures

Table 1: Accuracy Scores for 2008 Baseline and 2011 and 2012 Follow-Up Assessments for Novice Participants

	TASK										Overall success rate	Simple tasks success rate	Complex tasks success rate
	Simple Tasks					Complex Tasks							
Iteration	1	2	3	4	5	6	7	8	9	10			
2008 Baseline	89%	56%	78%	78%	67%	67%	33%	22%	22%	38%	55%	67%	27%
2011 Follow Up	44%	21%				25%	38%	11%		44%	29%	29%	28%
Difference in performance from 2008	45% D	35% D				42% D	5% I	11% D		6% I	26% D*	38% D*	1% I*
2012 Follow Up	80%	0%	11%	22%	0%	32%	25%	17%	0%	90%	35%	14%	54%
Difference in Performance from 2008	9% D	21% D	67% D	56% D	67% D	35% D	8% D	5% D	22% D	52% I	20% D	53% D	27% I

NOTE: I = Increase in accuracy. D = Decrease in accuracy.

Table 2: Repeated Tasks Accuracy Scores for 2008 Baseline and 2011 and 2012 Follow-Up Assessments for Novice Participants

	TASK						Overall success rate	Simple tasks success rate	Complex tasks success rate
	Simple Tasks			Complex Tasks					
Iteration	1	2	6	7	8	10			
2008 Baseline	89%	56%	67%	33%	22%	38%	51%	61%	30%
2011 Follow Up	44%	21%	25%	38%	11%	44%	29%	29%	28%
Difference in performance from 2008	45% D	35% D	42% D	5% I	11% D	6% I	22% D*	32% D*	2% D*
2012 Follow Up	80%	0%	32%	25%	17%	90%	41%	34%	54%
Difference in Performance from 2008	9% D	21% D	35% D	8% D	5% D	52% I	17% D	32% D	24% I

*Calculated from the repeated tasks mean.

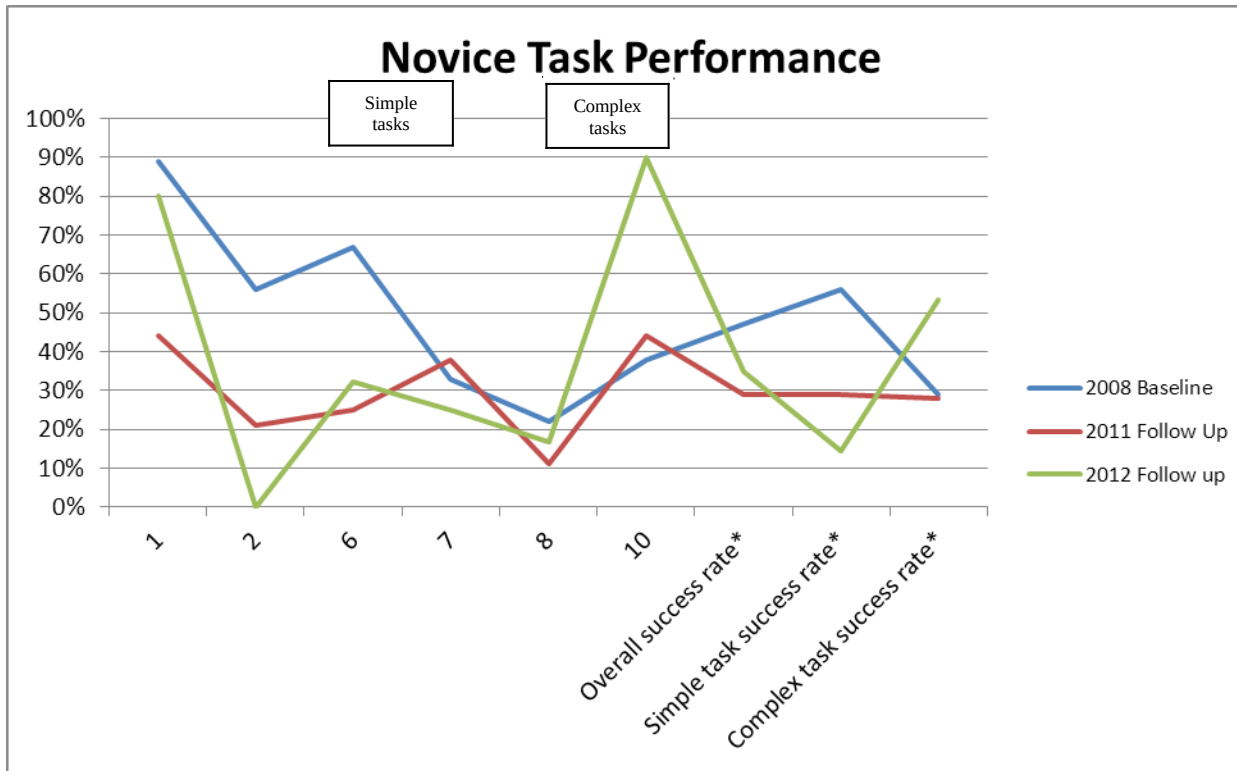


Figure 4: Accuracy Scores from 2008 Baseline and 2011 and 2012 Follow-Up Assessments, novice participants only. Participants had more difficulties with the simple tasks in the 2011 and 2012 Follow-Up studies than they did in the Baseline study.

Table 3: Efficiency Scores (amount of time per task) for 2008, 2011, and 2012 Novices – Including Failures

	TASK										Overall*	Simple tasks*	Complex tasks*
	Simple Tasks					Complex Tasks							
Iteration	1	2	3	4	5	6	7	8	9	10			
2008 Baseline	1m59s	4m31s	2m07s	2m03s	5m	6m52s	5m15s	6m49s	5m59s	4m47s	4m32s	3m58s	5m52s
2011 Follow Up	4m32s	9m20s				9m35s	7m21s	7m33s		6m08s	7m25s	7m42s	6m50s
Difference in performance from 2008[^]	2m33s I	4m49s I				2m43s I	2m6s I	44s I		1m21s I	2m23s I	3m03s I	1m3s I
2012 Follow Up	3m04s	6m22s	6m57s	5m24s	5m38s	7m52s	6m47s	5m35s	5m48s	4m16s	5m46s	6m	5m12s
Difference in performance from 2008	1m05s I	1m51s I	4m50s I	3m19s I	38s I	1m I	1m31s I	1m13s I	11s D	31s D	1m27s I	2m02s I	40s D

NOTE: I = Increase in time, it took longer to complete the task. D = Decrease in time, it took a shorter amount of time to complete the task.

[^] We usually do not include failures in the calculated time to complete tasks, but since the performance was so low in the Follow-Up study, we calculated these times here.

Table 4: Efficiency Scores (amount of time per tasks repeated in 2008, 2011, and 2012) Novices – Including Failures

	TASK						Overall*	Simple tasks*	Complex tasks*
	Simple Tasks			Simple Tasks					
Iteration	1	2	6	7	8	10			
2008 Baseline	1m59s	4m31s	6m52s	5m15s	6m49s	4m47s	5m02s	4m39s	5m48s
2011 Follow Up	4m32s	9m20s	9m35s	7m21s	7m33s	6m08s	7m25s	7m42s	6m50s
Difference in performance from 2008[^]	2m33s I	4m49s I	2m43s I	2m6s I	44s I	1m21s I	2m23s I	3m03s I	1m3s I
2012 Follow Up	3m04s	6m22s	7m52s	6m47s	5m35s	4m16s	5m59s	6m01s	4m56s
Difference in performance from 2008	1m05s I	1m51s I	1m I	1m31s I	1m13s I	31s D	1m27s I	2m02s I	40s D

Table 5: Efficiency Scores for 2008, 2011, and 2012 Novices - Correct Responses Only

	TASK										Overall*	Simple tasks*	Complex tasks*
	Simple Tasks					Complex Tasks							
Iteration	1	2	3	4	5	6	7	8	9	10			
2008 Baseline	1m45s	2m02s	2m07s	39s	3m24s	3m09s	4m06s	8m01s	10m49s	4m14s	4m02s	2m28s	7m41s
2011 Follow-Up	3m58s	10m26s**				9m34s	7m26s	4m7s**		4m44s	6m42s	7m51s***	4m26s****
Difference in performance from 2008	2m12s I	8m24s I				6m24s I	3m19s I	3m54s D		30s I	2m49s I	5m05 I	1m42s D
2012 Follow-Up	2m35s	-	-	2m45s	-	9m58s	7m46s	8m	-	4m25s	5m55s	5m46s	6m13s
Difference in performance from 2008	50s I	-	-		-	6m49s I	3m40s I	1s D	-	11s I	2m02s I	3m I	06s I

NOTE: I = Increase in time, it took longer to complete the task. D = Decrease in time, it took a shorter amount of time to complete the task.

NOTE: Efficiency scores may be skewed due to a limited number of successes

*Mean does not include the tasks from Baseline that were not included in the Follow-Up study.

**Based on 1 correct response out of 9 possible correct responses.

***Based on 10 out of 36 possible correct simple task responses.

****Based on 5 out of 18 possible correct complex task responses.

Table 6: Efficiency Scores for tasks repeated in 2008, 2011, and 2012 Novices - Correct Responses Only

	TASK						Overall*	Simple tasks*	Complex tasks*
	Simple Tasks			Complex Tasks					
Iteration	1	2	6	7	8	10			
2008 Baseline	1m45s	2m02s	3m09s	4m06s	8m01s	4m14s	3m53s	2m46s	6m07s****
2011 Follow-Up	3m58s	10m26s**	9m34s	7m26s	4m7s**	4m44s	6m42s	7m51s***	4m26s****
Difference in performance from 2008	2m12s I	8m24s I	6m24s I	3m19s I	3m54s D	30s I	2m49s I	5m05 I	1m42s D
2012 Follow-Up	2m35s	-	9m58s	7m46s	8m	4m25s	5m55s	5m46s	6m13s
Difference in performance from 2008	50s I	-	6m49s I	3m40s I	1s D	11s I	2m02s I	3m I	06s I

***Based on 10 out of 36 possible correct simple task responses.

****Based on 5 out of 18 possible correct complex task responses.

Table 7: Self-Rated Satisfaction Scores for 2008, 2011, and 2012 Novices (1 to 9 where 1 = low and 9 = high)

Iteration	Satisfaction Questionnaire Item									
	Overall reaction to site: terrible - wonderful	Screen layouts: confusing - clear	Use of terminology throughout site: inconsistent - consistent	Information displayed on the screens: inadequate - adequate	Arrangement of information on the screens: illogical - logical	Tasks can be performed in a straight-forward manner: never - always	Organization of information on the site: confusing - clear	Forward navigation: impossible - easy	Overall experience of finding information: difficult - easy	Census Bureau specific terminology: too frequent - appropriate
2008 Baseline	6.22	6.22	6.22	6.56	5.33	5.44	6.33	6.78	5.78	6.78
2011 Follow Up	3.33	2.89	5.67	3.33	4.00	2.67	2.56	6.13	2.11	4.56
Difference in Satisfaction ratings from 2008	2.89 D	3.33 D	0.55 D	3.23 D	1.33 D	2.77 D	3.77 D	0.65 D	3.67 D	2.22 D
2012 Follow Up	3.20	4.10	5.00	4.40	6.10	2.60	3.60	5.10	1.60	3.90
Difference in Satisfaction ratings from 2008	3.02 D	2.12 D	1.22 D	2.16 D	.77 I	2.84 D	2.73 D	1.68 D	4.18 D	2.88 D

NOTE: D = Decrease in rating

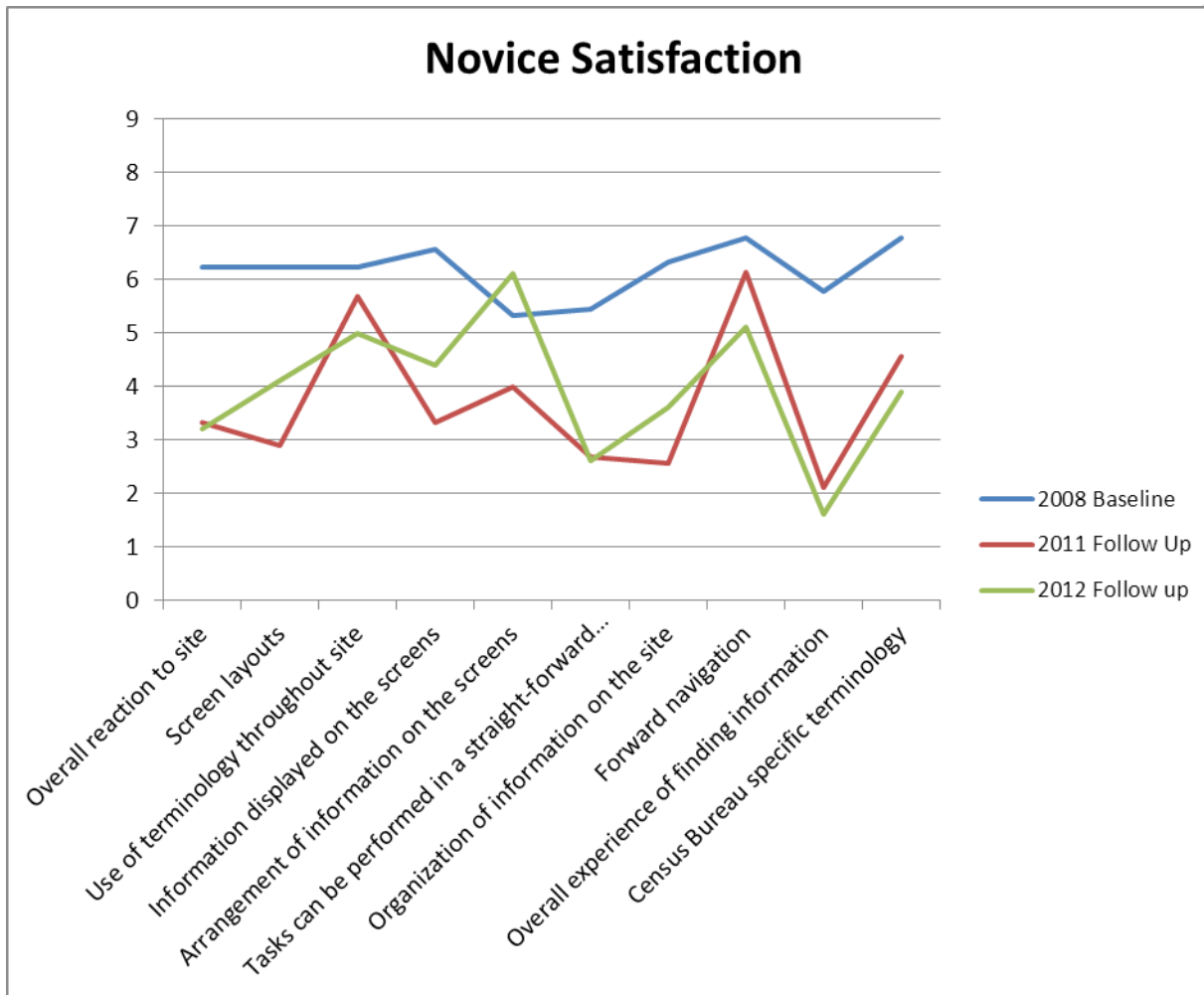


Figure 5: Satisfaction ratings from Baseline and Follow-Up Studies.
Novice participants are more dissatisfied with the new AFF as compared to the Legacy site.
Scoring was on a 9-point scale where 1 = low and 9 = high.

Expert Tables and Figures

Table 8: Accuracy Scores for Baseline and 2012 Follow-Up for Expert Participants⁵

Iteration	Tasks						Overall success rate
	1	2	3	4	5	6	
Baseline	42%	50%	36%	41%	69%	44%	47%
2012 Follow Up	50%	40%	43%	79%	72%	38%	54%
Difference in performance	8% I	10% D	7% I	38% I	3% I	7% D	7% I

NOTE: I = Increase in accuracy. D = Decrease in accuracy.



Figure 6: Accuracy Scores from Baseline and 2012 Assessments for expert participants only. 2012 Performance improved on 4 out of 6 tasks.

⁵ In 2011 there were no sessions with expert participants.

Table 9: Efficiency Scores for Baseline, and 2012⁶ for Experts – Including Failures

Iteration	Tasks						Overall
	1	2	3	4	5	6	
Baseline	11m04s	07m44s	06m22s	08m12s	09m29s	10m41s	08m55s
2012 Follow Up	08m26s	07m29s	08m00s	05m32s	08m00s	05m37s	07m11s
Difference in performance	2m38s D	14s D	1m38s I	2m40s D	1m29s D	5m04s D	1m45s D

NOTE: I = Increase in time. D = Decrease in time.

Table 10: Efficiency Scores for Baseline, and 2012⁷ for Experts – Correct Responses Only

Iteration	Tasks						Overall
	1	2	3	4	5	6	
Baseline	14m45s	07m58s	05m21s	07m25s	09m48s	10m12s	09m15s
2012 Follow Up	07m04s	06m28s	06m34s	04m43s	08m16s	04m55s	06m20s
Difference in performance	7m41s D	1m30s D	1m13s I	2m42 D	1m32s D	5m17s D	2m 55s D

NOTE: I = Increase in time. D = Decrease in time.

NOTE: Efficiency scores may be skewed due to a limited number of successes

⁶ In 2011 there were no sessions with expert participants.

⁷ In 2011 there were no sessions with expert participants.

Table 11: Self-Rated Satisfaction Scores for Baseline and 2012⁸ Follow-Up for Experts (1 to 9 where 1 = low and 9 = high)

Iteration	Satisfaction Questionnaire Item									
	Overall reaction to site: terrible - wonderful	Screen layouts: confusing - clear	Use of terminology throughout site: inconsistent - consistent	Information displayed on the screens: inadequate - adequate	Arrangement of information on the screens: illogical - logical	Tasks can be performed in a straight-forward manner: never - always	Organization of information on the site: confusing - clear	Forward navigation: impossible - easy	Overall experience of finding information: difficult - easy	Census Bureau specific terminology: too frequent - appropriate
Baseline	6.5	6.083	6.67	6.92	5.17	5.58	6.25	6.42	5.67	6.58
2012 Follow Up	4.60	5.30	5.00	5.00	5.10	3.80	4.50	5.50	3.70	4.90
Difference in Satisfaction rating	1.90 D	.78 D	1.67 D	1.92 D	.07 D	1.78 D	1.75 D	.92 D	1.97 D	1.68 D

NOTE: D = Decrease in ratings.

⁸ In 2011 there were no sessions with expert participants.

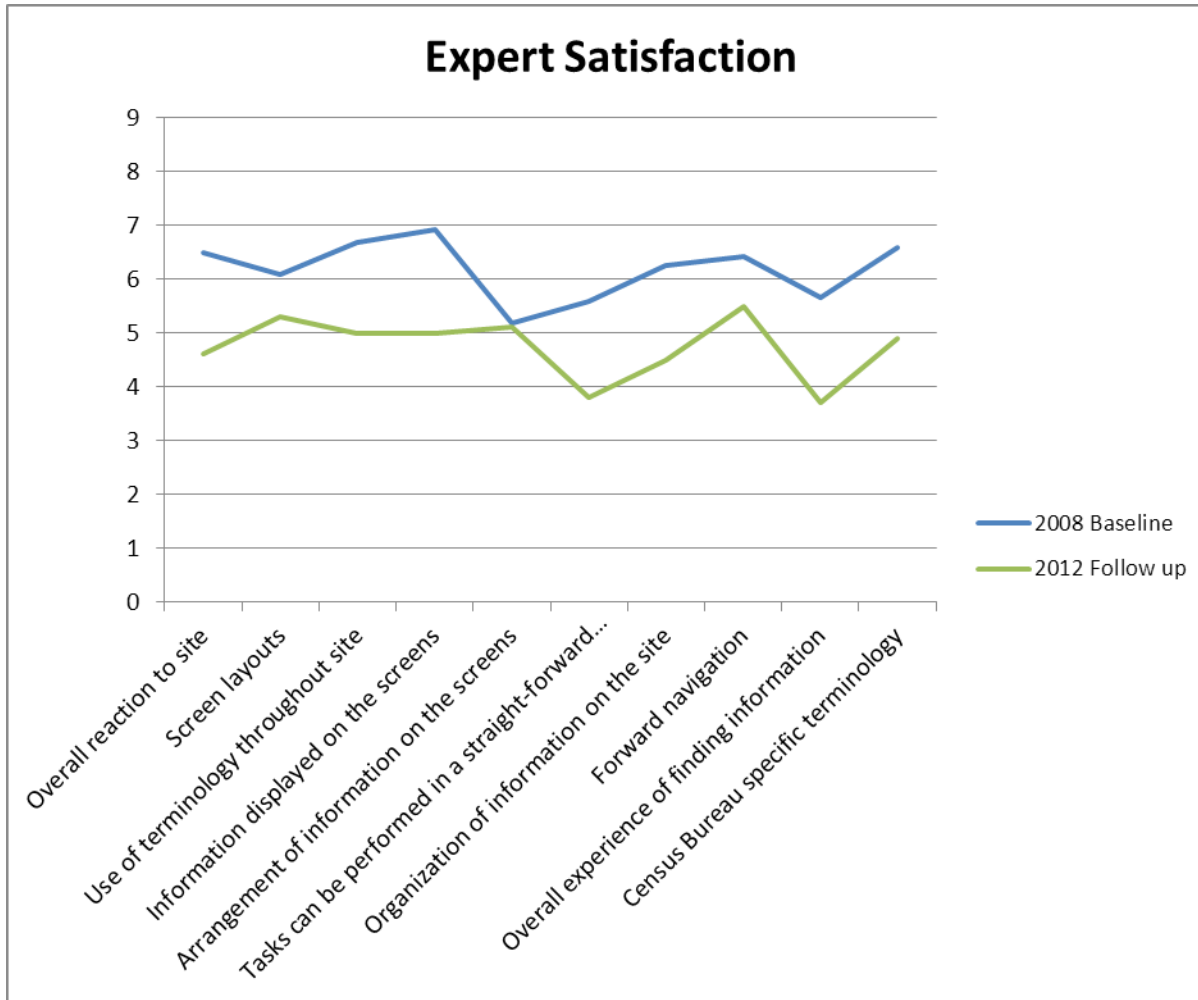


Figure 7: Satisfaction ratings from expert participants in the Baseline and 2012 Follow-Up Assessment. Expert participants were more dissatisfied with the 2012 Web site. Scoring was on a 9-point scale where 1 = low and 9 = high.

3.4 Positive Findings

3.4.1 Baseline Positive Findings

During the test, most users attended to the left navigation and used it often. During debriefing, most users said that they liked the left navigation and found it to be useful and helpful to complete tasks.

1. During debriefing, most users said that they liked the overall layout and colors of the Main page of the Web site.
2. Users said that they liked that there was a lot of information available to them, overall.
3. Users attended to and used the Fact Sheet on the Main page. During debriefing, many users commented that they liked the Fact Sheet.
4. Most users described the tasks as being pretty easy to complete.

3.4.2 2011 Follow-Up Positive Findings

1. Participants said that they liked that there was a lot of information available to them on the site.
2. One participant with a BA in Political Science was able to understand how the interface worked and consequently was successful in searching for content and finding the specific information he was interested in.
3. One participant said, about the look and feel of the page, that it looked like it would be useful.
4. One participant said that she was immediately able to see a topic that she was looking for.

3.4.3 2012 Follow-Up Positive Findings

1. The Quick Facts and Popular Tables on the main page appears to be a way for novice users to get to simple data. We noticed some novice participants using these links. Some novice participants noticed them only after other areas of the main page (i.e., Quick Start) did not work for them. It is likely that once some learning takes place on the site that novice participants would more quickly use these two areas of the main page to get quick data.
2. Participants saw the type ahead and occasionally clicked on one of the suggestions.
3. Dataset in Topics helped three expert users complete the majority of the tasks.
4. Geography List was useful for expert users. One user commented, “[I] really like the list feature. It’s time-saving.”

3.5 Usability Problems

3.5.1 Baseline Study Usability Issues

3.5.1a High-Priority Issues

Testing identified two general high-priority usability issues. Medium and low-priority findings follow.

1. The Search function was not helpful to participants. Users said that they wanted the search function to help them when they could not find answers, but it seldom did. Users tend to use their knowledge and experience from other Web sites to make inference about new experiences with Web sites (Forsythe, Grose & Ratner, 1998, p.27). Many users begin every online activity “with a Google search” (Krug, p.85). People in this study said they expected search to work like a Google search.

Sometimes, when participants entered items in the search box at the AFF site, no results were returned. For example, for Novice Task 9, (i.e., *Which country Idaho increased exports to from 2003 to 2004*) two participants tried to use the search function to find the information. One novice participant typed “Idaho export 2003” in the search box, and it returned no results. However, in Google, when one enters “Idaho export 2003” in the search box, *many* (about 729,000) results are returned. See Figure 8 for a screen shot of the AFF site and the Google site when performing this search.

Other times, when participants used search in AFF, the massive number of results was overwhelming and not helpful. The titles were oftentimes the same for every item on the search results, and the explanation for each item was not informative. For example, for Novice Task 2, (*Which three states had most people living in poverty*) three participants tried to use the search function to find the information. One participant typed into the search “poverty in 2006.” Many results were returned; however, the information associated with the results was not helpful to the participants in enabling them to determine which selection would have the information they were seeking. In Google, when a user enters a term, such as “poverty in 2006,” a brief explanation follows the titles of the search results, which gives the user enough information to make inferences about the content of the search results. See Figure 9 for a screen shot of the AFF site and the Google site when performing this search. As shown, the first two results on Google are Census Bureau products, but the explanation that Google provides is much more informative to users than are the explanations that the AFF Web site provides.

For expert users, the search also did not work the way they anticipated it would. Most experts also expected the search to be similar to Google, thus said they were frustrated when the search returned “no results.” In addition, expert users had some difficulty when using the keyword search. Expert participants did not notice the option to check the synonyms box when they were searching and many times came up with a “no results” response when searching for a topic that should have had related content (e.g., On expert task 6 *the number of health clubs in a few VA counties*). A number of experts searched the NAICS for data on “gyms” or “health clubs” and found “no results.” All experts understood that they were doing a NAICS search and just had to get the right key word to match what NAICS coded it, but only one expert appeared to know about checking the synonyms box. In fact, another expert user recommended creating a synonym-type search but thought it would need OMB approval and it would be a long and difficult process to get approved. Two other experts mentioned that if they had been in their work environment they would have turned to a book they have of all NAICS codes.) One SDC employee said about the search “[it] is clumsy; you almost have to know the exact table you want. It could be improved.”

U.S. Census Bureau
Search@Census

FAQS CENSUS DATA SUBJECTS
STAFF DIRECTOR SEARCH
SUBJECTS A-Z

Search Tips | Subjects A - Z | FAQs | Staff Search

American Factfinder

Idaho export 2003

Results - of about for **Idaho export 2003'**

Your search - **Idaho export 2003** - did not match any documents.
No pages were found containing "**Idaho export 2003**".

Suggestions:

- Make sure all words are spelled correctly.
- Try different keywords.
- Try more general keywords.

Powered by
Google

[PDF] indicates a file in Adobe's [Portable Document Format](#). To view the file, you will need the [Adobe® Acrobat® Reader](#) available **free** from Adobe.

a.

Google Idaho export 2003 [Advanced Search](#) [Preferences](#)

Web Results 1 - 10 of about 729,000 for **Idaho export 2003**. (0.20 seconds)

[Exports, Jobs, and Foreign Investment Idaho](#)

Idaho's export shipments of merchandise in 2007 totaled \$4.7 billion, up 125 percent from \$2.1 billion in **2003**, the sixth highest percentage change among ...
www.ita.doc.gov/industry/otea/state_reports/Idaho.html - 15k - [Cached](#) - [Similar pages](#) -

[Idaho Grain Market Price Report, September 11, 2003](#)

File Format: PDF/Adobe Acrobat - [View as HTML](#)
northern **Idaho**. USDA's **export** sales report showed barley **export** shipments at ... USDA S&D projections for barley in September **2003** - USDA left the US barley ...
www.idahobarley.org/marketrpts/marketrpts2003/mprpt0911.pdf - [Similar pages](#) -

[Idaho Grain Market Price Report, January 30, 2003](#)

File Format: PDF/Adobe Acrobat - [View as HTML](#)
northern **Idaho**. USDA's **export** sales report showed barley **export** shipments ... with world wheat output predictions for **2003** at 597 MMT, up 34 MMT from its ...
www.idahobarley.org/marketrpts/marketrpts2003/mprpt0130.pdf - [Similar pages](#) -

[More results from www.idahobarley.org >](#)

[IDAHO: EXPORTS, JOBS, AND FOREIGN INVESTMENT](#)

File Format: PDF/Adobe Acrobat - [View as HTML](#)
Idaho Depends on World Markets. • **Idaho's export** shipments of merchandise in **2003** totaled \$2.1 billion, up seven percent from \$2.0. in 2002. ...
www.ustr.gov/assets/Document_Library/Fact_Sheets/2004/Benefits_of_Trade_to_States/asset_upload_file712_6656.pdf - [Similar pages](#) -

[Idaho Governor Honors Excellence in Export Marketing. | Article ...](#)

Idaho Governor Honors Excellence in **Export** Marketing. Knight Ridder/Tribune Business

Sponsored Links

[Export Import Worldwide](#)
Find Buyers and Suppliers at Global Foreign Trade Portal
Go4WorldBusiness.Com

[Idaho - Exporting](#)
Looking for Exporting in **Idaho**? Find it here!
www.local.com
Idaho

b.

Figure 8: Screen shot of AFF site (a.) and Google site (b.) when performing a search for “Idaho export 2003.”

U.S. Census Bureau Search@Census

American Factfinder

Search Tips | Subjects A - Z | FAQs | Staff Search

poverty in 2006

Results 1 - 10 of about 12700 for 'poverty in 2006'

[United States by Urban/Rural and Inside/Outside Metropolitan and ...](#)
... Percent of People Below **Poverty** Level in the Past 12 Months (For Whom **Poverty** Status is Determined): **2006** Universe: Population for whom **poverty** status is ...

[United States by Urban/Rural and Inside/Outside Metropolitan and ...](#)
... Percent of Children Under 18 Years Below **Poverty** Level in the Past 12 Months (For Whom **Poverty** Status is Determined): **2006** Universe: Children under 18 years ...

[United States and States - R1701. Percent of People Below **Poverty** ...](#)
... Percent of People Below **Poverty** Level in the Past 12 Months (For Whom **Poverty** Status is Determined): **2006** Universe: Population for whom **poverty** status is ...

[United States and States - R1704. Percent of Children Below ...](#)
... Percent of Children Under 18 Years Below **Poverty** Level in the Past 12 Months (For Whom **Poverty** Status is Determined): **2006** Universe: Children under 18 years ...

[United States and States - R1702. Percent of Related Children ...](#)
... Percent of Related Children Under 18 Years Below **Poverty** Level in the Past 12 Months: **2006** Universe: Related children under 18 years More information about ...

Google poverty in 2006 [Advanced Search](#) [Preferences](#)

Web Results 1 - 10 of about 20,200,000 for [poverty in 2006](#). (0.30 seconds)

[US Census Press Releases](#)
Aug 28, 2007 ... There were 36.5 million people in **poverty in 2006**, ... About 9.8 percent (7.7 million) of the nation's families were in **poverty in 2006**. ...
[www.census.gov/Press-Release/www/releases/archives/income_wealth/010583.html](#) - 28k - [Cached](#) - [Similar pages](#) -

[Poverty 2006 - Poverty Thresholds 2006](#)
Jan 29, 2008 ... **Poverty** Thresholds for **2006** by Size of Family and Number of Related Children Under 18 Years. Related children under 18 years ...
[www.census.gov/hhes/www/poverty/threshld/thresh06.html](#) - 35k - [Cached](#) - [Similar pages](#) -
[More results from www.census.gov >](#)

[2006 Federal Poverty Guidelines](#)
Jan 24, 2006 ... [Computations for the **2006 Poverty** Guidelines] ... However, the **2006** HHS **poverty** guidelines only reflect price changes through calendar ...
[aspe.hhs.gov/POVERTY/06poverty.shtml](#) - 16k - [Cached](#) - [Similar pages](#) -

[Poverty and Income in 2006: A Look at the New Census Data and What ...](#)
Aug 28, 2007 ... The Census Bureau released new data on **poverty** and family income for **2006** on August 28. **Poverty** declined every year between 1993 and 2000, ...
[www.brookings.edu/events/2007/0828children--families.aspx](#) - 54k - [Cached](#) - [Similar pages](#) -

[POVERTY FORUM 2006](#)
POVERTY FORUM 2006 | KEEP THE PROMISE. MAKE IT HAPPEN. HOME REGISTER PROGRAMME BIOS ISSUES RESOURCES EVENTS CONTACT US INFORMATION ...

Figure 9: Screen shot of AFF site (a.) and Google site (b.) when performing a search for “poverty in 2006.”

Recommendation: Improve the search capabilities. Automatically search using synonyms so that user defined terms return related content. Improve the algorithm that determines the results so more results are returned when users enter common words and phrases. As users are expecting the search function to work like other search functions on other sites, the way users enter terms into a search box should be allowed and anticipated. Improve the titles and the explanations that follow each item in the search results. One participant recommended providing a synopsis of the results. Another participant recommended having a search box on every page.

Team Response: In the new AFF, the Search will work completely differently. Users will type a geography and topic, and the system will find that intersection. It will be a clearer path of refining results once you

have them. Users will also be able to add ways to narrow results, and the system will give suggestions/hints on how to narrow results.

2. Manipulating and working with maps was not easy. Reference Maps were difficult to use and the grey writing on the maps (against the grey background) was difficult to read. Three novice participants tried to obtain a city map by typing in the city name in the address box but were frustrated when they could not access the city map and instead were prompted for a zip code. The only way to get to a specific city is to zoom in on a specific area of the map, which many novice participants said was frustrating and took a long time. See Figure 10 for a screen shot of the current maps on AFF. One novice participant typed Fairfax, VA in the Fact Sheet box and then clicked on Reference Map. This participant did not have any problems with the map, although the map they received had little detail. See Figure 11 for the map found by using this alternate navigation.

Both expert and novice participants mentioned how the maps were “clunky” or not as easy or as precise as what they were familiar with, such as Google maps or MapQuest maps. Participants said Census maps should be more up to date and follow these other models. One novice participant went so far as to say the Census maps looked “archaic.”

Some experts struggled with being able to identify different parts of the county, not seeing or understanding how to use the different icons of the map, such as the identify icon, or the select icon. As well, two experts opted to right click and save the image that way as they did not know how to download the map in any other way that would keep the image as a map (i.e., they missed or did not understand the “download as pdf” option).

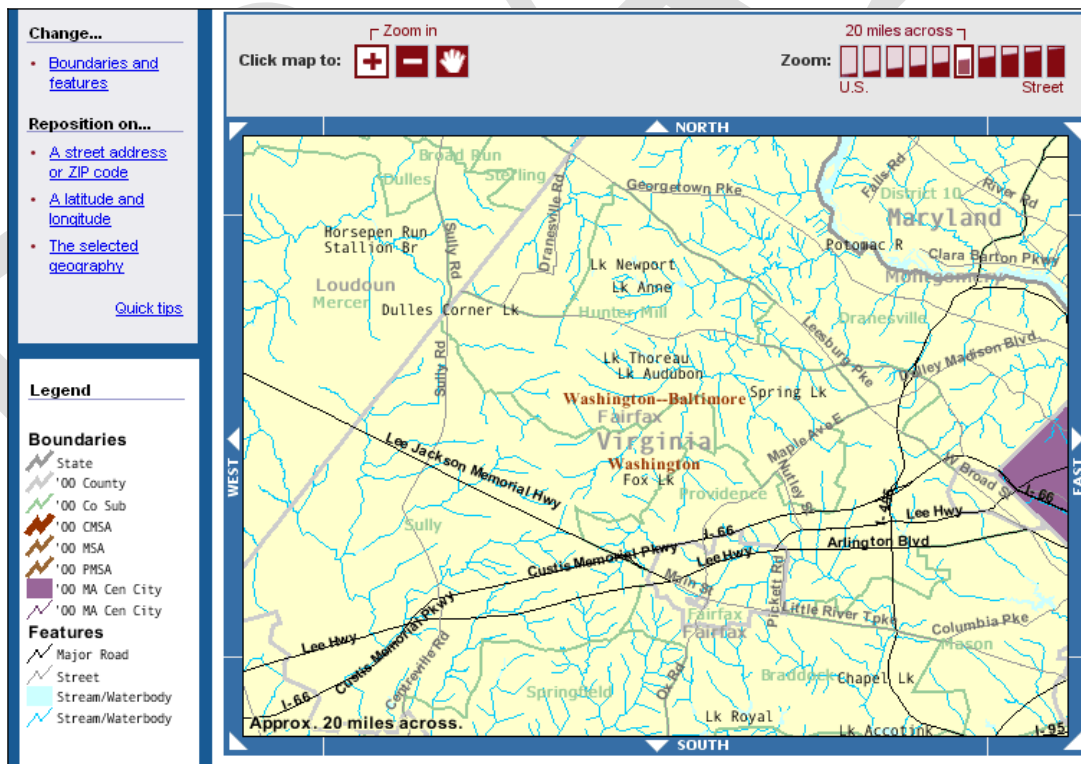


Figure 10: Reference map of Fairfax, VA from AFF site, using the Reference Map option from the left navigation.

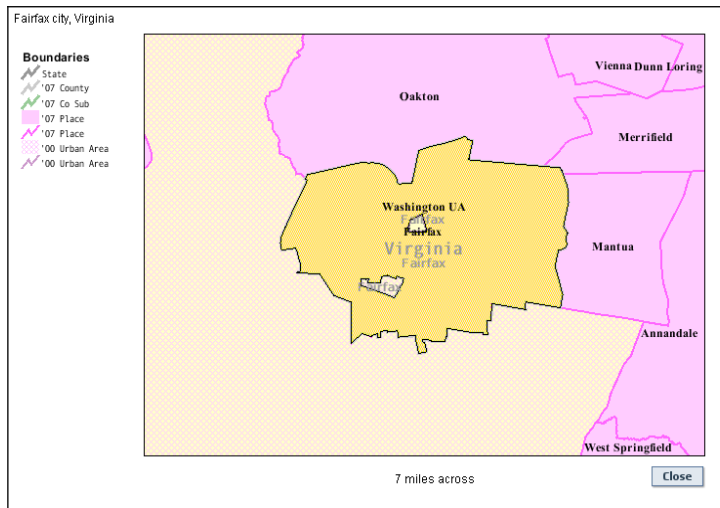


Figure 11: Reference map of Fairfax, VA from AFF site, using the FactSheet option.

Recommendation: Keep maps updated to reflect what users expect from maps, given their experience with Google maps, GPS and map Web sites, such as Mapquest.com. We agree with our participants who said that our maps look old and outdated and reflect poorly on the Census Bureau. Tweaks to the current maps could include a sharper visual contrast for foreground text than is currently displayed. Include an option to select a specific city without needing the zip code.

Team Response: The colors in this system are limited to 256 different colors. The new AFF will not have this limit, and the maps will look different from the current maps. Users will be able to type in an address or geography, and as they move over a map, that area will highlight. There will be base maps that have minimal boundaries and features for users, but not so much information that it is cluttered. The navigation will feel more like modern maps, such as Google; users will be able to draw a box or circle around an area and see all points within that area.

3.5.1b Medium Priority Issues

3. Information in the center of the Main page is not used. Most participants did not attend to or use the links and information in the center of the main page. During debriefing, when asked about this area, some participants said that they thought it looked too confusing. There is currently a lot of white space on the right side of the page that is not being used at all. See Figure 12.

Figure 12: Screen shot of the American FactFinder Main page and the center area that was not attended to by novice users.

Recommendation: Make better use of the space on the page. Use more white space in the center of the page to organize the center information. Use less white space on the right side of the page: expand the information so that it stretches to the right.

Team Response: The new design is completely different and does not have this area on the main page.

4. Census jargon is used throughout the Web site. Normally, this is a recurring, high-priority issue in the Usability Lab's evaluations of Web sites (see Romano-Bergstrom, Chen & Holland, 2011). However, in this usability study, few participants commented on Census jargon. The participants that did comment said confusing words included: NAICS, SHP, ASM, GS, data revision notices, 2004 value and 2004 percent share.

Recommendation: Eliminate Census jargon and use words that are typical for novice users. At the very least, define acronyms and unfamiliar terminology.

5. The "Data Sets" pathway forces expert users down a particular, somewhat rigid path. If the expert user makes a choice that does not lead them to the content they were after, the user must back out and start all over which can be time consuming and frustrating.

Expert users did not always know which data table/product would contain the information they needed. Users could choose from many different table types within the data sets tab, such as custom table, detailed tables, subject tables, etc. and once the user selected one of the tables then they were prompted to enter additional geographical information before seeing what content was in the table. This led to many instances where expert users wasted time going through all the steps to load a particular table only to find that it was not the table they needed. Participants would then have to back out, choose a different table type and then go through the whole process again to add back in their specific geographic interest to check if this new table would have the content they were after. For some tasks, this procedure was repeated more than three or four times before the user was satisfied with the table. Each time they had to add back in the geography which was time consuming and, users said, frustrating.

Recommendation: Allow users to access the data tables without needing to know what data set or specific table it comes from. Allow users to specify the topic they are interested in regardless of whether they have identified their geographical level or not. Allow users to verify that the content displayed is in fact the content they are after, before the user has to make additional steps, such as identifying the geographical level.

6. Many of the expert participants were often expert in either the Demographic or the Economic content, not, typically, with both.

If the expert user was not familiar with economic data, for example, they would struggle more with finding the content they were after. Experts who were not familiar with the economic data made sure to mention that they did not use the economic data in their work and thus were not familiar with

- a) How the interface worked
- b) What the differences were in the data products, or
- c) Which data product to choose

Recommendation: Make it easier for a user to choose the content they are after rather than first having them know which data set the content resides in. For example, do not require the user to know what content would be in the Economic Census area, versus what content would be found in the County Business Patterns area.

7. Experts did not use the various AFF functionalities, opting instead for the familiarity of what they knew, such as .xls

If the expert participant had not done something with the AFF interface before, such as changing the data class, moving the rows in a table around, or saving and reloading the data table, it was not immediately obvious how the user was supposed to do it. Most users reported that instead of working within the AFF window, they would typically download the content to an .xls spreadsheet and manipulate the data there. A few experts were able to eventually figure out how to change a data class on a map, but this was not the case for all users.

Recommendation: It appears that most expert users prefer to download the maps in a more common format (such as .xls) which they are familiar with and can use on their own time. Allow users to continue to download content. Also if some of the functionality of the new AFF involves manipulating the data with the AFF tool, consider this a lower priority as users may ignore this capability and opt to download the data rather than learn a new feature or online tool when the one they know (e.g., .xls) works. For functionality that a user would not be able to do in xls, such as changing the data class on a map, make sure to have useable instructions on how to use a particular tool.

3.5.1c Low Priority: Issues

8. The top navigation was seldom used. This type of finding is usually a high-priority issue (Romano Bergstrom et al., 2011) because the top navigation bar is often critical to the user's success in finding target information. However, on the AFF Web site, the links on the top navigation were not useful to participants. During debriefing, when asked about the top navigation, participants commented that, aside from the Search feature, they did not use it. Rather, participants tended to use the left navigation the most. See Figure 13 for a screen shot that highlights the top navigation.

The image shows the top navigation bar of the American FactFinder website. A green circle highlights the following links: **Main**, **Search**, **Feedback**, **FAQs**, **Glossary**, **Site Map**, and **Help**. Below this bar is a navigation menu with categories like POPULATION FINDER, FACT SHEET, PEOPLE, HOUSING, BUSINESS AND GOVERNMENT, ABOUT THE DATA, DATA SETS, DOWNLOAD CENTER, MAPS, TOOLS AND REFERENCES, and Address Search... The main content area includes sections for Fast Access to Information, Getting Detailed Data, Special Interest, Population Data, and What's New.

Figure 13: Top navigations on the Baseline AFF Web site.

Perhaps our task questions, aside from when users went into search, were not answerable by the top navigation links. These links are certainly secondary to the main topic-based navigation (on the left) that most users tried. So the top navigation links (Main, Feedback, FAQs, Glossary, Site Map, and Help) were not relevant to the participants in this study. However, because we were not asking task-based questions that required users to click on some of the links at the top in order to find what they were looking for, when participants did not click up there, it did not matter, and thus the finding is given a low priority. Future

studies should include task questions targeting some of the top navigation links, if the task is representative of what users come to the site to do.

Recommendation: Move items that are seldom used, such as “Feedback” and “Site Map,” from the top navigation to a more subtle location, such as the bottom navigation. Remove FAQs, since they are also located on the bottom of the screen, and it is redundant to have them on the screen twice. Also, include a link to American FactFinder-relevant FAQs on the Help screen, since people who are looking at FAQs are seeking help. Add links to the top navigation that are useful to users, such as adding a link for maps or data. These would provide users with alternate routes of finding important and frequently sought information.

Other User Feedback

- Participants said they found it puzzling that information about Puerto Rico was so prominent on the Main page. One participant recommended moving it below the fold of the page. Another recommended that it be placed in the Archived data.
- A few participants commented that there did not need to be so many pictures on the Main page.
- A number of experts mentioned that they wanted the Advance Query restored.
- Many experts immediately accessed the data through the Data Sets link in the lower left -hand navigation column.

3.5.2 2011 Follow-Up Study

3.5.2a High-Priority Issues

Testing identified a number of high-priority usability issues in the 2011 Follow-Up study.

9. Using the geography overlay was overly complex and confusing. Participants did not understand how to get a specific geography (e.g., Maryland) for a topic they were interested in. This contributed to participants not finding the information they were looking for.

- Participants often experienced difficulties adding in geographies. For example, most users did not know that once they clicked on the state, they had added it to the “Your Selections” box. The lack of feedback caused participants to click on the state numerous times, but still they did not notice that the state had been added to their selections. Many participants tried to add their specific geography (e.g. Maryland) by either clicking on the blue link label or checking the box. One participant said, after clicking the check box and clicking on the Add button, “I’m trying to see if it changed anything.” The participant did not notice that her state had been added. One participant said, “It says it was added to my selections but I don’t know what that means.” One participant said, after opening the Geographies overlay, “I know I want to go here. But once I get here, I don’t know what to do.” Another participant said, after selecting 4 states of interest and then clicking Add, “I’m not sure where they went. Humm now I’m confused.” See Figure 14.
- Participants did not understand that their search was being updated beneath the overlay. Users missed seeing that the results were underneath, even though the overlay is more opaque than in Iteration 3⁹ testing and slightly moved down. These changes seem to have been too subtle. See Figure 15.

⁹Iteration 3 is part of a series of low fidelity usability tests that occurred before the release of the new AFF Web site. The iterative tests were conducted on low-to medium fidelity prototypes not a live working site. Iteration 3 occurred in March of 2010.

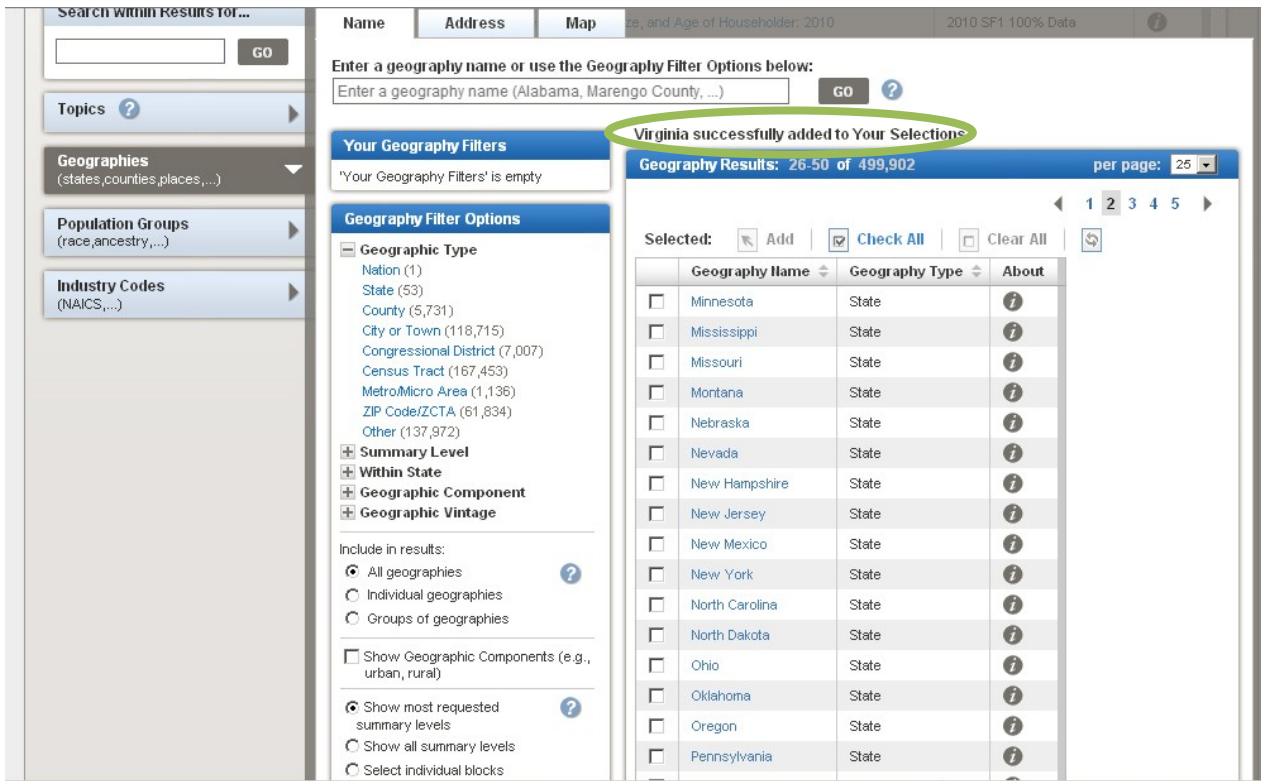


Figure 14: Screen shot of page after adding VA. Label “Virginia successfully added to Your Selections” was meaningless. Nothing appeared to have changed.

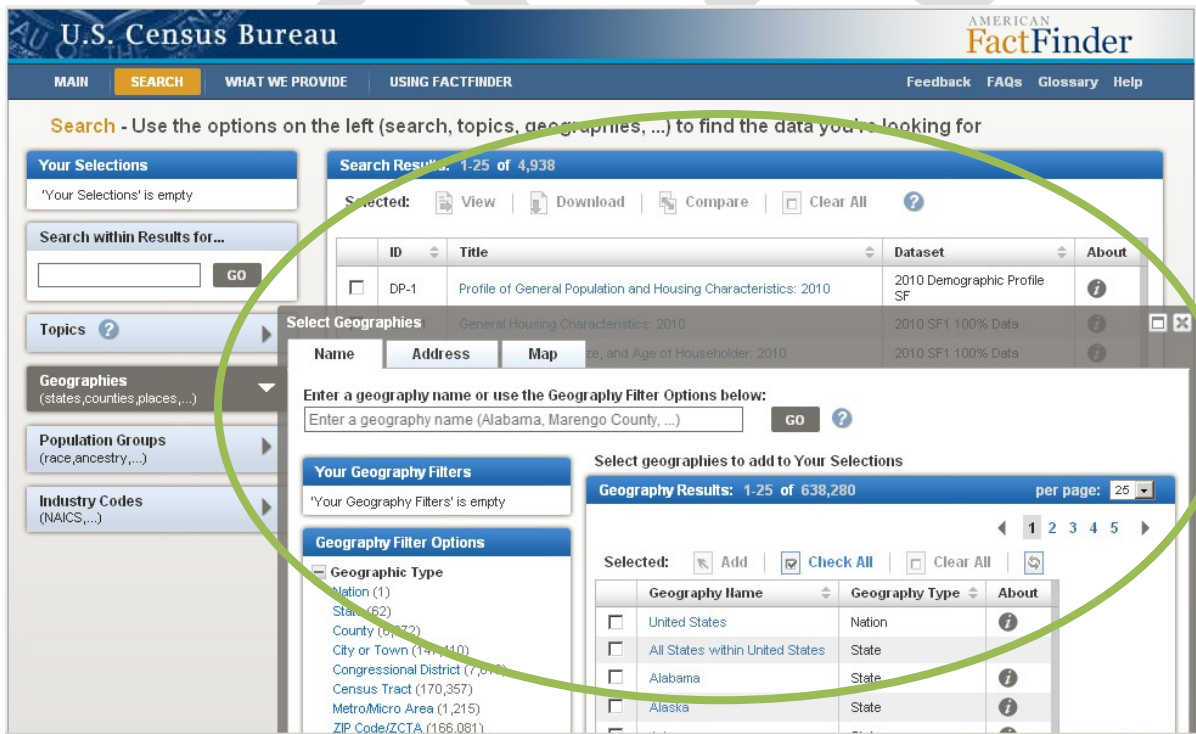


Figure 15: The geography overlay covered the main search results.

- Participants search on anything related to their topic in the geography search box, including many other things in addition to geographies. They use the search field as a Google-like search, typically after the other searches on the site (“Quick Start” and “Search within Results for...”) failed to get them any information related to their search.) See more on this in issue # 11 below.
- The geography filters section was confusing. None of the participants who ended up adding their geography to the “Your Geography Filters” understood what it was for. When participants do a search on a single geography in the Name search, the result appears in the “Your Geography Filters” but this is not what participants are expecting. Participants said they were expecting to get data about the geography that they had just searched on. The “getting data” box appears after the participant has searched and this implies that the geography overlay will include data. See Figure 16. Participants said that they were expecting to get some type of information about Maryland (after typing Maryland into the Name search). After Maryland appeared in “Your Geography Filters” participants were confused and said they got nothing.
- Note: The population overlay works much the same way as the geographic overlay in that it hides the data beneath the overlay. Participants who opened the population overlay also missed that the data was updating beneath the overlay. Thus any fix to the geography overlay would also be relevant to the population overlay.

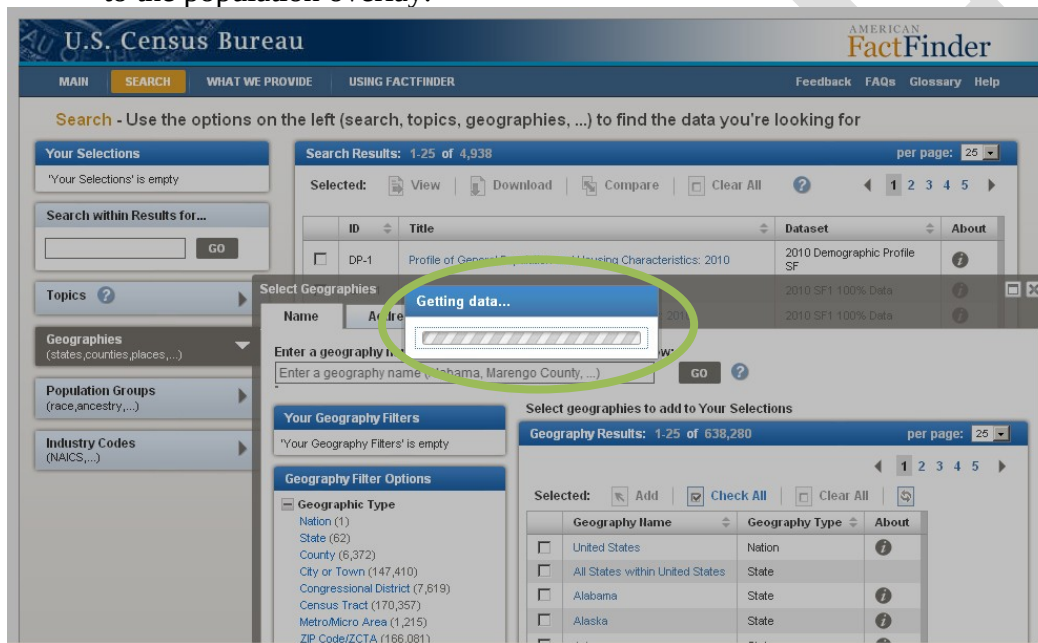


Figure 16: The “getting data” implies the search is getting data.

Discussion: These problems with the geography are similar to what participants experienced in Iteration 3 testing. Thus we can see that the fixes the design team implemented did not go far enough. The overlay (though more opaque and slightly moved down) is still covering most of the results. One fix that was demonstrated to the team was a slow motion action of the geography being loaded into the “your selections” box. The team thought that this might work to both show users what their action of loading a geography was, as well as highlighting to users where the “your selections” was located and how that area was connected to their geography search. During 2011 Follow-Up testing the feature, we were told, was working, but it worked so quickly that no participant saw the movement.

Recommendation: Simply the geography overlay. Make it apparent that when a participant clicks on a state (or other geo level) that something has happened, and that the content now will all be about their specific geography.

We recommend doing some low-fidelity testing focusing on the geography interface. We could have a few different alternate versions mocked-up and then see which one works better for most participants. Some suggested alternate geography interfaces:

- Add a button to the "Your Geography Filters" that says "Add Search Term". When you click the button it takes whatever is in the geography filters and places it in "Your Selections" and closes the Geography window.
- Put the complexities of the geography tool, even the "Your Geography Filters" section deeper in the interface, (a few clicks in), or as a tab on the interface so that most general users who do not need obscure geographies do not get lost with the overly complex interface.
- Have the "Your Selections" always in view so that once the geography has been added, it is clear that this has happened. Slow down the animation that was demonstrated to the team so that users will see it. Once the animation is slower, have the chosen geography move all the way into the "Your Selections" box, not to some location above the fold (if the participant happens to be scrolled down on the page).
- Move the "Your Selections" box to where the "Your Geography Filters" box is currently. And have a Step 1) Choose your geography (state, county ,etc.) Step 2). Click Get Results
- Add a button to the "Your Geography Filters" that says "Add Search Term". When you click the button, have it take whatever is in the geography filters, place it in "Your Selections" and close the geography window.

Team Response to user issues with overlays¹⁰: As part of the on going design process, IBM is making an effort to minimize the use of overlays. IBM will also explore the feasibility of allowing users to reposition overlays, though allowing the user to move an overlay then requires them to manage the placement of the overlay, which could present another set of usability challenges. Closing or minimizing the overlay when the user clicks anywhere outside the overlay is a common web UI interaction, which IBM will explore the feasibility of implementing.

10. Participants don't understand the "Your Selections" area. Some participants did not see that their search terms were in the "Your Selections" area, other participants did notice their search terms were there but did not understand how it was related to the rest of the site. Consequently, most participants were not able to understand the main functionality of the site.

- One user tried to click on labels in the "Your Selection" area—while he did notice the "Search Results" area, he did not understand how they were connected to what he was searching on. When he was asked at the end of the session what he was trying to do when he clicked on an item in the "Your Selection" area, he said that he was trying to see if it would take him to data. What was listed in the "Search Results" area was not relevant to what he had searched on, so instead he thought he needed to work within the "Your Selections" area because that at least had terms that he understood. It is likely that he was led to believe that the "Your Selections" area was where the results would appear because that was the only area that had relevant terminology (the terms he had searched on). All the links in the "Search Results" area were too confusing and often NOT related to his search query. See more on issues with label names in Finding # 13 below.

¹⁰See IBM Response to 4Q2011_R2_draft_2_21_2012, page 4

- The connection between the “Your Selections” and the geographies is not clear. For example, one participant said “it says Maryland was successfully added to my selections and I’m thinking what is my selections?” This participant continued, “I’m not sure how to get state and education together.”

Discussion: These problems with the “Your Selections” are similar to what participants experienced in Iteration 3 testing. At that time we did not recommend keeping the “Your Selections” present on the screen at all times because we thought other fixes might remedy the problem. Since the problem is still so severe for participants, and understanding how “Your Selections” works with the rest of the site is crucial to participants comprehension of the site, we think it important to make a more noticeable change such as modifying the design to keep the “Your Selections” tool in view at all times on the site.

Recommendation: Keep the “Your Selections” in view on the screen at all times—we anticipate that this will help users make the connection of its functionality to the rest of the site. Do not have a topic disappear when a different topic is loaded in the “Your Selections” area. If the topic is no longer an option, consider another way to indicate that there is no data on that specific topic, (e.g. make the label not clickable, such as graying it out and putting a zero in parenthesis next to it.) Consider adding simple instructions to the interface that explains a bit about what users need to do with the “Your Selections” area: For example: “Choose your topic” or “Choose your Geography” As well, make the “Your Selections” label more informative, such as “I am Looking for...”

Team Response: IMB accepted this recommendation to keep the “Your Selections” on the screen at all times. In addition, the IMB responded¹¹ to this issue: “The IBM Team acknowledges that the addition of the animation and the freezing of “Your Selections” and the top of the search results list does not fully address the end-user confusion with the faceted search. This was an initial “quick win” step while the new navigation is being designed. The IBM Team is doing analysis and conceptual design on a wizard based navigation that will incorporate the recommendations above.”

11. Search caused problems for participants. There were at least three places that participants tried to search for their information: “Quick Start,” (hereafter referred to as QS) “Search within Results for...”, and on the “Name” tab of the Geographies overlay. We saw all participants who used the search functionality follow the mental model of a Google-type search. Thus the searches are not performing in an anticipated way.

- The QS ends up not being that quick because it requires the user to read what the different fields are for (topic or geography). This is not what users are anticipating—their mental model of search is that they can type in anything into the search field and click go and it will work. When it doesn’t function that way, we saw many participants lost with what to do next, aside from slightly tweaking their search query.
- The QS gets different results than the “Search within Results for” search. This is confusing to participants. For example, a participant used the QS for the following query: “Salaries of households 2000” and in the geography field “Virginia and Maryland.” This returned no results (see Figure 17). The participant tried a few other things, including deleting “Washington Baltimore northern Virginia” (see Figure 18), and then he used the “Search within Results for...” and typed in Maryland. This too gave him no results and eventually he gave up saying that it was like “trying to find a needle in a haystack” (see Figure 19).

¹¹ See IMB response to Q42011_usability results_11_09_11, page 3.

- The functionality does not allow a geography search using the “Search within Results for...” However many users tried to do such a search. Users have no way of knowing such a strategy will fail, as there is no information about that.
- The “Search within Results for...” tool did not always work for participants. Some participants did not seem to realize that it was a tool to search *within* results instead of a general search tool. Participants used the “Search within Results for” the same way as they used the QS on the main page. Participants tried to do any type of search, often attempting to get at the level of geography they were interested in. There is nothing to indicate to participants that searching within their results for a specific state (e.g., Maryland) was not going to work. This is not intuitive.
- Primarily when the other search tools failed the participants, we saw a few participants who used the search field on the Geographies overlay to continue their Google-like searches.

The screenshot shows the American FactFinder search interface. At the top, it says "U.S. Census Bureau" and "AMERICAN FactFinder". The navigation bar includes "MAIN", "SEARCH", "WHAT WE PROVIDE", and "USING FACTFINDER". There are links for "Feedback", "FAQs", "Glossary", and "Help".

The main heading is "Search - Use the options on the left (search, topics, geographies, ...) to find the data you're looking for".

On the left side, there are several filter sections:

- Your Selections:** Search: "salaries of households 2000*", Combined Statistical Area: Washington-Baltimore-Northern Virginia, DC-MD-VA-WV CSA.
- Search within Results for...:** A text input field and a "GO" button.
- Topics:** A dropdown menu with a "Include archived products" checkbox.
- Geographies:** (states, counties, places, ...)
- Population Groups:** (race, ancestry, ...)
- Industry Codes:** (NAICS, ...)

On the right side, there is a notification: "The 2010 Demographic Profile is being released on a state by state basis throughout the month of May. Click here to see if your state has been released." Below this is the "Search Results:" section, which shows "Selected:" with options for "View", "Download", "Compare", and "Clear All". A table header is visible with columns "ID", "Title", "Dataset", and "About", but the table is empty with the message "No results found. See American FactFinder Help for additional guidance on search."

Figure 17: “Search within Results” confused some participants

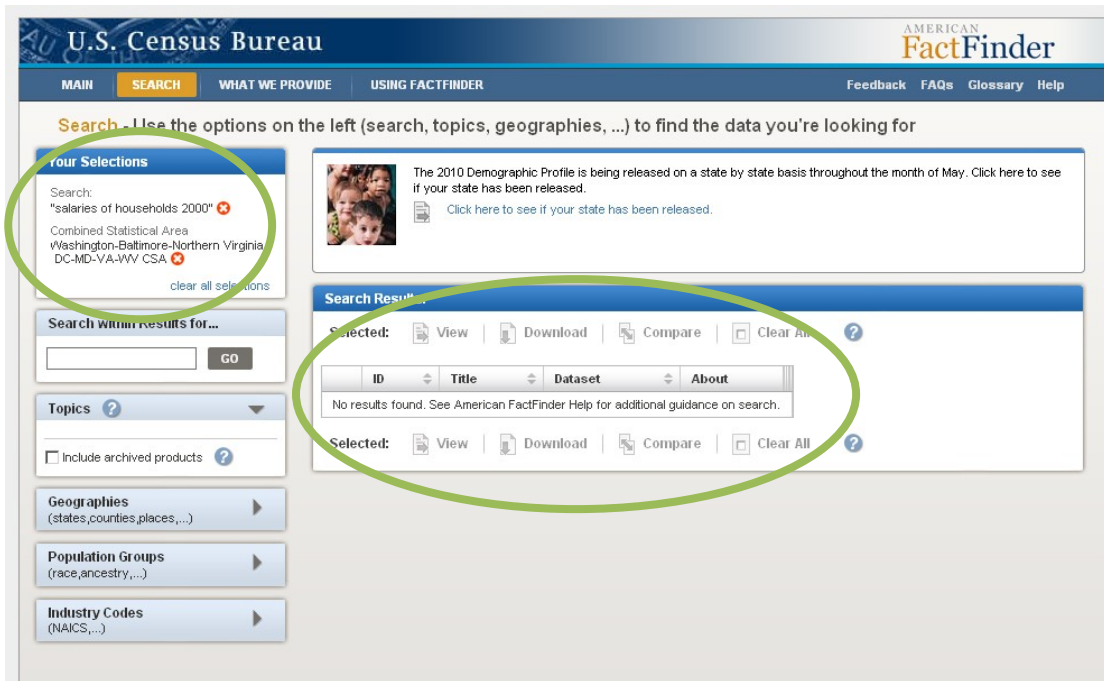


Figure 18: The QS off the main page often led to a “no results found.”

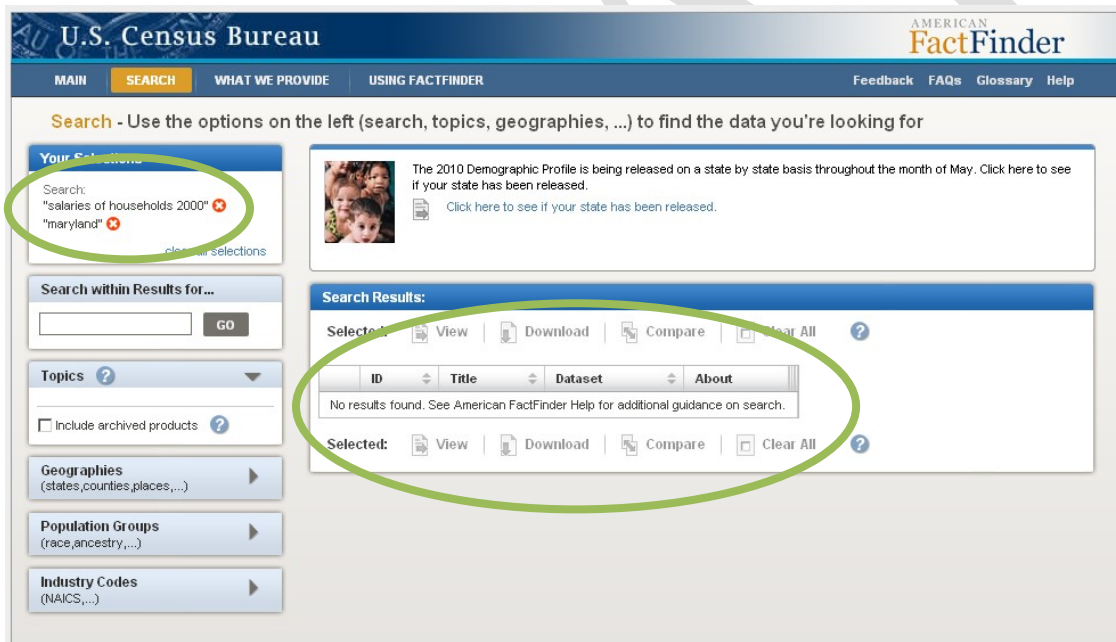


Figure 19: Search results suggest there were *no results* on household salaries and the state of MD.

Discussion: Issues with the “Search within Results for” were first noticed in Iteration 3 testing. It does not appear that any changes were made to address this issue for the 2011 Follow Up, but as the site is so search reliant, getting the search working in the way users anticipate will go a long way to improving the usability of the site. It is our understanding that the developers considered moving the “Search within Results for...” search tool over to the actual results section of the screen. This would likely help to indicate that the search will refine the results list. Adding in some instructional text such as “Refine your results. Search on _____” or something similar could also help.

The Initial home page tested in Iteration 2¹² appeared to work for participants. It was clear for participants when working with a “Start Here” search on how to get started. In addition, the search did not require participants to make a distinction between their topic and geography. See Figure 20. While there are business reasons for modifying the QS to encompass both a geography field and a topic field as well as the radio boxes of population group and industries, we see in testing that this added complexity has had an impact by decreasing comprehension and effective use.

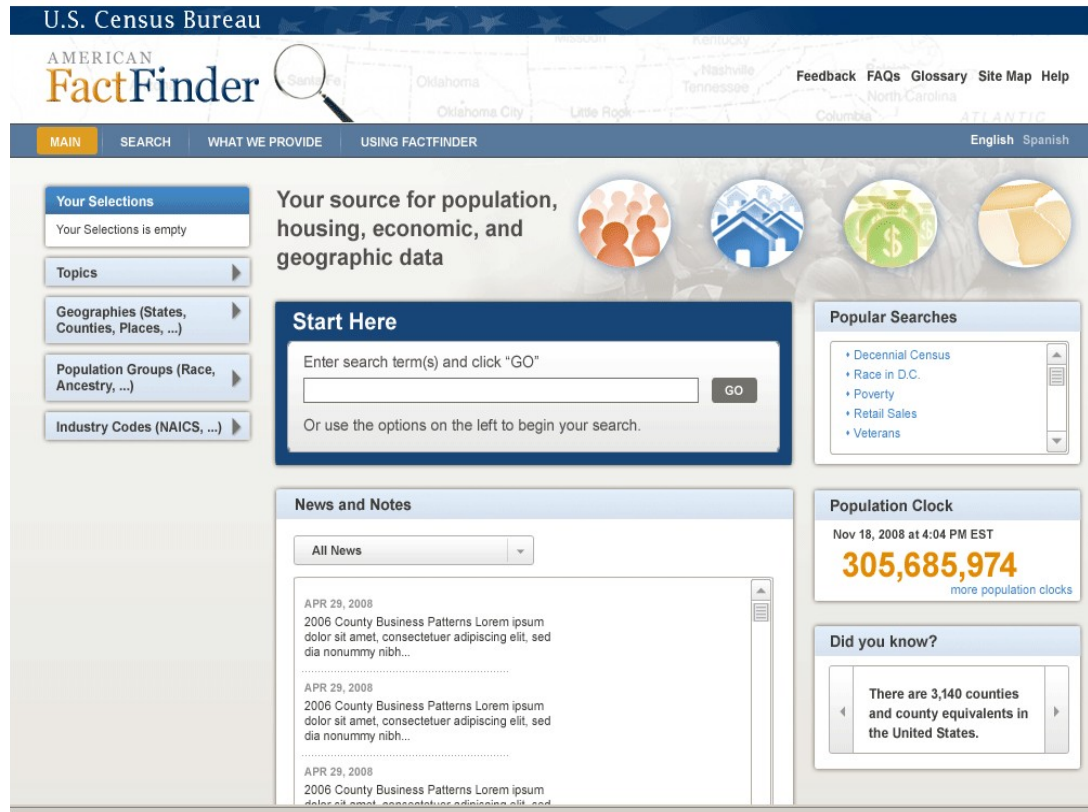


Figure 20: Screen shot of initial home page that was tested in Iteration 2 (June 2009).

Recommendation: Allow Google-like searches when you have search boxes on the site. Allow a user to search within the results for geography. Mock-up alternate designs of the “Search within Results for...” search in different locations (e.g., next to the results, as was suggested by the development team at the conclusion of Iteration 3 testing) and re-test with new participants.

Team Response to previous recommendations to allow a Google-like search¹³: Accepted. A site search feature is included in the new layout for the main page and will also be present on all pages in the AFF. The exact capabilities of the site search feature are still being designed and evaluated.

¹² Iteration 2 is part of a series of low fidelity usability tests that occurred before the release of the new AFF Web site. The iterative tests were conducted on low-to medium fidelity prototypes not a live working site. Iteration 2 occurred in June and July of 2009.

¹³ From IBM Response to 4Q2011_R2_draft_2_21_2012, page 1; also from IBM Response to 1Q2012_usability results_2-20-12, page 2.

12. Participants had difficulties with some of the Topics, both when topics disappeared and the label/location of some of the topics

- Participants did not understand why some topics disappeared. When participants clicked on a topic and it was loaded into the “Your Selection” area, other topics disappeared, this caused confusion. (For example, when trying to work on Task 5, which asks about fastest growing age group over the age of 45, a participant clicked on population change migration (previous residence) and the topics *Age & Sex* and *Age Group* disappeared. He then went to look for age in the topics list and was confused why he could not find age. He remembered from an earlier task that age was in the list and he spent some amount of time trying to find it under product type, survey, dataset, population groups, etc. It wasted a lot of his time and was very confusing for him).
- To get population data, a common task, you need to click on basic counts/estimates, which is not intuitive.
- *Age Group* only has children and older population as topics to select. Participants said they expected to see it broken down by age ranges.
- Participants clicked into the *Population Change* topic title when searching for age breakdowns but instead found migration, which was not what they were anticipating.

Discussion: The finding of participants not understanding when topics disappeared from the topics list is consistent with participants experience in Iteration 3 testing, although it is more nuanced. In this round of testing we saw participants confused when they tried to find a topic and it had disappeared because of another topic that they had already added into the “Your Selections” area. From Iteration 3 testing the usability team recommended adding an icon (e.g., such as a checkmark) next to the selected topics so that participants could see which topics have already been selected rather than having items disappear when they were added to the “Your Selections” box. The development team solution was to show animation of the topic moving up into the “Your Selections” box. In its current state, however, the animation is not working (IE) or working too quickly (Firefox), so that this is still a usability issue for participants.

Recommendation: Don’t have the topics disappear. If there is no content based on other items in the “Your Selections,” indicate this in another way, such as graying out the term and putting the number zero (0) in parenthesis next to it. Continue to refine the topics list (location and labels) based on common user terms and queries.

Team Response on topics disappearing¹⁴: IBM will work with the DADS Government staff to identify the appropriate approach to address this recommendation.

13. The names of the data files in the “Search Results” section of the screen were not clear. Many of the table titles listed were not scannable for many reasons: they were written in all capital letters (difficult to scan); they were too wordy with the same words repeated from one entry to the next with the only difference something that most general participants don’t understand or pay attention to (e.g. , the data set column). Consequently, the table labels caused confusion for participants. Many participants did not believe that the results had anything to do with what they had just searched on.

- The table labels were not in plain language. Participants did not know why the different table topics listed were actually there. They would say the results were not what they had searched on.
 - One participant said, “Why are there so many random categories? Why are there so many sub categories?” She said she wanted a more direct way to figure it out and that there was too much stuff to look through.

¹⁴ See IBM Response to 4Q2011_R2_draft_2_21_2012

- Another participant said, “when you put in a search, unless you know these terms... I can’t use this.”
- Another participant said, after adding poverty to the “Your Selections” and looking in the results, “I feel like it should be under poverty but I can’t find the heading I want.”
- Another participant said, when looking in the “Search Results” for the education attainment, “not by sex... I don’t want it by sex. It might throw you for a loop.”
- A participant used the QS on the main page to begin his query. He typed in “poverty states 2000” and clicked go. The participant said he expected it to pop up with the top 10 results but what he got instead was, “I got a bunch of government jargon. It’s so technical. Who knows what this is? Not all this ID and Title. I’d do Google.” See Figure 21.
- The table label “GEOGRAPHIC IDENTIFIERS” showed up in various participants searches. This led to an empty table filled with codes. Another high profile table that appeared at the top had IMPUTATION in the main title. People did not know what imputation meant.
 - One participant said about the Geographic Identifiers table “it’s giving me a lot of codes that I have no idea what they mean. I don’t know what this stuff means.”)
- Table titles were sometimes in all capital letters which makes it hard to read.
- Table titles would often be repeated exactly word for word under the “Title” heading and it was not always clear to participants what the difference was between them.
- Participants did not make the connection between what they had selected and the “Search Results” list:
 - One participant, after 35 minutes of working on the site and trying to figure out how her selections were related to the “Search Results” said, “I feel I have all appropriate information related to the questions. That’s where I am getting hung up. I know what selections to make, I don’t know if the stuff listed here [Search Results] is based on this.” She continues to look down at the list and then said, “So I feel I’m finally beginning to catch on. Indeed the reports were related to what I had selected.” This participant was able to make the connection between the “Your Selections” and the “Search Results” but it took her over 35 minutes to do so.

The screenshot shows the U.S. Census Bureau FactFinder interface. The search bar contains the query "poverty states 2000". The search results table is displayed with the following columns: ID, Title, Dataset, and About. The results are as follows:

ID	Title	Dataset	About
GCT-P14	Income and Poverty in 1999: 2000 - United States -- Metropolitan Statistical Area, and for Puerto Rico	2000 SF4 Sample Data	?
GCT-P14	Income and Poverty in 1999: 2000 - United States -- Urbanized Area, in Central Place, Not in Central Place, and County, and for Puerto Rico	2000 SF3 Sample Data	?
GCT-P14	Income and Poverty in 1999: 2000 - United States -- Urban Cluster Population by Size Class	2000 SF3 Sample Data	?
GCT-P14	Income and Poverty in 1999: 2000 - United States -- Metropolitan Area, in Central City, Not in Central City, County, and (in selected states) County Subdivision, and for Puerto Rico	2000 SF3 Sample Data	?
GCT-P14	Income and Poverty in 1999: 2000 - United States -- Region, Division, and States, and Puerto Rico	2000 SF4 Sample Data	?
GCT-P14	Income and Poverty in 1999: 2000 - United States -- Urbanized Area Population by Size Class	2000 SF4 Sample Data	?
GCT-P14	Income and Poverty in 1999: 2000 - United States -- Urban/Rural and Inside/Outside Metropolitan Area	2000 SF3 Sample Data	?
GCT-P14	Income and Poverty in 1999: 2000 - State -- Urban Cluster	2000 SF4 Sample Data	?
GCT-P14	Income and Poverty in 1999: 2000 - United States -- Urban/Rural and Inside/Outside Metropolitan Area	2000 SF4 Sample Data	?
GCT-P14	Income and Poverty in 1999: 2000 - United States -- County by State, and for Puerto Rico	2000 SF3 Sample Data	?
GCT-P14	Income and Poverty in 1999: 2000 - United States -- County by State, and for Puerto Rico	2000 SF3 Sample Data	?

Figure 21: Results listed appear to have no relationship to search query: “poverty states 2000.”

Recommendation: Give short plain language titles, and then make the official table id, data set and “official” table title secondary. Participants do not need to see or know the entire table title when at the point of making their decision on which search result to select.

Even if the other interface elements are fixed so that they work for users, the “Search Results” will continue to cause problems for most people until the time when they are written in plain language and with shorter, more scannable labels.

Data tables that are not common, such as imputation tables or geographic identifiers should not appear at the top of common searches.

The “Title” column should not have table titles that appear in all capital letters, this takes longer to read and comprehend.

Team Response to issues with tables from quick report¹⁵: IBM will work with the DADS Government staff to identify the appropriate approach to address this recommendation. The table names and column headers are consumed and displayed by the AFF system. It may not be possible to change the table names or column headers without permission and assistance from the data providers. This also applies to the case in which tables names are displayed.

IBM will investigate alternate layouts that place the table title closer to the table.

Placing a “Back to Top” or “Back to Search” button at the bottom of a long table is a usability best practice that IBM will add to the product view at the earliest opportunity.

14. Map View tab (and Creating a Map) was confusing for participants

Participants tried to click on Map View when in a table to create a map or to attempt to get to a different geography (e.g. tried to get a map so that the participant could select their geography). Often clicking on the Map View tab did nothing.

For example, when trying to find the boundaries of Fairfax City, participants, with a data table open, tried to click on the Map View tab but it did not work. Participants would click again and again and then say “it’s not letting me see it.” It was not clear why the hand appeared on the Map View tab, which indicates that something is clickable, yet the Map View tab was not clickable.

Discussion: During Iteration 3 testing in November of 2010, we saw participants clicking on the Map View tab when it was not available, as we saw participants doing in the current round of testing. In November we told participants that the Map View tab would not be there. At that time, participants said then they would go to “Create a Thematic Map” first. In November, we saw participants not reading the instruction and not knowing how to create the map. Thus, the recommendation was to make the connection between the “Create a Map” and the instructions on what to do next clearer, such as following what is done on the Modify Table function with the call out button. As well, we recommended modifying the instructions to be more clear and succinct—not in sentence form but rather in bulleted format, e.g.,

¹⁵ See IBM Response to 4Q2011_R2_draft_2_21_2012, page 6

To Create a Map you must select a data item:

1. Move the mouse cursor over the table
2. Click a cell

Recommendation: Since Iteration 3 testing, the development team removed the word “thematic” so that the button changed from “Create a Thematic Map” to “Create a Map”. This was a positive change as it reduced technical jargon on the page. We further recommend removing the “Map View” tab or disabling it (by graying it out and not making it look clickable) when it is not possible to create a Map. The instruction for how to create a map should be:

- 1: Written in a step by step format (see discussion above for example text)
- 2: Visually connected to the button, similar to the way the Modify Table call out bubble works.

3.5.2b Medium-Priority Issues

15. The label “population groups” is deceiving.

People think of it as more than just race and ancestry and frequently tried to get aging data from it.

Recommendation: Rename “Population Groups” to something more relevant to what is there. One observer recommended changing it to “Race and Ethnicity Groups.”

16. Participants tried clicking on “Modify a Table” to change geographies.

Recommendation: Allow users to change geographies from the actual result data table rather than requiring them to go back to search.

Team Response¹⁶: Accepted. Users will be able to change geographies from the product view.

3.5.2c Low-Priority Issues

17. Some participants did not what the red x was for. Other participants were able to use it.
18. One participant was confused by the question mark located right next to Topics.
19. Many participants commented on how long it took the data to load. For example after a participant clicked for a table, she read the getting data message and then after a bit said “Why is it taking so long?”
20. Comparison data: During the initial baseline study, most participants described the tasks as being pretty easy to complete. During the Follow-up to the Baseline, most participants described the tasks as being pretty difficult to complete.

3.5.3 2012 Follow-Up Study

3.5.3a High-Priority Issues

Testing identified a number of high-priority usability issues in the 2012 Follow-Up study.

21. Participants continue to have difficulties using the overlays

¹⁶ From IBM Response to 4Q2011_R2_draft_2_21_2012, page 7. This change was tabled for the time being though the team knows users continue to try to change their geography while on a table, often using the “Modify Table” button.

Novice participants still show the same pattern of interaction with the overlay as noted in previous rounds of testing. At least two expert participants who were less familiar with AFF showed similar patterns of behavior. Participant interactions with the overlay include:

- Trying to drag or move the overlay out of the way
- Missing the fact that their results are updated beneath the overlay.
- Saying they expected results after clicking on a selection in the overlay.
- Trying to click “GO” on the “Narrow your search” section (with one of the overlays open, such as Topics or Geographies) even when there were no items available to display.

Participants treat “Narrow your search” and QS as a Google-like search.

- Participants frequently refer to it as search.
- Participants often tried typing in a geography into the “Narrow your search” and did not understand why it did not work. In the 2011 baseline follow up report we noted, “It is not intuitive that you cannot search within your results for a geography and there is nothing that indicates that such a query is not possible.” This is still the case.
- Participants would enter in their entire query into the first of the two boxes in QS.
- Some participants assumed “Narrow your search” would create a new query that would search AFFs entire database.
- “Narrow your search” often lead participants to dead ends or irrelevant results. A novice participant, after failing several tasks using the QS and “Narrow your search” commented, “This is kinda frustrating, I don’t know why I can’t do this.”
- More than one participant commented, “QS is not that quick.”

Recommendation: Two different directions for the recommendations:

1. Keep novice users out of the Data Finder path.
2. For the intermediate/expert users, fix Data Finder by making the path more intuitive
 - a. Allow more natural search language
 - b. Allow users to narrow their search by geography. See Note below.
 - c. Modify the help in the yellow box to actually aid users as they come up against some issues
 - d. Give context specific feedback to users about what to do when their “Your Selections” is empty (See Figure 22)
 - e. Give context specific feedback to users when the items in the “Your Selections” causes no results (or irrelevant results) to be available (See Figure 23).
3. Allow users to move and minimize the overlay. Reduce the size of the overlay.

One participant suggested showing synonyms or related terms for similar topics. For example, if a user were to type in disabled then he/she should receive results on disability with a notification that it is a related term.

Discussion: In earlier usability results (e.g., Iteration 3 2010), we have recommended using the word “[remove](#)” instead of using the ✖ icon to indicate remove. We continue to think this would be more intuitive for users.

The re-labeling to “Narrow your search” and re-locating it just above the search results list has been effective, as many more participants use the feature, and some connect the feature with refining the results list. Now the search needs to continue to be refined so that users will get more out of their searches (such as allowing users to refine by geography).

Team Response: The recommendation to allow users to refine the results list by geography was recommended in an internal report to the sponsors for 1Q2012_Cycle1 and accepted by the IMB team in an internal report¹⁷).

The recommendation to allow the overlays to be minimized and moved was accepted with the following information from IBM: Accepted. As part of the on going design process, IBM is making an effort to minimize the use of overlays. IBM will also explore the feasibility of allowing users to reposition overlays, though allowing the user to move an overlay then requires them to manage the placement of the overlay, which could present another set of usability challenges.

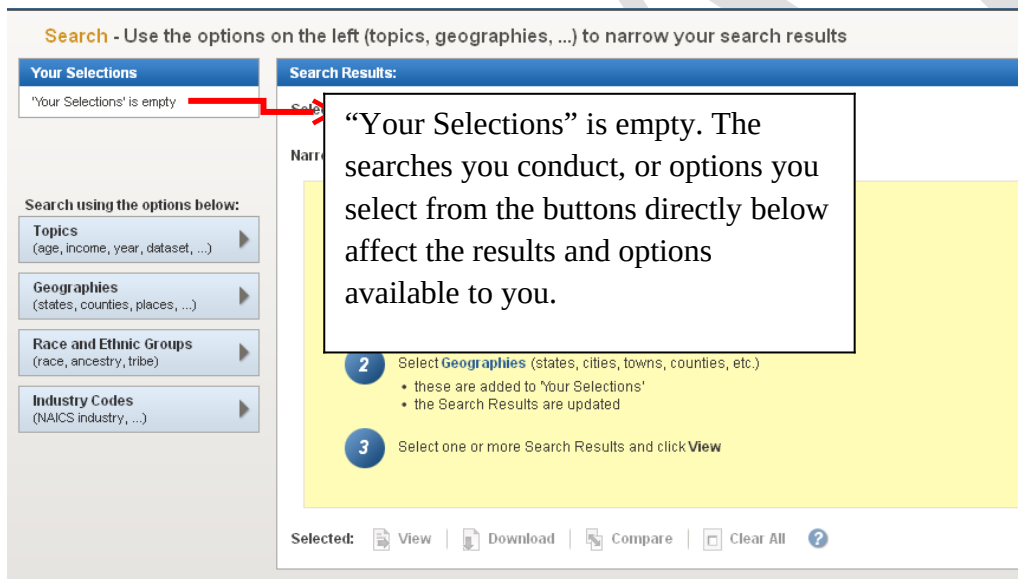


Figure 22: Suggested wording when users have not entered or chosen any options.

¹⁷ See IMB Response to 1Q2012_usability results_2_20_12, page 3.

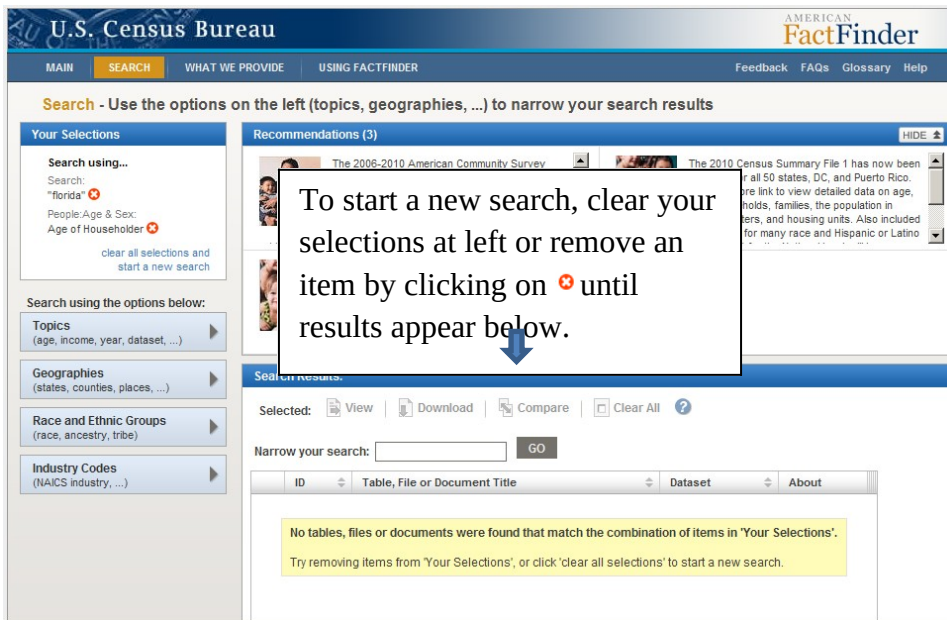


Figure 23: Suggested wording for context specific help when narrowing search leads to no, or irrelevant, results.

22. Participants continue to have difficulties understanding and using the Your Selections area effectively. Participants continue to experience confusion over what the Your Selections area is and how to use it. For example:

- More participants appear to notice the “Your Sections” area but they still do not necessarily understand how it is related to the rest of the site.
- Participants said the “Your Selections” area showed their past searches.
- Participants did not understand that options in the overlays were limited by what they had in “Your Selections.”
- “Geography” grays out unavailable options, but “Topics” hides the unavailable options. This inconsistency is confusing.
- Participants do not understand that topics disappear based on their selections. For example, they comment they do not know why they cannot find a topic that was available in an earlier search.

The combination of misunderstanding the search features combined with the confusion over “Your Selections” led to high rates of task failure for novice participants.

Recommendations: The confusion over the “Your Selections” area is similar to previous studies (Iteration 3 2010 and Follow-up 2011). While the recommendation of keeping the “Your Selections” open on the screen at all times has been made to the interface, as well as enhancing ways to draw the users’ eye to the “Your Selections” area of the screen, other recommendations were not made. Recommendations from the 2011 Follow-Up study that have *not* been implemented include:

1. Do not have a topic disappear when a different topic is loaded in the Your Selections area. If the topic is no longer an option, consider another way to indicate that they there is no data on

that specific topic, e.g. make the label not clickable, such as graying it out and putting a zero in parenthesis next to it.

2. Consider adding simple instructions to the interface that explains a bit about what users need to do with the “Your Selections” area: For example: “Choose your topic” or “Choose your Geography” As well tweaking the “Your Selections” label could be more informative, such as “I am Looking for...”

We still recommend graying out unavailable options instead of hiding them. This would give users a visual cue that they cannot select these options rather than have them think that the term does not exist. Consider prior recommendations from earlier studies to help explain to users how the “Your Selections” area works, such as bullet-point 2 above.

Team Response: While we have discussed at usability meetings the possibility of graying out unavailable options in the topics list, instead of having them disappear, the team has not made a decision on this issue as of yet.

23. There are too many choices in the results list. Participants have too many choices that can lead to task failures. Examples include:

- Irrelevant table titles in the results list (e.g., looking at a long list of different poverty tables, a novice participant had difficulty identifying which Poverty table would be the “right” one).
- Long list of available tables was time consuming as participant attempts to find the *one* table that would have the “correct” information. (e.g., Participants, including experts who were familiar with the old and new AFF Web site, said they did not like the sheer number of options available since it tended to result in an extended investigation into which table was the one they needed).
- QS could lead participants to a massive list of available tables (e.g., information overload). For example, one expert typed “employment for US” into QS and then said with an exasperated laugh, “Again it’s giving me all the details!”

During debriefing, several of the expert participants commented about how the old AFF system refined their options earlier in the process so that they did not have to deal with all the choices upfront. These experienced experts said they preferred the ability to use the drop downs in the old AFF to get a specific table.

Recommendation: Allow participants the option of not seeing all the data. Highlight the best choices, perhaps the most requested choices, based on the search criteria, and only show those initially.

Team Response: In the first and second cycle of 1Q2011 testing the development team demonstrated different ways to reduce the number of repeating tables by rolling all similar tables up into one table, and giving the user the option of expanding the results list to identify the exact table they wanted. Currently, however, these modifications have been postponed until 2013 or later.

In addition IBM responded¹⁸, “IBM will work with the DADS Government staff to identify the appropriate approach to address this recommendation. IBM will explore the technical cause of search returning results that do not appear to be related to the search criteria.

The table names are consumed and displayed by the AFF system. It may not be possible to change the names of the table without permission and assistance from the data providers. This also applies to the case in which tables names are displayed.

The ID column will be moved to be between the dataset and about columns.”

24. Misleading Yellow Message

The yellow message participants see when they have no items in the “Your Selections” area is misleading. Although it tries to explain the steps in using AFF, participants tend to treat them as a systematic guide where the only action they can take is to click “View.”

One participant took this message literally and thought to get any result he would have to make a selection in an Overlay and then click View since it was one of the buttons exposed when the overlay was opened. When following the instructions this participant said:

“But now it says click on View. But where’s View at? Oh View is at the top. But it’s not in bold [grayed out] so you can’t click on it. That’s just confusing. If you try to follow what it says... it’s confusing. It says select View, but View is not highlighted. It’s kinda frustrating.”

This participant may have confused the overlays with the search results. See Figure 24.

To search for tables and other files in American FactFinder:

- 1 Select from **Topics, Race and Ethnic Groups, or Industry Codes** or Enter a topic, keyword, or table ID in the **Narrow your search box**.
 - these are added to 'Your Selections'
 - the Search Results are updated
- 2 Select **Geographies** (states, cities, towns, counties, etc.)
 - these are added to 'Your Selections'
 - the Search Results are updated
- 3 Select one or more Search Results and click **View**

Figure 24: One participant honed in to the View button after reading these instructions.

Recommendation: Users who are struggling with the overlay are unlikely to find the instructions on using DataFinder helpful. Consider re-writing the instructions to assist users through the overlays rather than listing the steps for using DataFinder.

¹⁸ See IBM Response to 4Q2011_R2_draft_2_2012, page 4

25. Difficulties with “Create a Map” persist. The feature was problematic for participants:

- Creating a map takes several minutes. Some expert participants commented that they never use the “Create a Map” functionality because of the slow loading times. In some cases, this led to the inability to evaluate whether the task ended in success or failure since one expert participant had Maps “freeze” up on her. She commented:

“This is a feature I never use. I never use mapping because I’m un-successful. It never gives me the option because I live in a really small state. Or I have this problem because it takes a really long time to generate this map. When I can download it and pop it into ArcGIS.”

- Participants do not understand that they *must* have two like geographies in their table in order to be able to see a map of it. It appears random to participants when they can click on the “Create a Map” icon; sometime the feature is grayed out and sometimes it is active. Participants do not understand what will cause it to be grayed out.
- Data Classes in the legend are always defined by “persons.” This led to one expert participant being concerned that she had chosen the wrong table (when it was the right table) when asked to find the counties in California with household values between \$450,000 and \$540,000. She said:

“This is actually the persons in the group. Rather than the value? This is median value? But yet what it says data classes it says person. So I guess my question here is, this the # of people? Or is this the value? I would assume this is the value of the owner housing.”

After the participant checked the table again to ensure she had the right answer she decided to go ahead and define the range. Although at the end she still was second guessing herself on whether she had chosen the right dataset.

Recommendations: Fix the data classes bug, have the maps load faster, allow any data item to be mapped, including single geography.

26. Inaccessible Narrow Your Search

Participants are blocked from clicking on the “Narrow your search” box when there is only one result available. Although the intent is to demonstrate the table cannot be narrowed further, there is no feedback that the box is not clickable.

Participants are treating the “Narrow your results” as a search¹⁹ and are frustrated when they cannot click on the box. Eventually participants conclude (incorrectly) that the box is broken and try another method of looking for their data.

¹⁹ For more information on how participants are treating “Narrow your results” as a general search feature, see Finding 21 above.

Recommendation: Users should be informed visually that an action is unavailable (usually by graying it out). Alternatively, a message could show up in the box saying that this option is not available since they cannot narrow their search any farther. See Figure 25.

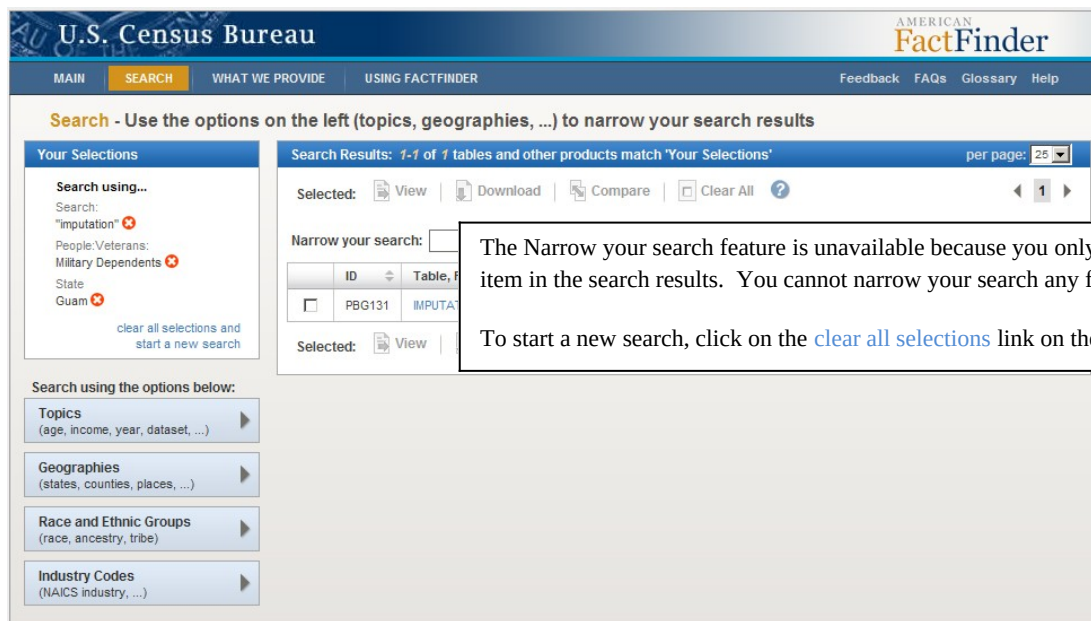


Figure 25. Suggested message/wording when the “Narrow your search” feature is unavailable.

7. Search Results: Usability issues with table titles, ID, and dataset persist. A big problem is that table titles are unhelpful, and in the worst case, misleading.

- Vague titles force participants to rely on the dataset information (if they can comprehend the differences) to identify what the table may contain. Participants unfamiliar with the table titles and datasets typically gave up when they encountered the numerous results, or resigned themselves to a sort of “hunt and peck” type search for the correct table.
- Repeating table title names were not scannable for many reasons: they were written in all capital letters; they were too wordy with the same words repeated from one entry to the next with the only difference something that most people don’t understand or pay attention to (e.g., the data set column).
- Results were confusing for participants who approach every search like a Google search. For example, if they typed in “city limits and borders” they would receive irrelevant results. Participants did not know why the different table titles listed were actually there in the list of results. As we have heard other participants say in earlier studies, participants said that they did not understand why the results were not related to what they had just searched on. See Figure 26 for an example.
- As reported in prior studies, the ID column was confusing for novice or general participants. It should not be the first thing that participants see when looking at the list of results.

Search - Use the options on the left (topics, geographies, ...) to narrow your search results

Your Selections

Search using...
 Search: "city limits and borders"
 County: Fairfax County, Virginia
 clear all selections and start a new search

Search using the options below:

Topics
(age, income, year, dataset, ...)

Geographies
(states, counties, places, ...)

Race and Ethnic Groups
(race, ancestry, tribe)

Industry Codes
(NAICS industry, ...)

Search Results: 1-25 of 217 tables and other products match "Your Selections"

Selected: View | Download | Compare | Clear All ?

Narrow your search: GO

ID	Table, File or Document Title
<input type="checkbox"/> B19080	HOUSEHOLD INCOME QUINTILE UPPER LIMITS
<input type="checkbox"/> B19080	HOUSEHOLD INCOME QUINTILE UPPER LIMITS
<input type="checkbox"/> B19080	HOUSEHOLD INCOME QUINTILE UPPER LIMITS
<input type="checkbox"/> B19080	HOUSEHOLD INCOME QUINTILE UPPER LIMITS
<input type="checkbox"/> B19080	HOUSEHOLD INCOME QUINTILE UPPER LIMITS
<input type="checkbox"/> B19080	HOUSEHOLD INCOME QUINTILE UPPER LIMITS
<input type="checkbox"/> B19080	HOUSEHOLD INCOME QUINTILE UPPER LIMITS
<input type="checkbox"/> B19080	HOUSEHOLD INCOME QUINTILE UPPER LIMITS
<input type="checkbox"/> B19080	HOUSEHOLD INCOME QUINTILE UPPER LIMITS
<input type="checkbox"/> B19080	HOUSEHOLD INCOME QUINTILE UPPER LIMITS
<input type="checkbox"/> EC0751A1	Information: Geographic Area Series: Summary Statistics for the United States, States, Metro and Micro A
<input type="checkbox"/> EC0754A1	Professional, Scientific, and Technical Services: Geographic Area Series: Summary Statistics for the Unite
<input type="checkbox"/> EC0756A1	Administrative and Support and Waste Management and Remediation Services: Geographic Area Series:
<input type="checkbox"/> EC0781A1	Other Services (Except Public Administration): Geographic Area Series: Summary Statistics for the US, St
<input type="checkbox"/> B19080	HOUSEHOLD INCOME QUINTILE UPPER LIMITS
<input type="checkbox"/> EC0256A1	Administrative and Support and Waste Management and Remediation Services: Geographic Area Series:
<input type="checkbox"/> EC0281A1	Other Services (Except Public Administration): Geographic Area Series: Summary Statistics for the United

Figure 26: These results are irrelevant to the participant's query.

Users expect a few things when conducting a search:

- That they will either not find what they are looking for (i.e., it doesn't exist)
- That their expected results will be near the top,
- That they will have to do a little refining based on the title and description of the results.
 - One expert participant, (given the first novice task at the conclusion of his work with the expert tasks) said, "On the actual search engine... it said [United States] at the top... maybe the table title... should have said MD, cause that could be confusing to someone."

When users receive irrelevant results, they may conclude that AFF does not contain the data. For example, one expert participant entered into QS "Disabled people VA" and received table titles such as "marital language, total population," but no results on disability.

He concluded, "AFF obviously does not cover that" before starting a new search. After changing his search term, he did find disability characteristics but wrongly concluded the table did not include Virginia. In Task 6, the same expert participant had a similar conclusion when a QS query for "health clubs" resulted in health insurance results. See Figure 27 for an example.

Your Selections

Search using...
 Search: "health clubs"
 County: Fairfax County, Virginia
 clear all selections and start a new search

Search using the options below:

Topics (age, income, year, dataset, ...)

Geographies (states, counties, places, ...)

Race and Ethnic Groups (race, ancestry, tribe)

Industry Codes (NAICS industry, ...)

Community Facts

Fairfax County, Virginia:
 American Community Survey
 Income, Employment, Occupation, Commuting to Work ...
 Find other popular data using State and County Quickfacts.

Search Results: 1-25 of 732 tables and other products match "Your Selections"

Selected: View | Download | Compare | Clear All

Narrow your search: GO

ID	Table, File or Document Title	Dataset	About
S2701	HEALTH INSURANCE COVERAGE STATUS	2010 ACS 1-year estimates	?
S2701	HEALTH INSURANCE COVERAGE STATUS	2010 ACS 3-year estimates	?
B18135	AGE BY DISABILITY STATUS BY HEALTH INSURANCE COVERAGE STATUS	2010 ACS 1-year estimates	?
B18135	AGE BY DISABILITY STATUS BY HEALTH INSURANCE COVERAGE STATUS	2010 ACS 3-year estimates	?
B27001	HEALTH INSURANCE COVERAGE STATUS BY SEX BY AGE	2010 ACS 1-year estimates	?
B27001	HEALTH INSURANCE COVERAGE STATUS BY SEX BY AGE	2010 ACS 3-year estimates	?
B27001A	HEALTH INSURANCE COVERAGE STATUS BY AGE (WHITE ALONE)	2010 ACS 1-year estimates	?
B27001A	HEALTH INSURANCE COVERAGE STATUS BY AGE (WHITE ALONE)	2010 ACS 3-year estimates	?
B27001B	HEALTH INSURANCE COVERAGE STATUS BY AGE (BLACK OR AFRICAN AMERICAN ALONE)	2010 ACS 1-year estimates	?
B27001B	HEALTH INSURANCE COVERAGE STATUS BY AGE (BLACK OR AFRICAN AMERICAN ALONE)	2010 ACS 3-year estimates	?
B27001C	HEALTH INSURANCE COVERAGE STATUS BY AGE (AMERICAN INDIAN AND ALASKA NATIVE ALONE)	2010 ACS 1-year estimates	?
B27001C	HEALTH INSURANCE COVERAGE STATUS BY AGE (AMERICAN INDIAN AND ALASKA NATIVE ALONE)	2010 ACS 3-year estimates	?
B27001D	HEALTH INSURANCE COVERAGE STATUS BY AGE (ASIAN ALONE)	2010 ACS 1-year estimates	?
B27001D	HEALTH INSURANCE COVERAGE STATUS BY AGE (ASIAN ALONE)	2010 ACS 3-year estimates	?
B27001E	HEALTH INSURANCE COVERAGE STATUS BY AGE (NATIVE HAWAIIAN AND OTHER PACIFIC ISLANDER ALONE)	2010 ACS 1-year estimates	?
B27001E	HEALTH INSURANCE COVERAGE STATUS BY AGE (NATIVE HAWAIIAN AND OTHER PACIFIC ISLANDER ALONE)	2010 ACS 3-year estimates	?
B27001F	HEALTH INSURANCE COVERAGE STATUS BY AGE (SOME OTHER RACE ALONE)	2010 ACS 1-year estimates	?
B27001F	HEALTH INSURANCE COVERAGE STATUS BY AGE (SOME OTHER RACE ALONE)	2010 ACS 3-year estimates	?
B27001G	HEALTH INSURANCE COVERAGE STATUS BY AGE (TWO OR MORE RACES)	2010 ACS 1-year estimates	?
B27001G	HEALTH INSURANCE COVERAGE STATUS BY AGE (TWO OR MORE RACES)	2010 ACS 3-year estimates	?
B27001H	HEALTH INSURANCE COVERAGE STATUS BY AGE (WHITE ALONE, NOT HISPANIC OR LATINO)	2010 ACS 1-year estimates	?

Figure 27: Health Insurance is returned after a search on health clubs.

Recommendation: Results list recommendations include:

1. Fix table titles to be less vague, less difficult to scan (e.g., Use upper and lower case letters, Use less vague titles)
2. Include more synonyms (for example, make health club and fitness center synonymous)
3. Work on the way search queries leads to relevant tables surfacing near the top of the results list
4. Move the confusing ID label over to the right of the list
5. Collapse similar table names into one table link (with an option to expand it) so that users do not have to see the same table repeated multiple times. It is our understanding that this recommendation is on the list of items that has been postponed due to budget and time constraints.

Team Response: The recommendation to move the ID column over to the right has been discussed, and, we understood, agreed on at various team meetings as well as in the internal report IBM Response to 4Q2011_R2_draft_2_21_2012, page 4 where the response is that, "The ID column will be moved to be between the dataset and about columns." It is not clear if this is an oversight or if the team has decided not to move the ID column over to the right of the results list.

28. Participants select the wrong item to add to "Your Selections" because of confusion with apparent duplications (e.g., Race & Ethnicity vs. Race and Ethnic Groups; Age& Sex vs. Age Group).

Recommendation: Consider a listing or card sorting exercise on some of the topic terminology to get the users perspective of which terms should be grouped together.

3.5.3b Medium-Priority Issues

29. Community Facts section was not often used

Although Community Facts is a useful tool, participants tend to ignore the links.

- Participants scrolled past Community Facts because they said they expected a list of results after conducting a search.
- Some participants did notice Community Facts, as they would comment on the text in it, but would usually jump to the “Search Results” section below. When asked about this in a debriefing, one participant commented that while it would have been helpful, she was expecting a result, which is why she scrolled past it. See Figure 28.

Note: However, not all participants overlooked these links. For example, when one novice participant was asked to find the population of Maryland, he noted that it says Maryland at the top (in Community Facts). He proceeded to click the first link and was successful in finding an estimate.

The screenshot shows the U.S. Census Bureau website interface. At the top, there is a navigation bar with 'MAIN', 'SEARCH', 'WHAT WE PROVIDE', and 'USING FACTFINDER'. Below this is a search bar with the text 'Search - Use the options on the left (topics, geographies, ...) to narrow your search results'. The left sidebar contains 'Your Selections' with search criteria: 'Total Population' and 'Maryland'. Below this are filters for 'Topics', 'Geographies', 'Race and Ethnic Groups', and 'Industry Codes'. The main content area is titled 'Community Facts' and shows results for 'Maryland: 2010 Census', including links for 'Population, Age, Sex, Race, Households and Housing ...', 'American Community Survey', and 'Population Estimates'. Below this is a 'Recommendations (4)' section. The search results section shows 'Search Results: 1-25 of 9,683 tables and other products match 'Your Selections''. A table of results is displayed with columns for 'ID' and 'Table, File or Document Title'. The table lists various population and income data points for the United States and Puerto Rico.

ID	Table, File or Document Title
S0601	SELECTED CHARACTERISTICS OF THE TOTAL AND NATIVE POPULATIONS IN THE UNITED STATES
S0601	SELECTED CHARACTERISTICS OF THE TOTAL AND NATIVE POPULATIONS IN THE UNITED STATES
S0601	SELECTED CHARACTERISTICS OF THE TOTAL AND NATIVE POPULATIONS IN THE UNITED STATES
S0601PR	SELECTED CHARACTERISTICS OF THE TOTAL AND NATIVE POPULATIONS IN PUERTO RICO
B01003	TOTAL POPULATION
B01003	TOTAL POPULATION
B01003	TOTAL POPULATION
B01003	TOTAL POPULATION
B01003	TOTAL POPULATION
B19313A	AGGREGATE INCOME IN THE PAST 12 MONTHS (IN 2010 INFLATION-ADJUSTED DOLLARS) FOR THE
B19313A	AGGREGATE INCOME IN THE PAST 12 MONTHS (IN 2010 INFLATION-ADJUSTED DOLLARS) FOR THE
B19313A	AGGREGATE INCOME IN THE PAST 12 MONTHS (IN 2010 INFLATION-ADJUSTED DOLLARS) FOR THE
B19313B	AGGREGATE INCOME IN THE PAST 12 MONTHS (IN 2010 INFLATION-ADJUSTED DOLLARS) FOR THE
B19313B	AGGREGATE INCOME IN THE PAST 12 MONTHS (IN 2010 INFLATION-ADJUSTED DOLLARS) FOR THE
B19313B	AGGREGATE INCOME IN THE PAST 12 MONTHS (IN 2010 INFLATION-ADJUSTED DOLLARS) FOR THE
B19313C	AGGREGATE INCOME IN THE PAST 12 MONTHS (IN 2010 INFLATION-ADJUSTED DOLLARS) FOR THE

Figure 28: Users expecting search results may overlook Community Facts

Recommendation: Integrate the Community Facts into the search results.

30. Table contents are missed in complex layout, key information is overlooked.

On certain tables, key information such as the location can be missed or overlooked by users such that they may not realize the table is actually what they wanted. Table titles tend to be unhelpful, for example, a title “SELECTED SOCIAL CHARACTERISTICS IN THE UNITED STATES” when the table is listing data for Virginia. This has been reported in earlier rounds (See usability results from internal report 4Q2011_R2) and there have been no changes to the visual layout of the tables.

- Participants *still* have trouble recognizing if the content of a table matches what they are looking for. For example, one participant clicked into a table and decided that Virginia was not mentioned in the table. Luckily, she took a second look at the table and realized it said Virginia in the column header.
- Other participants had difficulty with noting the year or geography, thinking they had found the answer to the task when they actually opened a table with an incorrect year, or missed the geography.

Recommendation: For key information such as a geography or year, consider using a combination of font size, color, and styles to differentiate the identifying information from the rest of the text on a table. Put important table information (such as the title) closer to the table itself.

31. Census Bureau jargon persists. Novice participants had trouble with some of the Census Bureau jargon. For example, they did not understand what NAICS was.

One participant had this to say, “These codes, it’s something I don’t understand. Codes. I don’t know. It’s challenging. I don’t know.”

Even among expert participants, those who were unfamiliar with ECON terminology wanted some way to learn more about the codes used on the Web site. One expert participant suggested having the Help “?” icons be specific to the overlay instead of generic help on interacting with the overlays in AFF. (Figure 29 currently shows what happens if you click on the “?” symbol.)

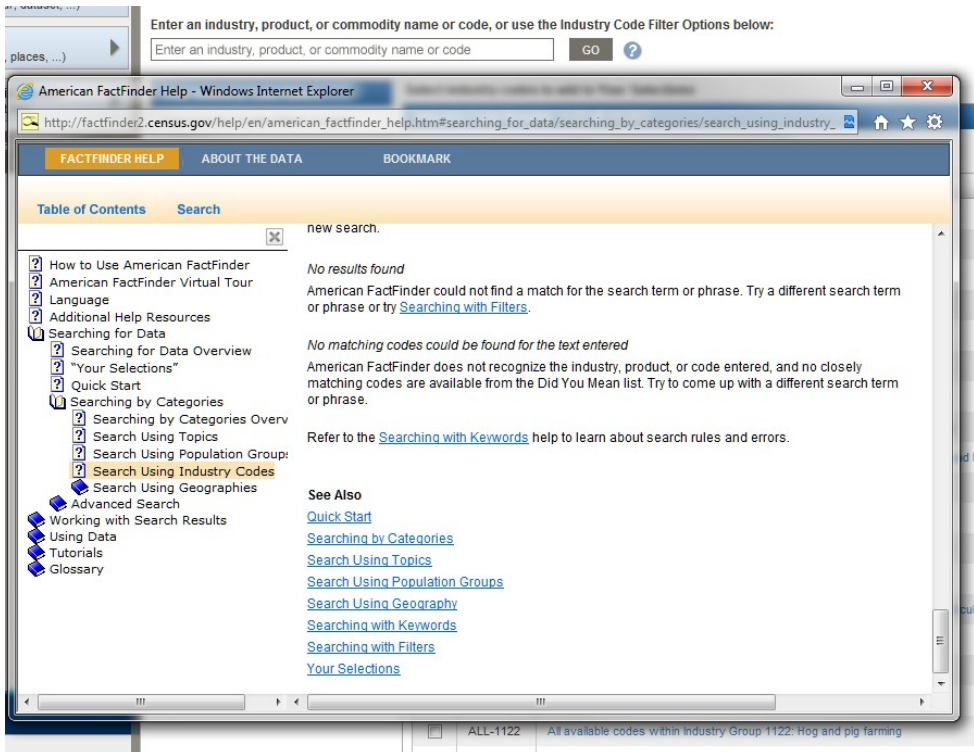


Figure 29: Help focuses on the use of FactFinder rather than the contents

Recommendation: Help should also explain the categories in AFF. For example, it should explain what an Industry Code is, and where they could learn more about the various NAICS codes. Alternatively, within the help, there could be a linked question: “Did you need the definition?” And link to the glossary.

32. QS caused geography confusions for participants.

One novice participant, when asked to find a table on exports to Mexico repeatedly tried to enter Mexico into the Geography section of the QS. This participant may have been confusing “place” in the instruction over the text entry box “state, county, or place” to mean any geography in the world when it actually refers to a city or town. Another participant who tried this (entering Mexico in the “state, county or place” box) may have read “county” as country. Other participants tried looking for Mexico using the geography overlay, or by using QS and searching on “U.S. exports to Mexico.” See Figure 30.



Figure 30: Participant types Mexico into the Geography box in QS

Recommendation: If AFF does not index geographies outside of the USA, the label above the field should specify a state, county or place in the USA. (Note: Our recommendation depends on the intended functionality of the QS. Identify how many countries or cities outside of the USA are entered into the data field and make the change mentioned above if it seems warranted.)

3.5.3c Low-Priority Issues

33. Main page clutter caused some distraction for participants.

Some participants reported that there were too many things on the Web site. For example, one participant pointed out News & Notes should be moved somewhere less prominent. The participant continued to say, “unless you are a statistician you’re not going to care about that [area].”

Recommendation: News & Notes should take up less space on the middle of the page since the Web site serves many users who will not need to know the latest notes or revisions to the tables. Consider moving this section to the side where the users who are not going to need it can ignore it, while still having it available on the main page for those who do use it.

34. All Counties versus State

One expert participant told us that she never uses the “all counties within [state]” to look for information because she assumed she would only get data at the state level. Instead, she opted to select all the individual counties and add them to her selections. She later decided to try it just to see what happens and realized it does not aggregate all the counties.

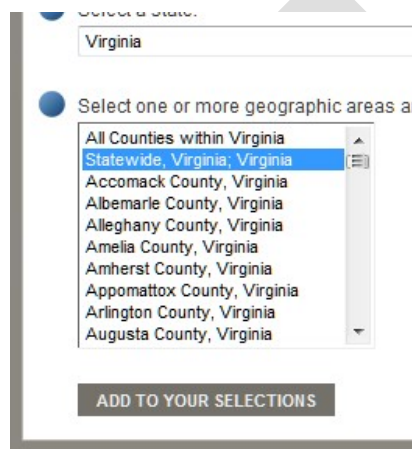


Figure 31: All Counties within Virginia could mean the overall statistic for Virginia

Recommendation: The wording could be clarified, to “Each county in Virginia”. However, there is no user testing to backup this suggestion. The participant who pointed out the issue said, “What would be helpful is if it said 64 counties since I’m not sure.”

35. Native American / Tribal Areas in Geography List caused some confusion

One participant mentioned specific issues she had with locating American Indian Reservation data. The geography filtering for a list does not work for American Indian Reservations. For example, in Figure 32, Montana is entered to the “Your Selections” yet the Geographies overlay shows all other reservations outside of Montana as selectable options.

Another issue is the small differentiation between Fort Peck the Indian Reservation, and Fort Peck the Reservation.

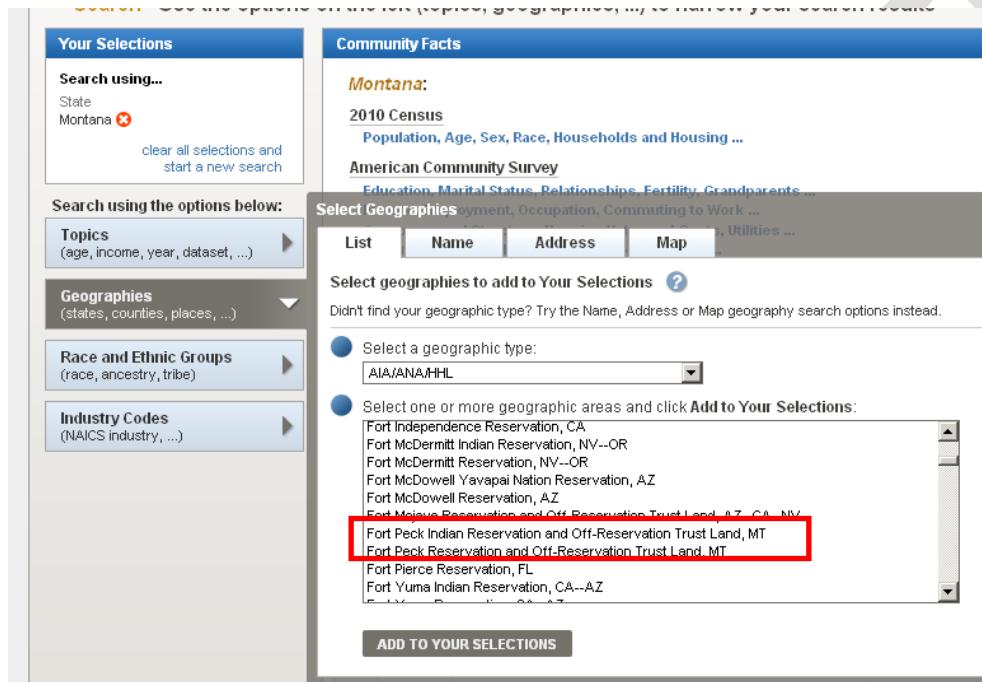


Figure 32: Lack of Filtering for American Indian Reservations

Recommendation: Fine tune the listing making sure there are actual distinctions between the listed items, and remove any redundant items.

36. Type ahead lead some participants astray

On some occasions we noticed that a user would unintentionally select a type-ahead result when they meant to search for the exact term they had typed.

Recommendation: Watch user performance with type-ahead in future studies and see if any issues persist with user comprehension. If the type aheads do not seem to be used, or continue to be used incorrectly, we recommend disabling the type ahead, or generalizing it so that you get more synonyms instead of complete table titles.

4.0 Discussion

Baseline: In the Baseline study, participants said that they enjoyed using the American FactFinder Web site. Satisfaction scores were moderately high, but accuracy scores for complex tasks were moderately low. The biggest complaint from users and the biggest usability issue was that the search function did not work in the way people expected it to. It did not provide users with help and/or answers when they could not otherwise find what they were looking for.

2011 Follow Up: Usability testing of the new version of the new AFF Web site identified numerous high-priority issues that impede users from completing tasks. The 2011 Follow-Up had major interface design issues that stymied users before they could really get started with the new AFF Web site. Some of the main problems included:

- Confusion with “Your Selections,” lack of understanding on how it was connected with their search for information
- Confusion with the geography overlay
- Problems with the “Search Results” section that has table labels that are not in plain language, not what they are searching for

There was one novice user that appeared to understand the site and one other that appeared to learn the site by the end of the session. The less Web-savvy users wanted more guidance and were slower to explore some of the different features of the site, if they did at all.

As with all recommendations we suggest further usability testing with typical users to identify if the recommended fixes to the user interface work, and to identify any new usability issues that might come from the design changes.

2012 Follow Up: In the 2012 Follow-Up study, participants continued to experience major problems with the interface design of the New AFF Web site. Data Finder continued to be problematic for novice and expert users who were unfamiliar with the way AFF worked. A number of the usability problems identified in this round of testing had been identified in prior rounds of usability testing. A few of the bigger problems are with the search, with users not understanding how “Your Selections” works, and with issues users have with the table titles in the Search Results section of the screen. While expert participants were able to use the site as well as or better than the legacy site, novice or more general participants continue to struggle with an interface that is overly complex. For nine out of the ten tasks assigned novice participants decreased in their accuracy, and efficiency. Satisfaction also decreased, reflecting the difficulty users had with the Web site.

The presence of QS occasionally helped users who could identify the most relevant keywords, but also hampered users by leading them to search results that contained vague table titles, or irrelevant results. Novice participants relied on QS rather than using the overlays, but more than one user said, “it wasn’t so Quick.”

Expert results were mixed for accuracy and efficiency, with a general trend of improvement across the six tasks. However, satisfaction declined for the 2012 Follow-Up expert participants, possibly because many of these expert users had used the legacy version of the AFF.

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Appendix A: Tasks from 2008, 2011, & 2012

Novice Tasks

Table 12: Novice Tasks throughout the Years

Novice Task Number			Novice Task Question
November 2008 Baseline	June 2011 Follow Up	June 2012 Follow Up	
1	1	1	You are thinking about moving to Maryland and want to get as much information as you can about Maryland, including how many people live there. How many people live in Maryland?
2	2 Year changed from 2006 to 2000	2 Year changed from 2006 to 2009	You are doing research for a project on poverty and want to know which three states had the most people living in poverty in 2006. Are you able to print this information for later use?
3	Task not used, content was not loaded	3 Year changed from 2002 to 2007.	You are doing a project about businesses in America through the years. You want to know what type of U.S. business had the highest amount of sales in 2002?
4	Task not used content was not loaded	4 Wording changed “go to Mexico” from “come from	What percent of U.S. imports currently come from China?

		China.”	
5	Task not used content was not loaded	5 Wording tweaked to remove DC, year changed to 2010.	How many people worked for the government in DC in 2002?
6	6	6	You are doing a report on education. You want to know what percent of the total population in Virginia, Kansas, Maryland and Texas were college-educated in 2006.
7	7	7	You are working on a project that involves city limits and you are interested in finding the borders of the city of Fairfax in 2000. You would like this information to be displayed visually as you are a visual learner.
8	8 Year range changed “from 2006 to 2008”	8	You are interested in demographic changes in the U.S. and want to know what the fastest growing age group was, over the age of 45, from 2006 to 2007?

9	Task not used content was not loaded	9 Task re-written as content no longer on site, not comparable	Baseline: You are interested in various states' overseas importing and exporting and specifically are interested in Idaho. You want to know which country Idaho increased exports with the most between 2003 and 2004. 2012 Follow Up: You are interested in various states' labor costs and are interested in finding out which State had the greatest annual payroll in 2002
10	10 Date change from 2007 to 2000.	10 Date change back to 2007.	You are interested in finding the average salary of households in Virginia and Maryland for 2007. Which state had the highest average household salary?

Note: Task 9 is not comparable across baseline and 2012.

Expert Tasks

Table 13: Expert tasks throughout the Years

Expert Task Number			Expert Task Question
Baseline	June 2011 Follow Up	June 2012 Follow Up	
1	NA*	1	You plan to move to one of the following cities—Seattle, WA; San Francisco, CA; Washington, DC — and would like to know the average income of females in each city for the last three years. You would like to come back to this information later. You wonder if there is any way to be able to access it all again without having to go through all those steps.

2	NA*	2	You would like to know the total number of finance and insurance companies in 2002, together. Then, you would like to make some comparisons between the two industries (finance and insurance). You don't want to see extraneous information, but you would like to see the information displayed with the number of employees first, payroll second and revenue last.
3	NA*	3	You would like to find a map that displays the counties in California with the most recent data on the average housing values of all homes that are owned (as opposed to rented). Is there a county in Southern California that has a price range between \$350,000 and \$540,000?
4	NA*	4 Task was changed to obtaining a list of the Number of Establishments in the state of California by from the County Business Patterns database for 2008.	You are interested in the income of senior citizens living in each county in Florida in 2007. You would like to gather the number of households with retirement income and the total retirement income in each county. Once you have these data displayed together, you would like to arrange the data by the highest total retirement income. Then you would like to save your work for later reference.
5	NA*	5	You would like to know the percent of disabled people in Virginia who are at least 65 years old in 2006. You would also like to find the county with

			the highest percentage of disabled people. You are looking not just for the numbers but for a map for a presentation you are preparing. When you find the information, you would like to save it in a format that would allow you to insert it into a PowerPoint presentation.
6	NA*	6	You are looking for the number of health clubs in the following counties in Virginia: Prince William, Fairfax, Stafford, Fauquier, and Loudoun. When you find the information you need, you would like to save it for later use.

NA* = No testing was done in 2011 with expert participants.

Appendix B: Participant Demographics

Table 14. Novice 2008 participants' self-reported computer and Internet experience.

Participant	Hours per day on the Internet	Scale: 1:No Experience - 9:Very Experienced		Scale: 1:Not Comfortable - 5:Comfortable			Scale: 1:Never - 5:Very Often		
		Overall experience with computers	Overall experience with Internet	Comfort in learning to navigate new Web sites	Comfort in manipulating a window	Comfort in using and navigating the Internet	How often working with data through a computer	How often working with complex analyses of data through a computer	How often using the Internet or Web sites to find information
1	2	9	8	4	4	5	5	4	5
2	2	8	7	5	5	5	5	5	5
3	2	8	8	3	3	4	4	1	4
4	2	7	9	5	5	5	5	4	5
5	5	8	9	5	5	5	3	2	4
6	2	2	5	4	2	5	1	1	2
7	2	8	7	5	4	4	4	3	5
9	5	5	7	3	3	4	3	3	5
10	7	9	9	5	5	5	4	1	5
Average across participants	3.22	7.11	7.67	4.33	4.00	4.67	3.78	2.67	4.44

Table 15: Novice 2011 participants' self-reported computer and Internet experience.

Participant	Hours per day on the Internet	Scale: 1:No Experience - 9:Very Experienced		Scale: 1:Not Comfortable - 5:Comfortable			Scale: 1:Never - 5:Very Often		
		Overall experience with computers	Overall experience with Internet	Comfort in learning to navigate new Web sites	Comfort in manipulating a window	Comfort in using and navigating the Internet	How often working with data through a computer	How often working with complex analyses of data through a computer	How often using the Internet or Web sites to find information
1	5	8	8	5	5	5	5	3	5
2	5	7	7	5	5	5	5	4	5
3	5	6	9	4	3	5	3	1	5
4	7	7	9	5	5	5	2	1	5
5	5	7	9	4	5	5	2	1	3
6	2	8	9	5	5	5	3	3	5
7	2	7	7	3	3	3	1	1	4
9	5	9	8	4	5	5	4	2	4
10	7	8	8	4	5	5	4	2	5
Average across participants	4.78	7.44	8.22	4.33	4.56	4.78	3.22	2.00	4.56

Table 16: Novice 2012 participants' self-reported computer and Internet experience.

Participant	Hours per week on the Internet	Scale: 1:None - 5: A Great Deal		Scale: 1:Not Difficult At All - 5:Very Difficult			Scale: 1:Never - 5:Very Often		
		Overall experience with computers	Overall experience with Internet	Difficulty in learning to navigate new Web sites	Difficulty in manipulating a window	Difficulty in using and navigating the Internet	How often working with data through a computer	During last month, how many times did you do complex analyses of data using a computer?	How often using the Internet or Web sites to find information
1	33	5	5	2	1	1	-	0	-
2	28	3	5	2	2	1	-	1	-
3	30	3	3	1	1	1	-	0	-
9	NA	NA	5	1	1	NA	-	NA	-
10	NA	NA	4	2	1	NA	-	NA	-
11	NA	NA	4	1	1	NA	-	NA	-
12	29	3	3	2	1	2	-	0	-
13	22	4	5	1	1	1	-	0	-
17	18	5	5	1	1	1	-	0	-
Average across participants		3.83	4.33	1.44	1.11	1.17	-	0.17	-

- Indicates that this question was not asked, information is collected in other question or during screener.

- Please note some of the questions asked have been changed or have had their scales changed.

Table 17: Expert Baseline participants' self-reported computer and Internet experience (2009).

Participant	Hours per day on the Internet	Scale: 1:No Experience - 9:Very Experienced		Scale: 1:Not Comfortable - 5:Comfortable			Scale: 1:Never - 5:Very Often		
		Overall experience with computers	Overall experience with Internet	Comfort in learning to navigate new Web sites	Comfort in manipulating a window	Comfort in using and navigating the Internet	How often working with data through a computer	How often working with complex analyses of data through a computer	How often using the Internet or Web sites to find information
1	4-6	9	9	5	5	5	5	5	5
2	1-3	9	9	5	5	5	5	4	5
3	4-6	9	9	5	5	5	5	4	5
4	1-3	8	8	4	4	4	4	4	5
5	4-6	9	9	5	5	5	5	5	5
6	4-6	7	6	4	4	5	3	2	4
7	1-3	7	7	4	5	4	5	4	4
8	1-3	7	7	4	5	5	5	5	4
9	4-6	7	8	5	5	5	5	5	5
10	1-3	7	7	4	4	5	5	5	5
11	7 or more	6	6	4	4	4	5	4	5
12	4-6	7	7	5	5	5	5	4	5
13 (Grad 6)	1-3	8	8	5	5	5	4	3	5

Average across participants		4.54	4.69	4.77	4.69	4.15	4.77	4.54	4.69
-----------------------------	--	------	------	------	------	------	------	------	------

DRAFT

Table 18: Expert 2012 Follow Up participants' self-reported computer and Internet experience.

Participant	Hours per week on the Internet	Scale: 1:None - 5: A Great Deal		Scale: 1:Not Difficult At All - 5:Very Difficult			Scale: 1:Never - 5:Very Often		
		Overall experience with computers	Overall experience with Internet	Difficulty in learning to navigate new Web sites	Hours per week on the Internet	Overall experience with computers	How often working with data through a computer	How often working with complex analyses of data through a computer	How often using the Internet or Web sites to find information
4	28	4	5	1	1	1	-	0	-
5	26	4	4	1	1	1	-	15	-
6	17	5	5	1	2	1	-	50	-
7	23	4	5	1	1	1	-	20	-
8	NA	NA	5	1	1	NA	-	NA	-
14	29	4	5	1	1	1	-	3	-
15	26	5	5	1	1	1	-	450	-
16	27	5	5	2	1	1	-	0	-
18	14	5	5	2	1	1	-	5	-
Average across participants	23.75	4.50	4.89	1.22	1.11	1.00	-	67.88	-

- Indicates that this question was not asked on the Background questionnaire, information was collected in other questions or during screener.

-Please note some of the questions asked have been changed or have had their scales changed.

Appendix C: Protocol

General Introduction for Baseline AFF Web Site²⁰

Thank you for your time today. My name is (Test Administrator). I work here in the U.S. Census Bureau Usability Lab, and I will be working with you today. In this lab, we evaluate how easy or difficult Census products are to use. We bring in people like you who are potential users of our products to try them out while there is still time to make changes to them. What works well, we keep. When potential users such as you have difficulty with something, we have an opportunity to fix it.

Today, we will be evaluating the American Factfinder Web site by having you work on several tasks. There are two parts to our session. First, you will complete 10 tasks using the American FactFinder Web site. Then, at the end of the session, you'll fill out a questionnaire about your experience during the session. The entire session should last about an hour.

Before we start, there is a form I would like you to read and sign. It explains the purpose of today's session and your rights as a participant. It also informs you that we would like to videotape the session to get an accurate record of your feedback. Only those of us connected with the project will review the tape and it will be used solely for research purposes. Your name will not be associated with the tape or any of the other data collected during the session.

[Hand consent form; give time to read and sign; sign own name and date.]

Thank you.

Before we start, I want to tell you that you can't make a mistake or do anything wrong here. Difficulties you may run into reflect the design of the Web site, not your skills or abilities. This product is intended for people like you. Where it works well, that's great. But if you have a problem using parts of it, do not blame yourself. We are going to use your comments and data as well as comments and data from the other participants to give feedback to the developers of the site. Your comments and thoughts will help the developers make changes to improve the site. I did not create the site, so please do not feel like you have to hold back on your thoughts to be polite. We are not evaluating you or your skills, but rather you

²⁰ The protocol varied only slightly from the baseline to the follow up studies.

are helping us see how well the site works. Please share both your positive and negative reactions to the site. And remember, there are no right or wrong answers.

In addition to the tasks I am about to give you, we are also going to do some eye tracking to record where you are looking on the screen. It will be very simple. In a moment we will do a very short simple task that will allow the computer to find your eyes.

I am going to give you 10 tasks to work on. Your comments are very important to us. I'd like you to tell me your impressions and thoughts as you work through the tasks. So give me your open impressions, both good and bad of what you see and what you experience on the site.

While you are working, I'd like you to think aloud. In other words, I'd like you to tell me what you are thinking, describe the steps you are taking, what you are expecting to see, why you are doing what you are doing, what you are going to do, and why. Tell me why you clicked on a link or where you expect the link to take you. Tell me if you are looking for something and what it is and whether you can find it or not.

Ok, now we will practice thinking aloud. ***[open www.craigslist.com and do practice question.]***

Ok, that was fine. Do you have any questions about the "think-aloud" process we've just practiced and that I have asked you to use?

Ok, let's do the eye-tracking calibration now. I am going to have you position yourself in front of the screen so that you can see your nose in the reflection at the bottom of the monitor. To calibrate your eyes, please follow the blue dot across the screen with your eyes.

Now that we have your eyes calibrated, we are ready to begin. Here are your task questions. When we are ready to begin, you will be working with them. Also, here is the questionnaire you will complete at the very end. I will tell you when to complete this.

[Set the task questions and questionnaire by participant.]

I am going to go around to the other room and do a sound check. While I am doing that, please take a moment to complete this computer usage and internet experience questionnaire. I am going to leave, but we will still be able to communicate through a series of microphones and speakers. Do you have any questions?

[Hand computer experience form, and go into control room.]

[Start video recording.]

For the next 60 minutes, I will ask you to work on the 10 tasks. We will begin each task by having you read the task question out loud. As you work, remember to talk to me about what you are thinking and feeling. Once you have found the information you are looking for please state your answer aloud. For example, say, “My answer is ---” or “This is my final answer” and please write your answer on the sheet too. After each task, I will return you to the page where you can begin the next task.

Appendix D: Consent Form



Consent Form For Individual Participants Usability Testing of the American FactFinder Web Site

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 and online surveys and questionnaires in order to obtain the best information possible.

You have volunteered to take part in a study to improve the usability of the American FactFinder Web site. 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. Only staff directly involved in the research project will have access to the tapes. 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.

Participant's Name: _____

Participant's Signature: _____ Date: _____

Researcher's Name: _____

Researcher's Signature: _____ Date: _____

Appendix E. Questionnaire on Computer Use and Internet Experience

1. Do you use a computer at home or at work or both?

(Check all that apply.)

Home

Work

2. If you have a computer at home,

a. What kind of modem do you use at home?

Dial up

Cable

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	3	4	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.

Not Comfortable

Comfortable

6. How comfortable are you in learning to navigate new Web sites?

1 2 3 4 5

7. Computer windows can minimize, resize, and scroll through. How *comfortable* are you in manipulating a window?

1 2 3 4 5

8. How *comfortable* are you using and navigating through the Internet?

1 2 3 4 5

Never

Very Often

9. How *often* do you work with any type of data through a computer?

1 2 3 4 5

10. How *often* do you perform complex analyses of data through a computer?

1 2 3 4 5

11. How *often* 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 *familiar* are you with the Census (terms, data, etc)?

1 2 3 4 5

13. How *familiar* are you with the current American Factfinder Web site (terms, data, etc.)?

1 2 3 4 5

Appendix F. Final Satisfaction Questionnaire Baseline and 2011 Follow Up

Please circle the numbers that most appropriately reflect your impressions about using this Web -based instrument.

- | | | | |
|---|-------------------|-------------|----------------|
| 1. Overall reaction to the Web site: | terrible | wonderful | |
| | 1 2 3 4 5 6 7 8 9 | | not applicable |
| 2. Screen layouts: | confusing | clear | |
| | 1 2 3 4 5 6 7 8 9 | | not applicable |
| 3. Use of terminology throughout the Web site: | inconsistent | consistent | |
| | 1 2 3 4 5 6 7 8 9 | | not applicable |
| 4. Information displayed on the screens: | inadequate | adequate | |
| | 1 2 3 4 5 6 7 8 9 | | not applicable |
| 5. Arrangement of information on the screen: | illogical | logical | |
| | 1 2 3 4 5 6 7 8 9 | | not applicable |
| 6. Tasks can be performed in a straight-forward manner: | never | always | |
| | 1 2 3 4 5 6 7 8 9 | | not applicable |
| 7. Organization of information on the site: | confusing | clear | |
| | 1 2 3 4 5 6 7 8 9 | | not applicable |
| 8. Forward navigation: | impossible | easy | |
| | 1 2 3 4 5 6 7 8 9 | | not applicable |
| 9. Overall experience of finding information: | difficult | easy | |
| | 1 2 3 4 5 6 7 8 9 | | not applicable |
| 10. Census Bureau-specific terminology: | too frequent | appropriate | |
| | 1 2 3 4 5 6 7 8 9 | | |

Additional Comments:

Final Satisfaction Questionnaire: 2012 Follow Up

Satisfaction Questionnaire

Please read each statement carefully. Rate each statement using the words listed above the endpoints of the scale that most appropriately reflect your impressions about using this Web-based instrument.

Screen layouts.

Confusing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Clear
	1	2	3	4	5	6	7

Use of terminology throughout the Web site.

Inconsistent	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Consistent
	1	2	3	4	5	6	7

Information displayed on the screens.

Inadequate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Adequate
	1	2	3	4	5	6	7

Information displayed on the screens.

Inadequate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Adequate
	1	2	3	4	5	6	7

Arrangement of information on the screen.

Illogical	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Logical
	1	2	3	4	5	6	7

Tasks can be performed in a straight-forward manner.

Never	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Always
	1	2	3	4	5	6	7

Organization of information on the Web site.

Confusing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Clear
	1	2	3	4	5	6	7

Forward navigation.

Impossible	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Easy
	1	2	3	4	5	6	7	

Backward navigation.

Impossible	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Easy
	1	2	3	4	5	6	7	

Overall experience of finding information.

Difficult	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Easy
	1	2	3	4	5	6	7	

Census Bureau-specific terminology.

Too frequent	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Appropriate
	1	2	3	4	5	6	7	

Overall experience of finding information.

Difficult	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Easy
	1	2	3	4	5	6	7	

Census Bureau-specific terminology.

Too frequent	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Appropriate
	1	2	3	4	5	6	7	

Overall reaction to the Web site.

Terrible	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Wonderful
	1	2	3	4	5	6	7	

Frustrating	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Satisfying
	1	2	3	4	5	6	7	

Difficult	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Easy
	1	2	3	4	5	6	7	

SUBMIT

Appendix G: Debriefing Questionnaire for Baseline and Follow Up AFF Usability Tests

1. Can you walk me through your thinking on why you marked (a particular QUIS item) especially low/high? (Do this for several low/high QUIS ratings).
2. What do you think of the basic screen layout?
 - a. Overall?
 - b. Colors?
 - c. Links and information around the center pane?
 - d. Context of the information on the homepage?
 - e. Other?
3. What do you think of the navigational methods?
 - a. Previous and Next buttons?
 - b. Drop down menus across the center navigation?
 - c. Links on the sides of the pages?
 - d. Other?
4. What did you like best about the Web site?
5. What did you like least about the Web site?
6. Is there anything that you feel should be changed?
7. Is there anything that you feel should stay the same?
8. How easy or difficult do you feel it was to complete the tasks? What made a task easy or difficult?
9. Is there anything you would like to mention that we haven't talked about?

10. Additional Comments:

DRAFT

Appendix H: Participant Accuracy Scores

Table 19. Novice 2008 Baseline Accuracy Scores

	TASK										Overall Success Rate	Simple Tasks Success Rate	Complex Tasks Success Rate
	Simple Tasks					Complex Tasks							
Participant	1	2	3	4	5	6	7	8	9	10			
1	success	success	success	success	failure*	success	failure*	success	failure	success	70%	71%	67%
2	success	success	success	success	success	success	success	success	success	success	100%	100%	100%
3	failure	failure*	success	failure*	failure	failure	failure***	failure*	failure*	failure*	10%	14%	0%
4	success	failure*	success	success	success	Failure	failure***	failure	failure	ERROR	44%	57%	0%
5	success	success	success	success	success	Success	success	failure	failure	success	80%	100%	33%
6	success	success	failure	failure	failure*	Failure	failure***	failure	success	failure	30%	29%	33%
7	success	failure*	failure	success	success	Success	failure*	failure	failure	failure	40%	57%	0%
9	success	success	success	success	success	success**	success	failure*	failure	failure^	70%	100%	0%
10	success	failure	success	success	success	success	failure***	failure	failure	failure	50%	71%	0%
Success by Task	89%	56%	78%	78%	67%	67%	33%	22%	22%	38%	55%	67%	27%

* Task was stopped by the Test Administrator or by the Participant.

** Task completed, but with Test Administrator probes. See Appendix B for details.

*** Participant stopped zooming in on the map when in the vicinity.

^ Participant was correct, but had guessed based on '06 data. He said, "It probably hasn't changed much in a year"

Table 20. Novice 2011 Accuracy Scores

	TASK						Overall success rate	Simple task success rate	Complex task success rate
	Simple Tasks			Complex Tasks					
Participant	1	2	6	7	8	10			
1	success	failure	failure	success	failure	success	50%	50%	50%
2	failure	failure	failure	failure	failure	failure	0%	0%	0%
3	failure	failure	failure	failure	failure	failure	0%	0%	0%
4	success	success	50% success**	success	failure	success	75%	88%	50%
5	failure	failure	failure	failure	failure	success	17%	0%	50%
7	failure	failure	failure	failure	failure	failure	0%	0%	0%
8	success	failure	failure	failure	failure	failure	17%	25%	0%
9	success	75% success*	success	success	success	success	96%	94%	100%
10	failure	failure	failure	error on site***	failure	failure	0%	0%	0%
Success by task	44%	19%	17%	38%	11%	44%	29%	29%	28%

* Participant got two of the three states correct and knew how to print the information.

** Participant found the correct information but could not map it.

*** It seemed that the participant was on the right track to finding the information, but the Web site was freezing when he tried to get to the maps.

Table 21: Novice 2012 Accuracy Scores

	TASK										Overall success rate	Simple task success rate	Complex task success rate
	Simple Tasks					Complex Tasks							
Participant	1	2	3	4	5	6	7	8	9	10			
1	success	failure	failure	failure	failure	NA	NA	NA	NA	NA	10%	20%	NA
2	failure	NA	NA	NA	NA	failure	failure	failure	failure	NA	0%	0%	0%
3	success	failure	failure	failure	success	failure	NA	NA	NA	NA	10%	20%	NA
9	success	failure	failure	failure	failure	failure	failure	failure	failure	success	20%	14%	33%
10	failure	failure	success	success	failure	failure	failure	failure	failure	success	30%	29%	33%
11	success	failure	failure	failure	failure	success	failure	failure	failure	success	20%	29%	33%
12	success	failure	failure	failure	failure	50%	failure	failure	failure	NA	15%	19%	0%
13	success	failure	failure	success	NA	NA	success	50%	failure	success	40%	50%	50%
17	success	failure	failure	failure	failure	75%*	success	success	NA	NA	38%	34%	100%
20	success	failure	failure	failure	failure	success	failure	NA	NA	50%*	25%	29%	50%
Success by task	80%	0%	11%	22%	0%	32%	25%	17%	0%	90%	21%	24%	38%

* Found the correct table but read the wrong number

NA = participant did not do the task, due to time limitations

Table 22: Expert Baseline Accuracy Scores

Participant	TASK						Overall success rate
	1	2	3	4	5	6	
1	failure	success	success	success	success	success	90%
2	success	50%	success	success	failure	failure	55%
3	success	success	success	success	success	success	100%
4	failure	success	failure	failure	failure	50%	27%
5	50%	failure	failure	failure	50%	success	36%
6	50%	failure	failure	failure	NA	NA	17%
7	failure	failure	failure	NA	NA	NA	0%
8	50%	failure	failure	failure	success	NA	33%
9	50%	success	success	success	NA	failure	67%
10	NA	NA	NA	NA	NA	NA	NA
11	50%	success	failure	50%	NA	failure	44%
12	50%	failure	NA	failure	success	NA	38%
13	failure	50%	failure	failure	success	failure	27%
Success by task	42%	50%	36%	41%	69%	44%	45%

NA = participant did not do the task, due to time limitations

Table 23: Expert 2012 Follow Up Accuracy Scores

Participant	TASK						Total
	1	2	3	4	5	6	
4	failure	failure	failure	failure	failure	failure	0%
5	success	success	success	success	success	success	100%
6	success	failure	success	success	success	failure	67%
7	success	success	success	success	success	success	100%
8	failure	failure	failure	success	failure	failure	17%
14	success	success	50%	success	success	success	92%
15	failure	failure	failure	failure	success	NA	20%
16	failure	failure	failure	failure	NA	NA	0%
18	success	success	failure	success	success	failure	67%
19	failure	failure	75%	success	50%	failure	38%
Success by task	50%	40%	43%	70%	72%	38%	50%

NA = participant did not do the task, due to time limitations

Appendix I: Participant Efficiency Scores

Table 24. Novice 2008 Baseline Efficiency Scores: Time in minutes (m) and seconds (s) to complete each task

Participant	TASK										Mean Time by Participant		
	Simple Tasks					Complex Tasks							
	1	2	3	4	5	6	7	8	9	10	Total	Simple	Complex
1	2m4s	2m45s	52s	32s	7m31s*	3m5s	8m9s*	4m11s	3m38s*	1m38s	2m10s	1m52s	2m55s
2	28s	1m54s	53s	29s	6m45s	4m23s	4m11s	11m51s	7m42s	2m57s	4m9s	2m43s	7m30s
3	3m50s*	8m30s*	49s	7m56s*	6m40s*	7m16s	5m31s*	8m39s*	9m28s*	13m51s*	3m58s	3m58s	NA
4	2m17s	6m9s*	3m23s	35s	57s	2m55s*	4m24s*	3m16s*	2m48s*	ERROR	1m48s	1m48s	NA
5	2m54s	1m14s	1m9s	32s	3m29s	1m18s	5m33s	3m18s*	5m22s*	6m50s	2m52s	2m18s	6m50s
6	1m10s	2m27s	2m31s*	6m*	10m29s*	14m30s*	2m56s*	5m8s*	13m56s	2m58s	5m8s	1m49s	8m27s
7	34s	6m23s*	2m12s*	38s	1m37s	8m7s	10m39s*	4m48s*	4m15s*	6m33s*	2m44s	2m44s	NA
9	37s	6m51s	3m58s	1m16s	1m22s	10m23s	2m35s	10m47s*	2m19s*	3m	3m45s	3m52s	3m
10	3m58s	4m36s*	2m40s	32s	6m12s	2m17s	3m21s*	9m49s*	4m26s*	2m25s*	3m8s	3m8s	NA
Mean Time by Question (correct responses only)	1m34s	1m41s	1m58s	39s	3m24s	5m12s	4m6s	8m1s	10m49s	3m29s	3m19s	2m45s	6m7s

* Task Failure: time not included in mean calculation.

Table 25. Novice 2011 Follow Up Efficiency Scores: Time in minutes (m) and seconds (s) to complete each task

Participant	TASK*****						Mean Time by Participant		
	Simple Tasks			Complex Tasks			Total	Simple	Complex
	1	2	6	7	8	10			
1	7m49s	12m11s*	9m4s*	3m35s	7m34s*	5m42s	7m39s	8m10s	6m38s
2	5m6s*	13m32s*	3m44s*	5m58s*	9m53s*	6m44s*	7m29s	7m5s	8m19s
3	5m22s*	4m11s*	10m56s*	4m15s*	8m41s*	14m6s*	7m55s	6m11s	11m24s
4	2m7s	10m26s	14m29s	6m54s	10m22s*	4m40s	8m10s	8m29s	7m31s
5	6m47s*	6m25s*	11m30s*	6m1s*	5m32s*	6m25s	6m47s	7m41s	4m59s
7	7m24s*	4m47s*	8m16s*	9m24s*	3m12s*	10m39s*	7m17s	7m28s	6m56s
8	5m9s	8m37s*	9m29s*	9m38s*	10m2s*	3m10s*	7m40s	8m13s	6m36s
9	0m45s	12m53s*	4m38s	11m48s	4m7s	2m9s	6m3s	7m31s	3m8s
10	3m11s*	10m55s*	14m8s*	8m37s*	10m33s*	10m54s*	9m43s	9m13s	10m44s
Mean Time by Question	4m51s	9m20s	9m35s	7m21s	7m33s	7m10s	7m38s	7m47s	7m21s
Mean Time by Question, correct responses only	3m58s	10m26s**	9m34s	7m26s	4m7s**	4m44s	6m8s	6m46s***	4m37s****

* Task Failure: Time not included in mean calculation for correct responses only.

** Based on one correct response out of nine possible correct responses.

*** Based on 10 out of 36 possible correct simple task responses.

**** Based on five out of 18 possible correct complex task response

**** Tasks 3, 4, 5, and 9 were not administered since the data was not available in American FactFinder

Table 26: Novice 2012 Follow Up Efficiency Scores: Time in minutes (m) and seconds (s) to complete each task

	TASK										Mean Time by Participant		
	Simple Tasks					Complex Tasks							
Participant	1	2	3	4	5	6	7	8	9	10	Total	Simple	Complex
1	3m35s	5m58s*	9m30s*	7m25s*	6m14s*	NA	NA	NA	NA	NA	6m32s	6m32s	NA
2	5m01s*	NA	NA	NA	NA	8m52s*	7m27s*	6m14s*	5m48s*	NA	6m40s	7m06s	6m01s
3	03m24s	7m13s*	6m39s*	5m10s*	7m47s*	10m05s*	NA	NA	NA	NA	6m43s	6m43s	NA
9	1m10s	6m46s*	7m45s*	5m16s*	5m54s*	5m56s*	7m52s*	4m34s*	4m48s*	4m48s	5m28s	5m48s	4m43s
10	5m03s*	6m43s*	6m35s*	2m29s	5m28s*	6m40s*	6m22s*	4m11s*	4m40s*	4m42s	5m17s	5m37s	4m31s
11	1m36s	4m26s*	6m00s*	5m41s*	4m46s*	7m40s*	4m24s*	5m58s*	5m44s*	2m42s	4m53s	4m56s	4m48s
12	2m10s	5m29s*	8m04s*	7m40s*	6m30s*	7m43s*	5m45s*	5m45s*	7m54s*	NA	6m20s	6m11s	6m49s
13	1m10s	9m07s*	5m41s*	3m00s	NA	NA	7m54s	4m26s*	5m51s*	5m28s	5m19s	5m22s	5m15s
17	1m59s	6m43s*	5m33s*	5m14s*	3m19s*	6m*	7m38s	8m	NA	NA	5m33s	5m12s	8m00s
20	5m34s	4m54s*	6m45s*	6m42s*	5m05s*	9m58s	6m51s*	NA	NA	NA	6m10s	6m32s	3m38s
Mean Time by Question	3m04s	6m22s	6m57s	5m24s	5m38s	7m51s	6m46s	5m35s	5m48s	4m15s	5m53s	6m	5m28s
Mean Time by Question, correct responses only	2m34s	-	-	2m45s	-	9m58s**	7m46s	8m	-	4m25s	3m59s	3m26s***	5m08s****

* Task Failure: Time not included in mean calculation for correct responses only.

** Based on one correct response out of ten possible correct responses.

*** Based on 13 out of 61 possible correct simple task responses.

**** Based on five out of 18 possible correct complex task response

Table 27: Expert Baseline Efficiency Scores: Time in minutes (m) and seconds (s) to complete each task

Participant	TASK						Total	Correct Only
	1	2	3	4	5	6		
1	10m47s*	5m52s	4m46s	4m47s	7m18s	8m19s	6m58s	6m12s
2	6m27s	5m59s*	3m38s	7m45s	7m53s*	7m39s*	6m33s	5m56s
3	23m03s	13m55s	4m50s	5m59s	9m28s	9m37s	11m08s	11m08s
4	5m23s*	4m35s	10m47s*	6m54s*	11m43s*	9m08s*	8m05s	4m35s
5	7m05s*	1m35s*	2m16s*	5m26s*	11m58s*	12m40s	6m50s	12m40s
6	7m28s*	9m23s*	9m40s*	9m36s*	NA	NA	9m01s	NA
7	6m*	5m24s*	4m33s*	NA	NA	NA	5m19s	NA
8	16m48s*	13m26s*	8m47s*	5m19s*	13m26s	NA	11m33s	13m26s
9	12m33s*	6m14s	8m09s	11m07s	NA	9m52s*	9m35s	8m30s
10	NA	NA	NA	NA	NA	NA	NA	NA
11	13m03s*	9m13s	2m51s*	10m09s*	NA	11m41s*	9m23s	9m13s
12	11m30s*	12m10s*	Skip	8m55s*	8m59s	NA	10m23s	8m59s
13	12m46s*	4m56s*	9m47s*	14m11s*	5m04s*	16m34s	10m33s	NA
Mean Time by Question	11m04s	07m43s	06m22s	08m11s	09m28s	10m41s	8m55s	

Mean Time by Question, correct responses only	14m45s	07m57s	05m20s	07m24s	09m47s	10m12s		9m14s***
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* Task Failure: Time not included in mean calculation for correct responses only. *** Based on 22 out of 56 possible correct simple task responses.

Table 28: Expert 2012 Follow Up: Time in minutes (m) and seconds (s) to complete each task

Participant	TASK						Total	Correct Only
	1	2	3	4	5	6		
4	5m29s*	3m54s*	4m08s*	4m47s*	5m09s*	3m18s*	4m27s	NA
5	6m13s	6m10s	8m08s	3m54s	5m59s	6m19s	6m07s	6m07s
6	6m43s	7m49s*	9m33s*	2m24s	11m17s	6m56s*	7m27s	6m48s
7	11m49s	7m35s	5m	3m19s	5m20s	7m27s*	6m45s	6m36s
8	12m21s*	9m20s*	11m22s*	7m46s	10m41s*	06m05s*	9m35s	7m46s
14	5m28s	5m21s	6m30s*	3m15s	6m08s	3m31s	5m02s	4m44s
15	7m47s*	10m43s*	5m39s*	6m23s*	14m25s	NA	8m59s	14m25s
16	17m07s*	11m27s	8m30s*	11m10s	NA	NA	12m06s	NA
18	5m09s	6m47s	9m23s*	3m44s	6m28s	7m07s*	6m26s	5m32s
19	6m14s*	5m44s*	11m45s*	8m38s*	6m34s*	4m16s*	7m11s	8m38s
Mean Time by Question	8m26s	7m29s	7m59s	5m32s	8m	5m37s	7m10s	
Mean Time by Question, correct responses only	7m04s	6m28s	6m34s	4m42s	8m16s	4m55s		6m20s***

* Task Failure: Time not included in mean calculation for correct responses only.

***** Based on 26 out of 57 possible correct simple task responses.**

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Appendix J: Participant Satisfaction Scores

Table 29. Novice 2008 Baseline Satisfaction Results (1 = low, 9 = high).

Participant	Overall reaction to site: terrible - wonderful	Screen layouts: confusing - clear	Use of terminology throughout site: inconsistent - consistent	Information displayed on the screens: inadequate - adequate	Arrangement of information on the screens: illogical - logical	Tasks can be performed in a straight-forward manner: never - always	Organization of information on the site: confusing - clear	Forward navigation: impossible - easy	Overall experience of finding information: difficult - easy	Census Bureau specific terminology: too frequent - appropriate
1	7	9	8	8	8	6	8	8	7	8
2	6	6	8	7	5	5	5	4	5	3
3	5	5	4	5	7	3	3	4	3	5
4	6	4	6	6	3	7	9	9	8	9
5	5	5	4	4	4	7	7	6	6	8
6	5	5	5	6	5	4	4	7	4	6
7	7	7	7	9	9	6	9	7	6	6
9	7	7	6	6	2	4	6	8	5	7
10	8	8	8	8	5	7	6	8	8	9
Mean Satisfaction Rating by Question	6.22	6.22	6.22	6.56	5.33	5.44	6.33	6.78	5.78	6.78

Table 30. Novice 2011 Follow-Up Satisfaction Results (1 = low, 9 = high).

Participant	Satisfaction Questionnaire Item									
	Overall reaction to site: terrible - wonderful	Screen layouts: confusing - clear	Use of terminology throughout site: inconsistent - consistent	Information displayed on the screens: inadequate - adequate	Arrangement of information on the screens: illogical - logical	Tasks can be performed in a straight-forward manner: never - always	Organization of information on the site: confusing - clear	Forward navigation: impossible - easy	Overall experience of finding information: difficult - easy	Census Bureau specific terminology: too frequent - appropriate
1	2	3	2	2	2	3	2	5	1	3
2	2	1	6	1	7	1	1	3	1	1
3	2	2	2	2	7	1	2	n/a	1	1
4	7	3	8	6	2	5	3	7	4	8
5	5	7	9	7	3	3	3	9	2	7
7	3	1	6	1	1	1	1	8	1	8
8	2	1	2	2	3	1	2	4	1	3
9	4	5	7	5	5	6	7	6	6	6
10	3	3	9	4	6	3	2	7	2	4
Mean Satisfaction Rating by Question	3.33	2.89	5.67	3.33	4.00	2.67	2.56	6.13	2.11	4.56

Table 31: Novice 2012 Follow-Up Satisfaction Results (1 = low, 9 = high).

Participant	Satisfaction Questionnaire Item									
	Overall reaction to site: terrible - wonderful	Screen layouts: confusing - clear	Use of terminology throughout site: inconsistent - consistent	Information displayed on the screens: inadequate - adequate	Arrangement of information on the screens: illogical - logical	Tasks can be performed in a straight-forward manner: never - always	Organization of information on the site: confusing - clear	Forward navigation: impossible - easy	Overall experience of finding information: difficult - easy	Census Bureau specific terminology: too frequent - appropriate
1	7	7	7	7	3	2	5	4	1	5
2	7	6	4	9	3	2	7	5	1	5
3	3	2	4	7	8	5	3	6	3	3
9	2	3	5	1	8	2	2	8	2	3
10	1	5	5	4	8	2	2	4	1	5
11	2	2	8	3	8	2	5	6	2	7
12	2	5	7	2	8	2	2	3	1	2
13	3	3	2	2	5	4	4	5	2	3
17	2	4	4	3	3	3	4	3	1	2
20	3	4	4	6	7	2	2	7	2	4
Mean Satisfaction Rating by Question	3.20	4.10	5.00	4.40	6.10	2.60	3.60	5.10	1.60	3.90

Table 32: Expert Baseline Satisfaction Results (1 = low, 9 = high).

Participant	Satisfaction Questionnaire Item									
	Overall reaction to site: terrible - wonderful	Screen layouts: confusing - clear	Use of terminology throughout site: inconsistent - consistent	Information displayed on the screens: inadequate - adequate	Arrangement of information on the screens: illogical - logical	Tasks can be performed in a straight-forward manner: never - always	Organization of information on the site: confusing - clear	Forward navigation: impossible - easy	Overall experience of finding information: difficult - easy	Census Bureau specific terminology: too frequent - appropriate
1	7	6	7	8	6	8	8	7	7	5
2	5	3	2	8	4	4	3	4	5	8
3	7	7	7	7	3	5	6	6	5	7
4	7	7	8	7	2	6	7	9	7	9
5	7	7	8	9	8	7	7	8	8	8
6	6	6	4	6	7	5	6	6	5	6
7	7	7	8	6	7	6	6	6	6	7
8	6	6	8	7	5	5	7	7	7	6
9	8	8	7	8	2	8	7	9	5	7
10	*	*	*	*	*	*	*	*	*	*
11	5	6	6	6	5	5	5	5	5	5
12	7	7	7	6	6	5	6	5	6	7
13	6	3	8	5	7	3	7	5	2	4
Mean Satisfaction Rating by Question	6.5	6.08	6.67	6.92	5.17	5.58	6.25	6.42	5.67	6.58

Table 33: Expert 2012 Follow-Up Satisfaction Results (1 = low, 9 = high).

Participant	Satisfaction Questionnaire Item									
	Overall reaction to site: terrible - wonderful	Screen layouts: confusing - clear	Use of terminology throughout site: inconsistent - consistent	Information displayed on the screens: inadequate - adequate	Arrangement of information on the screens: illogical - logical	Tasks can be performed in a straight-forward manner: never - always	Organization of information on the site: confusing - clear	Forward navigation: impossible - easy	Overall experience of finding information: difficult - easy	Census Bureau specific terminology: too frequent - appropriate
4	2	4	5	5	8	3	3	2	3	5
5	7	6	5	6	6	5	6	6	7	4
6	4	7	1	3	4	4	3	7	2	3
7	7	7	5	7	3	5	5	8	6	4
8	2	2	3	1	4	2	3	5	1	6
14	4	4	7	3	7	2	5	4	4	5
15	6	6	5	5	6	5	7	7	6	6
16	4	4	6	6	7	1	4	5	2	5
18	7	8	8	7	3	6	7	7	4	4
19	3	5	5	7	3	5	2	4	2	7
Mean Satisfaction Rating by Question	4.60	5.30	5.00	5.00	5.10	3.80	4.50	5.50	3.70	4.90