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**A Usability Evaluation of the Monthly and Annual Wholesale
Trade Survey Web site**

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A USABILITY EVALUATION of the MONTHLY and ANNUAL WHOLESALE TRADE SURVEY WEB SITE

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Abstract

In December 2007 and April 2008, the U.S. Census Bureau conducted usability evaluations on the Wholesale Trade Survey Web site. Previously, the Monthly and Annual Wholesale Trade Survey data and information were available on two Web sites. The first round of usability testing in December 2007 evaluated the new combined user interface before the Web site's release to the public. Seven internal participants from the Census Bureau were recruited to help evaluate the user interface. Prior to the testing, participants completed an Internet experience form on which they reported their experience navigating Web sites and noted whether they had prior experience with the older, separate, Monthly or Annual Wholesale Trade Survey Web sites. From the first round of testing, the Usability Lab uncovered issues with the navigation and wording of the Web site. Prior to the Web site's release to the public, changes were made to the user interface. The second round of usability testing was conducted in April 2008. Eight external participants were recruited from a database maintained by the Usability Lab to help evaluate the revised user interface. The methods used for the second round of testing were identical to the methods used during the first round of testing. This round of usability testing uncovered new issues and provided support/discounting evidence for the recommendations from the first round of usability testing. This report provides a summary of the findings of the usability evaluations. Recommendations are provided to improve the usability of the user interface in terms of user success and satisfaction. All recommendations were discussed with the project's sponsor.

Executive Summary

In December 2007 and April 2008, members of the Statistical Research Division's usability staff conducted two rounds of usability testing on the Monthly and Annual Wholesale Trade Survey Web site. The testing was completed at the U.S. Census Bureau in Washington D.C. at the Census Bureau's Usability Laboratory.

Purpose. The primary purpose of the study was to identify elements of the user-interface design that were problematic and led to less successful and satisfying experiences for the test participants using the Web site.

Method. The methods used for each round of testing were similar. Before completing tasks designed for the usability study, participants completed an Internet experience questionnaire to verify the participant had experience navigating Web sites and using a computer. Participants worked through tasks designed specifically for the usability study. Eye movements of the participants were recorded using the Tobii eye-tracking system and the ClearView software. For the first round of testing, the eye-tracking system was able to calibrate and record four out of seven participants' eyes and eye movements. During the second round of testing, four out of eight participants' eyes were calibrated and recorded. Based on other studies conducted in the lab, this rate of calibration was not unusual.

While completing the tasks, the participants were asked to think aloud by verbalizing their thoughts and actions. This technique is used to understand the participant's cognitive processes as they interact with a user interface. If a participant became quiet, the test administrator prompted the participant to continue to think aloud.

As the participants completed the tasks, the analyst took notes on the participant's comments and actions. To conclude the session, participants completed a user satisfaction questionnaire and answered debriefing questions.

Round one

In December of 2007, seven internal participants participated in a task-based usability evaluation of a high-fidelity prototype of the Monthly and Annual Wholesale Trade Survey Web site.

Results: The full report provides a complete summary of findings and recommendations for issues uncovered during the usability testing. The following summary notes some of the high-priority issues and recommendations to resolve them:

1. The text throughout the Web site was dense and difficult for users to sift through. Many participants struggled to find information while sifting through the dense text.

Recommendation: Write in a style that is more appropriate for the Web. Use bulleted lists instead of long paragraphs. The Web site should communicate key concepts with as few words as possible.

2. The functionality of the links on the top navigation bar was unclear. It was not apparent to the test participants that the labels on the top navigation buttons were links that took users to new Web pages.

Recommendation: Redesign the top navigation bar to help users better understand that the labels accompanying the dropdown menu are also links to different areas of the Web site, or eliminate the dropdown functionality.

Round two

A revised version of the Wholesale Web site was released to the public in January 2008. Prior to the release, the Wholesale Trade Survey sponsor implemented recommendations from the first round of testing and made additional changes to meet their needs. For a complete list of changes, refer to the full report. In April 2008, the Usability Laboratory conducted a second round of usability testing on the revised, public Wholesale Web site.

Results: This report provides a summary of findings and recommendations for issues uncovered during the second round of usability testing. Usability issues of high importance and recommendations for resolving the issues are summarized below:

1. The terminology used in the top navigation is technical, and some of the words are outdated. Words such as Overview, Glossary, and Methodology caused participants to struggle. It is important to design a Web site's terminology for the novice user.

Recommendation: Eliminate jargon and rename the links in the top navigation bar so the terminology is more meaningful to novice users.

2. The content on the top navigation does not stand out to users. The top navigation is small and centered in the middle of the page with a large amount of dead space on each side of the links.

Recommendation: Make the top navigation more visible by increasing the font size, and decreasing the amount of dead space to the left and right of the top navigation bar.

3. The contact information is unclear and is in paragraph form. The email address is only visible by hovering over the hyperlinked word 'email' and looking in the bottom left hand corner in the browser window or by clicking on the link.

Recommendation: Rewrite the contact information so it is more suitable for the Web. This includes short bulleted sentences (Redish, 2007).

4. Participants often used the Business Help site to assist them in finding information. Relying on the Business Help Site is a double-edged sword. Participants are able to find the desired information successfully, but the Wholesale Trade Survey user interface is not supporting users in accomplishing their goal.

Recommendation: Several steps can be taken to help to resolve this issue. For one, change the link names so they are more meaningful to the novice user, and increase the size of the top navigation. Investigate what it is about the Business Help Site that users find so attractive, and design the main Wholesale Trade site to attract users' attention in the same way.

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1.0 Introduction

Prior to January 2008, the Monthly and Annual Wholesale Trade Survey Web site was divided into two separate Web sites on the census.gov domain; the Monthly Wholesale Trade Survey Web site, and the Annual Wholesale Trade Web site. To better meet the needs of their users the Wholesale team in the Service Sector Statistics Division (SSSD) combined the two Web sites into one functional interface. In December 2007, in preparation for the launch of the new Wholesale Trade Survey site, the Usability Lab at the Census Bureau conducted the first round of usability testing to evaluate the new design. The testing evaluated the success and satisfaction of the test participants as they interacted with the interface. Participants attempted to complete tasks supported by the Web site but developed specifically for the usability test. The Usability Lab provided the Wholesale Team with a detailed report outlining the issues uncovered during the evaluation along with recommendations on how to correct these issues. See section 3.0 of the report for the complete list of findings and recommendations from the first round of testing.

Based on the results of the first round of usability testing, the Wholesale Trade Survey team corrected issues with the interface and launched the combined Monthly and Annual Wholesale Trade Survey Web site on the census.gov domain. To evaluate the changes made to the live Monthly and Annual Wholesale Trade Survey Web site, the Usability Lab conducted a second round of usability testing. Similar to the first round of testing, participants attempted to complete tasks supported by the Web site, but developed specifically for the usability test. Section 6.0 details the issues and recommendations from the second round of usability testing.

The findings and recommendations provided in this study are intended to inform the developer about areas of user satisfaction as well as areas where participants struggled while using the Wholesale Trade Survey Web site.

1.1 Background

The user interface is an important element to the design of a Web site. For a Web site to be successful, the user interface must be able to meet the needs of its user in an efficient, effective, and satisfying way. Prior to the first round of usability testing, the Wholesale Trade Survey information was divided onto two Web sites, a Monthly Wholesale Trade Survey (MWTS) site, and an Annual Wholesale Trade Survey (AWTS) site. The first round of usability testing was designed to examine the user interface of the new Wholesale Trade Survey site, which is a combination of the old AWTS and MWTS sites. Using the findings from the first round of testing, the Usability Lab provided recommendations on how to remedy issues with the interface. The second round of testing on the Monthly and Annual Wholesale Trade Survey Web site was conducted to evaluate the interface released to the public. Changes to the interface between round one and round two of testing were incorporated based on the recommendations from the first round of testing and the needs of the Wholesale team.

1.2 Purpose

For round one and round two of testing, the primary purpose of the study was to identify elements of the user-interface design that were problematic and led to less effective and satisfying experiences for the test participants using the Web site.

1.3 Usability Goals

The usability goals for this study are defined in two categories: user accuracy and user satisfaction. The goals were developed with cooperation between the usability lab and the Wholesale sponsor.

Goal 1: To achieve a high level of accuracy in completing the given tasks using the Wholesale Survey Web site. The user should be able to successfully complete 75percent of the tasks given.

Goal 2: For the user to experience a moderate to high level of satisfaction from their experience with the Wholesale Survey Web site. The overall mean from the Questionnaire for User Interaction Satisfaction survey ratings will be well above the mean (at seven or above on a nine-point scale, where one is the lowest rating and nine is the highest rating). The same will be true for the individual QUIS items.

1.4 Scope

All user interactions with the Web site were within the scope of the usability evaluation. The user interface was not tested for compliance with the Section 508 regulations. However, since this is a government Web site, the Web site must comply with Section 508 regulations.

1.5 Assumptions

- Participants had at least one year of prior Internet and computer experience
- Participants had prior knowledge of how to navigate a Web site.
- Participants did not have extensive prior experience in using the previous Monthly or Annual Wholesale Survey Web sites.
- No changes were made to the Wholesale Survey Web site during the testing period.
- Participants fro the second round of testing did not participate in the first round of usability testing.

1.6 Facilities and Equipment

Below is a detailed description of the usability lab facilities and equipment used through out this usability study.

1.6.1 Testing Facilities

The test participant sat in a small room, facing a one-way glass mirror and a wall camera, in front of an LCD monitor equipped with eye-tracking capabilities placed on a table at standard desktop height. The test participant and test administrator were not in the same room. During the usability study, the test administrator was in the control room. The test administrator and the test participant communicated with microphones and speakers.

1.6.2 Computing Environment

The participant's workstation consisted of a Dell OptiPlex GX150 personal computer with a Pentium IV processor and 512 MB of RAM, a Tobii LCD monitor equipped with cameras for eye-tracking, a standard 101/102 key quiet keyboard, and a PS2 IntelliMouse with a wheel. The operating system was Windows XP for all test participants.

1.6.3 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. Audio for the videotape was picked up from one desk and one ceiling microphone near the test participant. The audio sources were mixed in a Shure audio system, eliminating feedback, and fed to the videocassette recorder.

1.7 Eye-Tracking Capabilities

Using a Tobii eye-tracking system and the ClearView 2.0 software program, participants' eye movements were recorded during their interactions with the interface. The software monitored the participants' eye movements and recorded eye gaze data. A unique feature to the Tobii eye-tracking system is participant's heads are not restrained allowing for more naturalistic interactions with the interface. Eyes are tracked using two infrared cameras mounted inside the computer monitor display.

From the eye-tracking, we can report a range of information. The eye-tracking software allows us to see what the test participant is looking at, as well as how long the test participant focuses on different elements on the Web page. Using the different tools in the ClearView software, we were able to visualize the gazes of multiple test participants.

Data collected from the eye-tracking device includes eye gaze position, timing for each data point, eye position, and areas of interest. A gaze is described as the total number of fixations in a given area across all subjects. Gazes are thought to indicate which areas are getting the most attention and which areas users tend to neglect (Poole & Ball, 2005). Using the Clearview software, gaze data were collapsed across participants to find areas where participants directed visual attention. For the purpose of this evaluation, areas of high visual attention were referred to as hot spots. A hot spot is a point where people spend a few moments looking. The hot spots are collapsed across the participants and range in color from green (short amount of time) to red (long amount of time).

Prior to the usability testing, the test administrator, the supporting Usability staff, and the Wholesale Trade Survey sponsor defined specific areas of interest (AOIs). AOIs are sections of the interface that are of particular interest to the client. For the purpose of this testing, AOIs were the top and left navigation, sections of the main page that provide user access to the data, and the contact information. Looking at the collapsed gaze data, the test administrator determined whether the participant spent time looking at each particular area of interest.

Due to complications with the eye-tracking device, not all participants' eyes were calibrated. For the first round of testing, 4 out of 7 participant's data were recorded with the eye-tracking software. During the second round of testing, 5 out of 8 participant's eyes were recorded. Based on other usability studies conducted at the Usability Lab, this finding was not uncommon.

1.8 Materials

The usability testing of the Wholesale site required the use of various testing materials. Testing materials used are provided in the appendices. This section provides a description of the usability materials used for the usability tests: the consent form, the questionnaire on computer use and internet experience, the introduction to a testing session, the tailored satisfaction questionnaire (QUIS), and the debriefing questions. To maintain consistency the materials used did not change between each round of testing.

1.8.1 General Introduction

The test administrator read some background material and explained several key points about the session to the test participant. A major purpose of having the general introduction is to ensure the participants that they were assisting in the development of a Web site, and not having their own abilities tested. A copy of the General Introduction is provided as Appendix A.

1.8.2 Consent Form

Prior to beginning the usability test, the test participants signed a general consent form supplied in Appendix B. The purpose of the form was to explain the rationale of the study and to obtain permission to video tape the session. All participants signed the consent form, and as a result, each usability session was videotaped.

1.8.3 Questionnaire on Computer Use and Internet Experience

Prior to the usability study, the test participant completed the questionnaire to gather information on the participant's computer use and internet experience. A final version of the questionnaire is located in Appendix C.

1.8.4 Tasks

Members of the Wholesale Survey team and the Census Bureau's Usability Lab collaborated in creating the tasks and the task-based goals. The tasks were designed to capture the participant's interaction and reactions to the design and functionality of the Wholesale Trade Survey Web site.

The tasks used during the second round of testing varied slightly from the first round of testing. Between the first and second round of testing, changes were made to the interface based on the findings and recommendations from the first round of testing. As a result, the interface no longer supported all the tasks from the first round of testing. Appendix D provides the tasks used for both rounds of testing on the Wholesale Survey Web site.

1.8.5 Questionnaire for User Interaction Satisfaction (QUIS)

The original version of the QUIS includes dozens of items related to user satisfaction with a user interface (Chin, Diehl, and Norman, 1988). For the context of the Wholesale Trade Survey Web site, a tailored version of the QUIS was adapted to assess the user's satisfaction levels after completing the designated tasks on the Wholesale Trade Survey Web site (see Appendix E).

1.8.6 Debriefing Questions

After completing the tasks, the test participants answered debriefing questions about their overall experience using the Wholesale Trade Survey Web site (see Appendix F for debriefing questions). The test administrator was not limited to these questions. Other questions were asked based on the specific issues each test participant experienced during their evaluation of the Wholesale Trade Survey Web site.

1.9 Performance and Satisfaction Measurement Methods

This section explains the performance and satisfaction measurements used. For this evaluation, the test administrator measured user accuracy in terms of task completion and user satisfaction, which was measured using a self-report questionnaire.

1.9.1 Accuracy

After each participant completed a task, the task was marked as a success or a failure. Within the context of usability testing, successful completion of a task means that the design supported the user in reaching a goal. In this study, a successful task involved the test participant navigating the user interface to identify the correct piece of information on the Web site based on the task objective. For example, one task asked, "Typically, how many firms participate in the Monthly Wholesale Trade Survey?" A successful response to this question was "4500 firms". If the participant struggled to find the information, but eventually arrived at the correct

response, this was also marked as a success. Within the context of usability testing, a failure occurred when the site did not support the using in finishing a task. The participants were not graded; rather, it is the interface that was evaluated.

The average accuracy score is divided into two different means: (1) accuracy across the participants and (2) accuracy across the tasks. Prior to the usability study, the sponsor and the usability lab set an overall accuracy goal of 75 percent across the participants.

1.9.2 Satisfaction

The subjective satisfaction score is computed from the participants' ratings on the QUIS survey. After completing the usability session, the participants indicated their satisfaction with the Web site using the tailored nine-item QUIS survey. The QUIS is used to calculate the average Overall Satisfaction score from the 9-point Likert scale. Participants were asked to rate their overall reaction to the site by circling a number from one to nine, with one being the lowest possible rating and nine the highest possible rating. From the QUIS data, we can report ranges and mean scale values for the various rated attributes of the Web site. We can also identify below-mean values, which indicate that problems exist even when the overall mean is acceptable or better.

2.0 Round One of Usability Testing

The first round of usability testing was conducted in December of 2007. This section provides an explanation of the methods, participants, results and recommendations from the first round of testing.

2.1 Methods

This section provides information on the characteristics of the participants, explains how participants were recruited, and summarizes test procedures.

2.11 Participants and Observers

Before testing occurred, two dry run sessions of the usability test were conducted. Similar to the actual usability test, participants were recruited internally from the Census Bureau. Based on the dry run sessions, the methods and procedure of the usability test were tweaked to ensure an effective usability test. The dry run sessions followed the same procedure as the actual usability sessions. Since the dry run sessions were used for tweaking the methods and procedure of the evaluation, the data collected were included in the findings and recommendations.

Upon completion of the dry run sessions, seven additional test participants were recruited internally from the U. S. Census Bureau for the usability study of the high fidelity prototype of the Wholesale Web site. Each test participant had at least one year of prior experience in navigating different Web sites. The test participants did not have prior experience using the separate Annual and Monthly Wholesale Trade Survey Web sites. Observers from the Wholesale Trade Survey team were invited to watch the usability sessions on television screens in a separate room from the test participant and test administrator.

2.2 Procedure

The test participant reported to the usability lab at the U.S. Census Bureau. Upon arriving, the test participant was seated in the testing room. The test administrator greeted the participant and read the general introduction. Before beginning the usability study, the participant read and

signed the consent form explaining that all information gathered during the study was confidential and the session would be videotaped. To better understand the participants experience with navigating Web sites and gauge familiarity with the current Wholesale Web sites, the test participant completed the questionnaire on computer use and internet experience. During this time, the test administrator left the testing room and moved to the control room. Upon completion of the questionnaire, the video recording of the usability study began.

Since the study used the eye-tracking device, the participant's eyes were calibrated at this time. With the Tobii eye-tracking system, calibration is completed in about fifteen to twenty seconds, by the participant looking at a dot that moves across the computer screen. Once calibration is completed, the eye-tracker is ready to record data.

Following calibration, the participant began the tasks designed for evaluating the Wholesale Trade Survey Web site. To signify the beginning of each task, the participant read the task aloud. While completing the task, participants were encouraged to think aloud and share what they were thinking. This was not a conversation between the test administrator and the test participant, but rather the participant keeping a running commentary about what they were seeing and experiencing on the Wholesale Survey Web site. If at anytime test participants became quiet, the test administrator reminded them to think aloud. This was not to disrupt their thought process, but to allow the test administrator to better a greater understanding of how the participants were completing the task, and to identify issues with the Web site. At the conclusion of each task, participants stated what they believed was the correct response to the task. The participants who did not use the eye-tracking system completed the tasks the same manner as those who used the eye-tracking system. As the participants completed each task, the test administrator noted observable behaviors such as areas in which the user struggled using the interface. After the participants completed all the tasks, the eye-tracking device was stopped, but the video recording continued and the test participant completed the modified QUIS.

After the participant completed the QUIS, the test administrator returned to the lab room where the test participant answered debriefing questions. This was an opportunity for a conversational back and forth exchange about the Web site. At the conclusion of the usability evaluation, the video recording was stopped. Overall, each usability session lasted between thirty and forty-five minutes.

3.0 Results and Recommendations Based on the First Round of Usability Testing

To identify design elements that caused participants to have problems completing the task objectives, the test administrator recorded detailed notes during the usability session. To reinforce notes captured during the usability session, the test administrator used the videotape recordings to refresh memory and to confirm findings. By noting participant behavior and comments, the test administrator in cooperation with additional usability staff members inferred the likely design element that caused the test participant to experience difficulty.

The usability team assigned each problem a priority code, based on its effect on performance, as follows:

- *High Priority* – These problems bring the test participant to a standstill. He or she is not able to complete the task.
- *Moderate Priority* – These problems cause some difficulty or confusion, but the test participant is able to complete the task.
- *Low Priority* – These problems caused minor annoyances but do not interfere with the flow of the tasks.

The quantitative data, usability findings, and eye-tracking data are presented below. It is important to note that the version of the Wholesale Survey Trade Web site that was tested during the Round 1 was the version last modified on December 14, 2007.

3.1 Participant Accuracy

Accuracy scores are listed in Table 1. The overall accuracy score across the participants was 73 percent. Although not very far below the goal, the accuracy scores were not in line with the goal of 75 percent to 100 percent accuracy. Accuracy scores ranged from 67 percent to 78 percent across participants and from 28 percent to 100 percent across tasks.

Table 1. User Accuracy Results in Usability testing of the Wholesale Web site

Participant	Tasks									Overall Success Rate
	1	2	3	4	5	6	7	8	9	
1	Success	Failure	Success	Success	Failure	Success	Success	Success	Failure	67%
2	Success	Success	Success	Success	Failure	Failure	Failure	Success	Success	67%
3	Success	Failure	Success	Success	Failure	Success	Success	Success	Success	78%
4	Success	Failure	Success	Success	Failure	Success	Success	Success	Success	78%
5	Success	Failure	Failure	Success	Success	Failure	Failure	Success	Success	67%
6	Success	Failure	Success	Success	Success	Success	Success	Failure	Success	78%
7	Success	Success	Success	Success	Failure	Success	Success	Failure	Success	78%
Success By Task	100%	28%	86%	100%	28%	71%	71%	71%	86%	

- Task 1. Find the Wholesale inventory value for the month of September.
2. Find the definition of Title 13.
3. Find a monthly Wholesale Trade Survey form for a company reporter.
4. Find the official email address for the Wholesale Office.
5. Find if historical Annual data are available online.
6. Find the number of firms who participate in the survey.
7. Find when the 2006 Annual data will be released.
8. Find the purpose and use of the Annual Wholesale Trade survey.
9. Find the Annual Wholesale Trade Survey revision notice.

3.2 Participant Satisfaction

The user satisfaction ratings are detailed and averaged in Table 2 for the test participants. The average QUIS score was 6.53 out of 9, which is slightly below the satisfaction goal of 7 or higher set for the site. Although the means were quite high for satisfaction, ratings below the mid-point of the scale indicate issues that may affect other users. It is well known that users tend to give higher satisfaction ratings than might be expected from their accuracy scores.

Table 2. User Satisfaction Results in Usability Testing of the Wholesale Web site (1=low, 9=high)

QUIS Items	Participants							Average score by question
	1	2	3	4	5	6	7	
1	7	5	8	6	5	6	6	6.14
2	7	6	8	7	5	7	7	6.71
3	7	7	*	8	4	6	8	6.67
4	7	7	8	7	4	7	6	6.57
5	7	7	7	7	4	7	8	6.71
6	6	6	7	6	5	7	6	6.14
7	6	6	7	5	4	7	7	6.00
8	*	8	8	7	5	7	8	7.17
9	7	7	8	6	4	7	7	6.57
Average score by participant	6.75	6.56	7.63	6.56	4.44	6.78	7.00	

* = The test participant did not indicate an answer during the test session

QUIS Items

1. Overall reaction to the Web site
2. Screen layout
3. Use of terminology throughout the Web site
4. Information displayed on the screens
5. Arrangement of information
6. Tasks can be performed in a straightforward manner
7. Organization of information on the Web site
8. Forward navigation throughout the Web site
9. Overall experience finding information

3.3 Eye-Tracking

Four of the seven test participants' eye movements were recorded during the usability test. Three test participants' eye movements were not recorded due to complications with the eye-tracking system. With the current eye-tracking technology used at the Census Bureau, these results are not uncommon. The Census Bureau Usability Lab estimates that the eyes of about one third of the test participants cannot be captured by the eye-tracking system.

3.4 Positive Findings

1. Most participants commented that the layout of the Web site was clear. One participant commented that he/she liked the breakdown between the Annual and Monthly information.
2. Five out of seven participants responded positively to the color scheme, noting that the colors stood out and were not offensive to the eyes
3. Half the participants commented that the Wholesale Web site was easy to navigate.
4. Participants were quickly able to locate the email address for the Wholesale office.
5. Participants effectively accessed the latest Monthly Wholesale Survey.

3.5 Usability Findings

Reasons for the performance deficits may be found in the list of usability issues that follows. The usability problems are prioritized from high to low in terms of their effect on participant performance. The usability issues deal primarily with difficulty in locating certain pieces of information within the Web site. Appendix G lists an initial inclusive list of the usability findings from the testing. Fixing the high- and medium- priority problems as they occur throughout the site should result in improvement in the participant's performance using the Web site, and improved satisfaction. Appendix H contains the raw data collected from the usability test from which the findings and recommendations were derived.

3.5.1 High Priority Issues

Below are the usability issues that fell under the high priority category. These issues caused participants to struggle to the point that they were unable to recover and complete the task successfully.

3.5.1.1 Text is too dense

Many participants struggled to find information while sifting through the dense text. One participant commented that the amount of information on the screen was overwhelming and there was too much information to read through.

One task asked participants to identify whether historical Annual Wholesale Trade Surveys were available on line. Overall, 2 out of the 7 participants completed the task successfully. One possible reason for low success rate may be due to the location of the information that provides the answer to the task. The information indicating that historical Annual Wholesale Trade Surveys are not available is located at the end of a block of text. From the eye-tracking data (N=4), as shown in Figure 1, this sentence was overlooked.



Figure 1. Important pieces of information can be overlooked in dense text (N=4)

Writing for the Web is different from writing for reports or papers. Text on a computer screen should display about 100 words or about the equivalent of a half page of double-spaced text (Kilian, 2001). When people read information on the Web, their eyes tend to scan in a vertical pattern unlike the horizontal movements used when reading on paper. From the eye-tracking data collected during this study, we can see this pattern emerge. As Figure 2 shows, the

participants read the first few lines of the text but quickly begin scanning through the page in a vertical manner. If important information is located within the later parts of the text, the user may fail to recognize the information due to this scanning pattern.

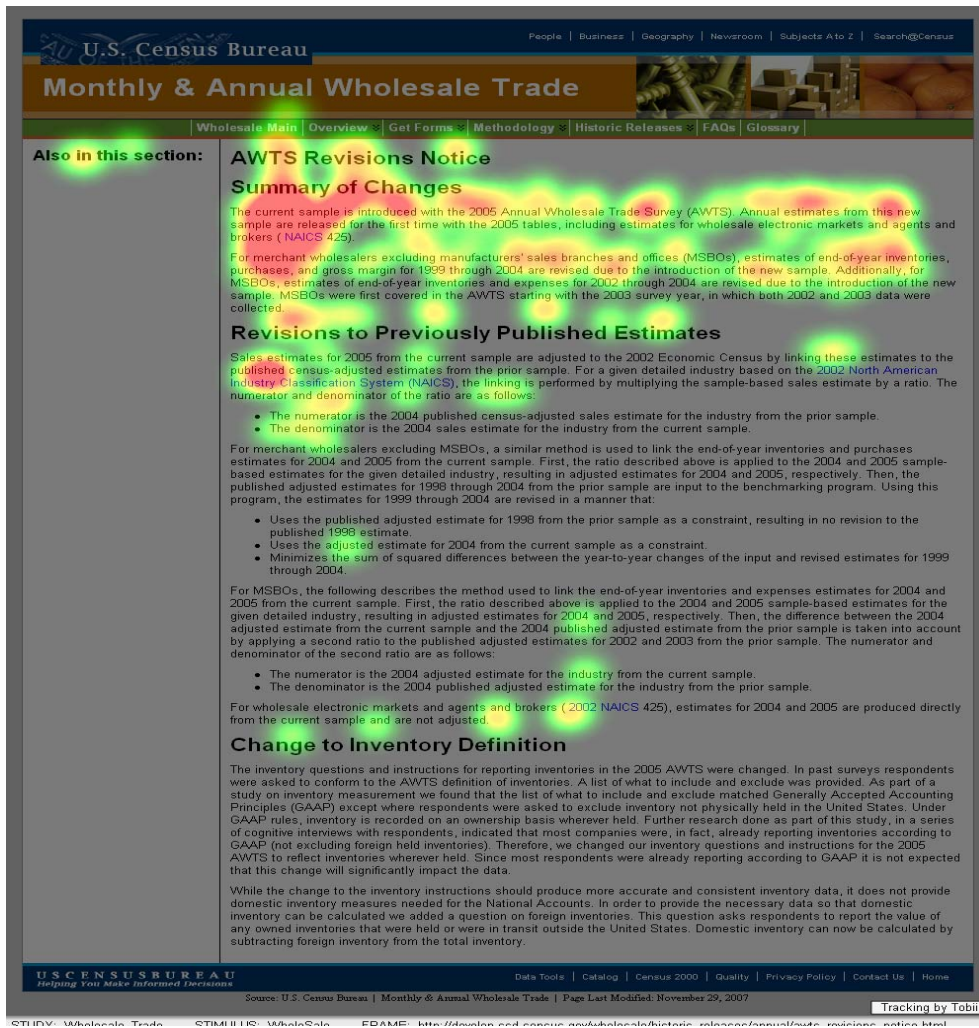


Figure 2. Eye-tracking gaze data demonstrate a vertical scanning pattern while reading dense text (N=4)

Note: Red indicates a longer fixation on a certain area

Recommendation: Write in a style that is more appropriate for the Web. Figure 3 provides an example of how to write more appropriately for the Web. In this example, the content of the main page of the Web site is reduced by highlighting key concepts and ideas. It is important for the main page of a Web site to orient the users to the overall organization, content, and navigation (Kilian, 2001). The example in Figure 3 serves as an example on how to reduce the amount of text on a screen while still communicating main ideas and concepts. This example was not used during the usability study.

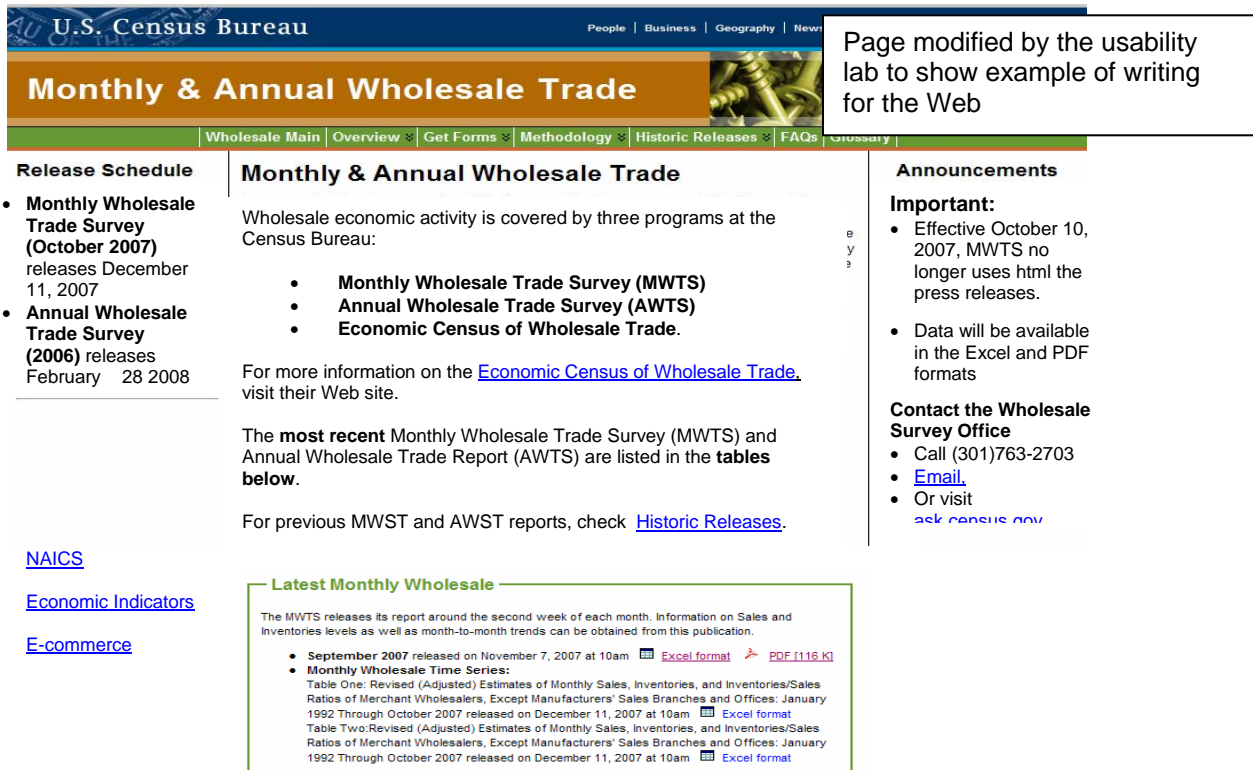


Figure 3. Example of writing for the Web using the Wholesale Trade Survey Web site main page

3.5.1.2 The content in the Glossary was not apparent initially

When asked during debriefing, most participants identified that the glossary was an area where definitions to different terms could be located. However, during the usability evaluation most participants (N=4) did not utilize the glossary to find the definition of Title 13. The word 'Glossary' may be an outdated word. When asked about what was found in a Glossary, several participants explained that they would expect to see terms or definitions in the Glossary.

Recommendation: Change the word Glossary to a word that provokes greater recognition of content such as terms or definitions. (See Figure 4).

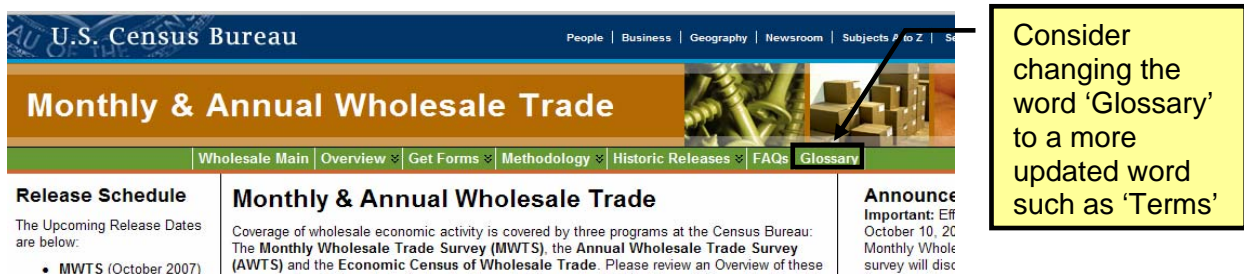


Figure 4. Consider changing the word 'Glossary' in the navigation bar

3.5.1.3 The functionality of the Top Navigation Bar is unclear.

It was not apparent to the test participants that the titles to the dropdown menu on the top navigation bar were links that took users to new pages on the Wholesale Trade Survey interface. Based on the current design, users treated the links as labels for the top navigation. One of the tasks required participants to use the Historical Release link (not one of the options from the dropdown menu) to find the answer to the task. The design of the interface did not

support the user in finding the information on the Historical Release page. In this instance, the participant had to click on the name “Historical Release” on the navigation bar, and not one of the associated dropdown elements. None of the participants navigated to the information using the Historical Release link on the top navigation. The two participants who successfully completed the task, navigated to the information using the link to the Historical Releases in the center pane of the main page.

When asked during the debriefing about the navigation bar, only one participant was able to identify that the titles on the top navigation were links in addition to labels for the dropdown functionality. Another participant commented that he/she had seen similar dropdown functionality on other Census Bureau Web sites and had to be informed that the labels were also links.

Recommendation: Redesign the top navigation bar to help users better understand that the labels accompanying the dropdown menu are also links to different areas of the Web site.

Status: The Wholesale team has decided to eliminate the dropdown menu functionality. While this change may reduce confusion on the functionality of the labels, further usability testing needs to be conducted to identify the effectiveness, satisfaction, and accuracy of the new functionality.

a.



b.

Figure 5. The navigation bar, (a.) used during the usability testing, and the redesign of the navigation bar (b.) (Web site as of 1/09/08)

3.5.2 Medium Priority Issues

These issues caused participants to struggle; however, the participant was eventually able to overcome the issue and complete the task successfully.

3.5.2.1 Use of Acronyms caused confusion for participants.

The Web site used the acronyms “AWST” and “MWST” frequently. These are examples of jargon, which cause confusion for participants. One participant stopped and took a few seconds to try to figure out what the acronym represented. As discussed earlier, many users do not read large sections of text. If the acronyms are defined within a large section of text, it is easy for the user to overlook this information. Remembering what the acronyms represent from page to

page demands cognitive resources that may slow the user down when completing common tasks on the Web site. Figure 6 provides one example of where the acronyms should be defined. In general, the first time the acronyms are used on a page, they should be defined.

Recommendation: Define acronyms more frequently. While the center pane of text on the Wholesale Main page defines the acronyms, this is not enough. The acronyms need to be defined in other locations.

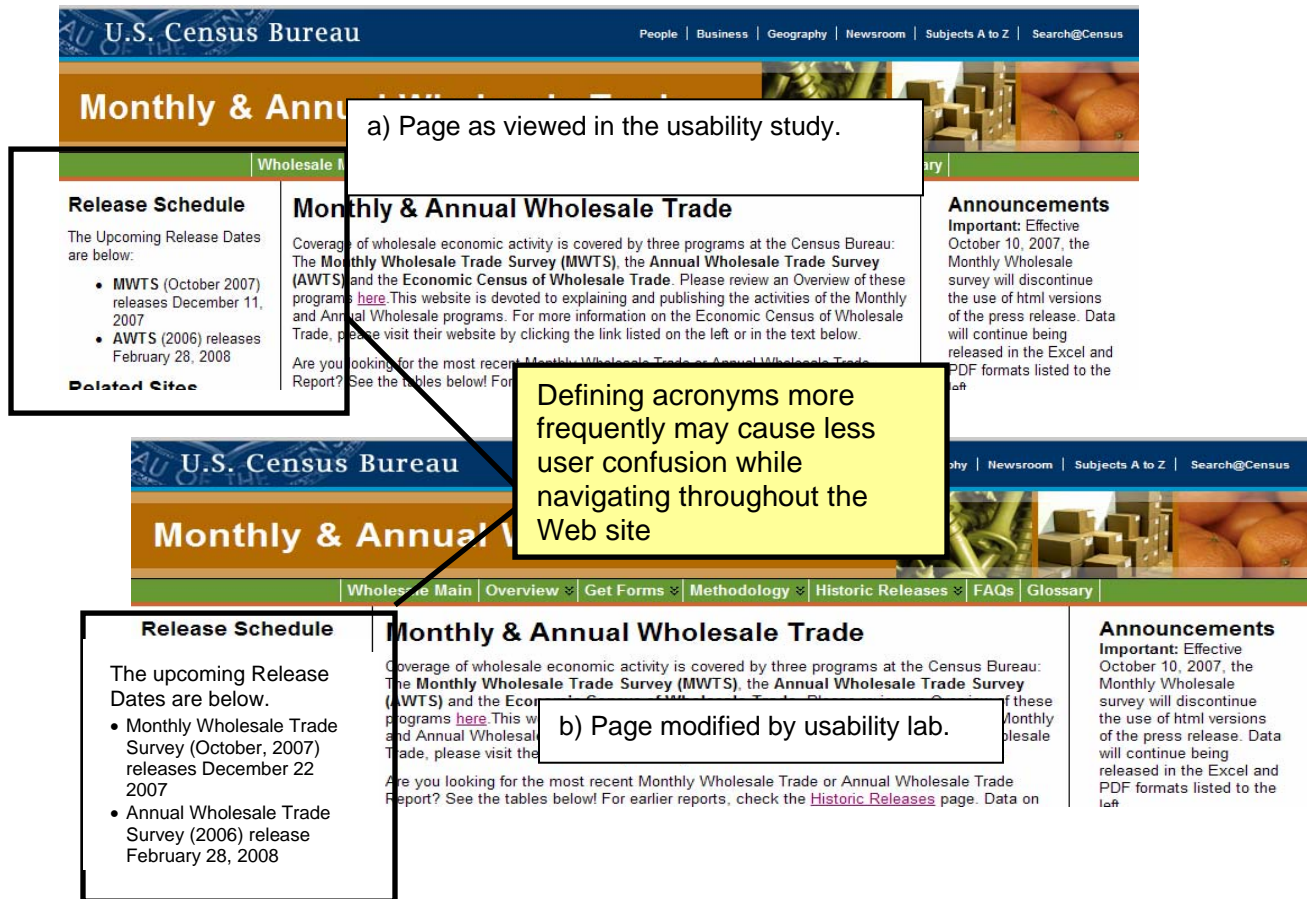


Figure 6. Acronyms should be defined more frequently.

Figure 6a is a screen shot from the Web page participants saw during the usability study.

Figure 6b provides an example Web page created by the Usability Lab based on the findings and recommendations from the usability study.

3.5.2.2 Some information should be located in multiple locations

Some participants expected certain information to be located in more than one location. One task required participants to locate the number of firms that complete the Monthly Wholesale Survey. Five out of the seven participants felt the number of firms was related to the sample. These participants searched for the information in the methodology section under the sub pages that pertained to the sample. One participant commented that once he/she found the number of firms in the methods section, he/she did not think this was bad place for the information. However, he/she felt the information should be located elsewhere. Figure 7 from the eye-tracking data shows that the test participants looked at the left navigation panel, particularly focusing on sections that pertained to the sample. The red X's on the screen shot indicate where the participants clicked to access information.

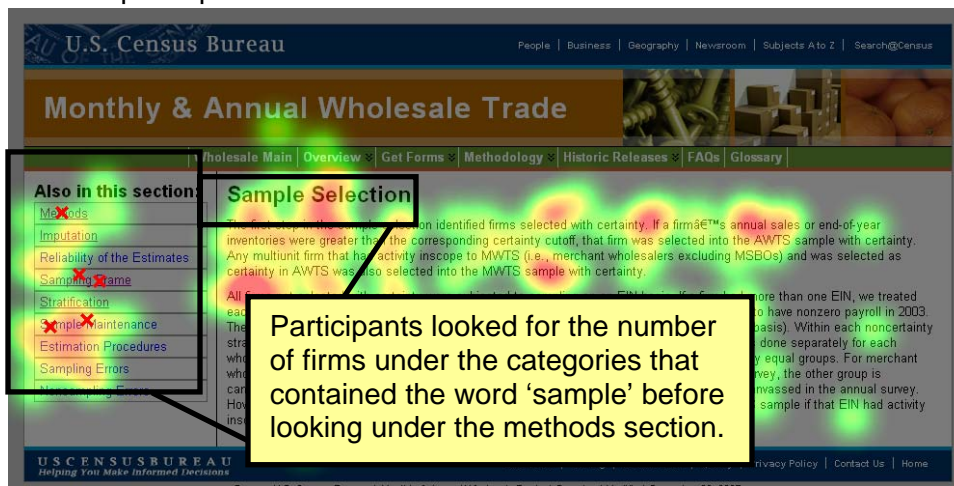


Figure 7. Eye-tracking data from the Monthly Methodology section.

Another example of where participants expected information to be in one or more location was when participants were searching for the definition of Title 13. Four participants tried to find the answer in the FAQs. For this usability test, the FAQs were not available. However, this shows that participants expect to find the definition of Title 13 in a location outside of the Glossary.

Recommendation: Consider placing information of high interest in more than one appropriate location. This may ease user confusion and decrease time spent searching for information.

3.5.3 Low-Priority Issues

These problems caused minor annoyances but did not interfere with the flow of the tasks.

3.5.3.1 Strange characters appear within large blocks of text

While no participants commented on this, strange characters appeared in large blocks of text. While a sighted user may be able to overcome the strange characters, a person using a screen reader may become confused, as the screen reader will be unable to identify the characters. The strange characters could cause a user to think the page is not professional. The characters appear in Internet Explorer and Mozilla. Figure 8 provides an example of the strange characters.

Recommendation: Correct text before launching the Web site

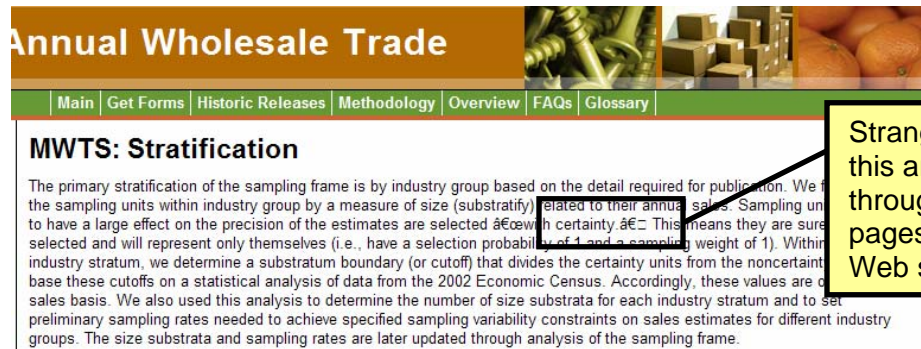


Figure 8. Screen shot of the strange characters within the text

3.5.3.2 Users are not aware when they are leaving the Wholesale Web site

To complete several tasks, a few participants used the Census.gov links in the blue navigation bars to find the information they were looking for. This navigated users off the Wholesale Trade Survey interface without their knowledge. To go back to the Wholesale Web site, the user must have adequate knowledge of how to use a browser's backward navigation.

Recommendation: Create a page that notifies users when they are leaving the Wholesale Web site

Creating a page, similar to the example in Figure 9, may reduce confusion when looking for information. A page explaining that users are leaving the Wholesale Trade Survey site and are navigating to another Census.gov page may serve as an indication that they are navigating to a location where they did not plan on going.

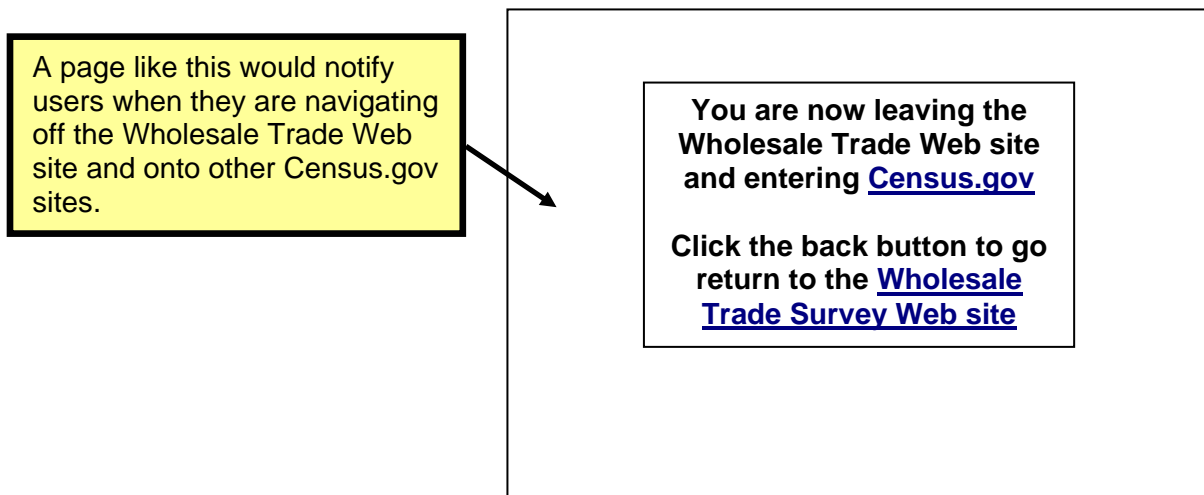


Figure 9. Example page notifying users when navigating off the Wholesale Web site and onto another Census.gov site

Note: After consultation with the sponsor, we note that this type of functionality is not available on the census.gov portal.

3.5.3.3 The Contact Us information organization needs to be reworked

The contact information is written in paragraph form and the phone number is divided on to two lines. One participant mentioned that he/she did not like having the phone number on two lines because it was hard to read. Generally, users do not read paragraphs of text. It is possible users will not read the text and, thus, will overlook some of the contact information.

Recommendation: Add bullet points to separate each method of contacting the Wholesale office, and place the phone number on one line.

As Figure 10 shows, having the contact number on one line and adding bullet points makes the information clearer and more visually appealing. Consider restructuring the contact information to accommodate this change.



Figure 10. Example of restructuring the 'Contact Us' information

Figure 10a is a screen shot from the Web page participants saw during the usability study.

Figure 10b provides an example Web page created by the usability lab based on the findings and recommendations from the usability study.

4.0 Key Findings from the First Round of Testing and Future Directions

During the first round of usability testing, the Usability Lab identified several high-priority issues that stopped users from completing their tasks. Overall, the main areas of concern for the Web site were dense text and unclear navigation. The dropdown functionality did not provide visual

clues to the user that the labels were links to more information. Additional key findings included the following:

- The word Glossary in the top navigation did not clue users into looking for definitions;
- Acronyms were not always defined;
- Strange characters appeared in large blocks of text;
- Participants were not aware when they were leaving the Wholesale Web site; and
- The Contact Us information in paragraph form was confusing.

After consultation with the Usability Lab, the sponsor implemented changes to the user interface. To evaluate these changes, a second round of Usability testing was conducted.

5.0 Second Round of Usability Testing

The changes made to the user interface between the first and second round of testing are listed next. Then we describe the methods used in the second round of usability testing.

5.1 Changes to the interface between the first and second round of testing

After the first usability study, changes were made to the Wholesale Web site user interface before the site was released to the public. Changes made included the following:

- Eliminating words and writing in a style more appropriate for the Web throughout the Web site
- Removing the dropdown functionality from the top-navigation bar
- Adding a PDF of the release schedule for the Monthly Wholesale Trade Survey under Release Schedule on the left-navigation bar
- Adding five additional Related Sites links (including the Business Help Sites for the Monthly and Annual Wholesale Trade Surveys)
- Expanding the data tables in the center of the main page with more content. This change was most noticeable with the Latest Annual Wholesale Trade Report.

The most noticeable change to the navigation of the Web site was the decision to eliminate the dropdown functionality on the top navigation. During the first round of usability testing, participants did not notice that the labels for the dropdown menus were links to important information on the Web site. To emphasize the importance of the links, the dropdown functionality was removed, forcing participants to click on the links to find additional information. Figure 11a provides an example of the navigation used during the first round of testing, and Figure 11b shows the revised design evaluated in the second round of testing.

a.

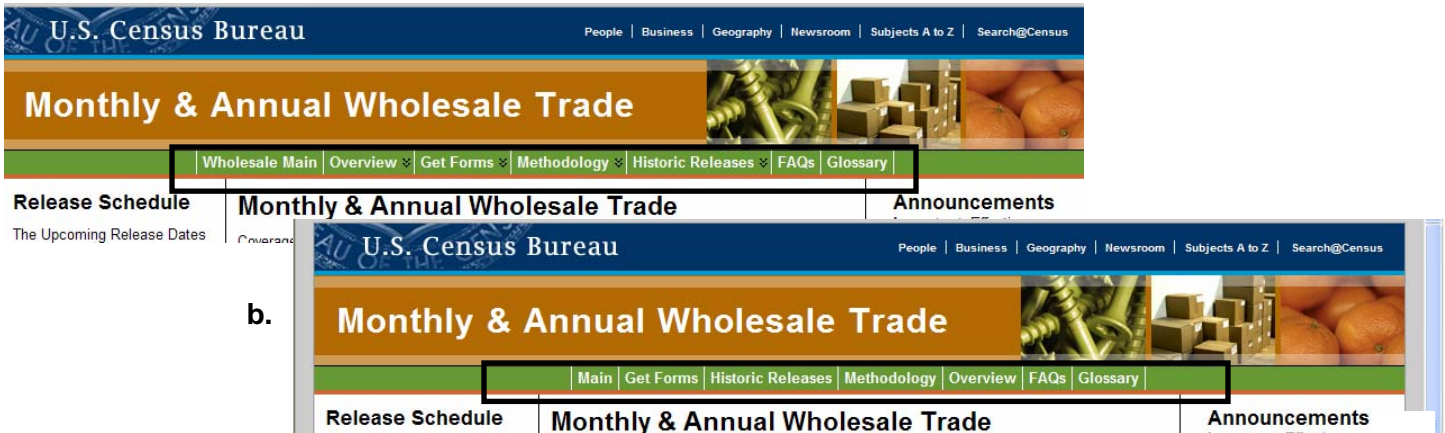


Figure 11. The navigation bar (a.), used during the first round of usability testing with dropdown controls, and the redesigned navigation bar (b.), without dropdown controls, used during the second round of testing.

5.2 Methods

This section provides information on the characteristics of the participants, explains how participants were recruited, and summarizes test procedures.

5.2.1 Participants and Observers

Before testing occurred, one dry-run session of the usability test was conducted. The dry-run participant was recruited internally from the Census Bureau. The purpose of the dry run was to gain a better understanding of the methods and procedures used during the test. The data collected from the dry-run session are not included in the findings and recommendations. Based on the dry-run, no changes were made to the test plan prior to the usability evaluation.

Eight participants were recruited externally through a database maintained by the Usability Lab and by word of mouth. One participant's data were not included in the findings and recommendations due to the participant's inexperience in navigating through the Internet. The test administrator noticed the participant's inexperience during the usability testing. One of the assumptions of the project was that participants had prior knowledge of how to navigate a Web site. Since this participant violated this assumption, his/her data were removed from the analysis.

The remaining participants were considered knowledgeable in navigating the Internet and using a computer and unfamiliar with the Monthly and Annual Wholesale Trade Web site. Prior to beginning the tasks, the participants were briefly informed about the purpose of the Wholesale Trade survey, data that are collected, by the Wholesale Trade surveys and the type of information users usually look for on the Web site. Participants were compensated \$40 to cover the cost of traveling to the Census Bureau. Observers from the Wholesale Trade Survey team were invited to watch the usability sessions in a remote observation room within the usability suite.

5.2.2 Procedure

The test participant reported to the usability lab at the U.S. Census Bureau. Upon arriving, the test participant was seated in the testing room. The test administrator greeted the participant and read the general introduction. Before beginning the usability study, the participant read and signed the consent form explaining that all information gathered during the study was

confidential and the session would be videotaped. To better understand the participants experience with navigating Web sites and gage familiarity with the current Wholesale Web sites, the test participant completed the questionnaire on computer use and internet experience. During this time, the test administrator left the testing room and moved to the control room. Upon completion of the questionnaire, the video recording of the usability study began.

Since the study used the eye-tracking device, the participant's eyes were calibrated at this time. With the Tobii eye-tracking system, calibration is completed in about fifteen to twenty seconds, by the participant looking at a dot that moves across the computer screen. Once calibration is completed, the eye-tracker is ready to record data.

Following calibration, the participant began the tasks designed for evaluating the Wholesale Trade Survey Web site. To signify the beginning of each task, the participant read the task aloud. While completing the task, participants were encouraged to think aloud and share what they were thinking. This was not a conversation between the test administrator and the test participant, but rather the participant keeping a running commentary on what they were seeing and experiencing on the Wholesale Survey Web site. If at anytime test participants became quiet, the test administrator reminded them to think aloud. This was not to disrupt their thought process, but to allow the test administrator to better a greater understanding how the participants were completing the task, and to identify issues with the Web site.

At the conclusion of each task, participants stated what they believed was the correct response to the task. The participants who did not use the eye-tracking system completed the tasks the same manner as those who used the eye-tracking system. As the participants completed each task, the test administrator noted observable behaviors such as areas were the user struggled using the interface. After the participants completed all the tasks, the eye-tracking device was stopped, but the video recording continued and the test participant completed the modified QUIS.

After the participant completed the QUIS, the test administrator returned to the testing room where the test participant answered debriefing questions. This was an opportunity for a conversational back and forth exchange about the Web site. At the conclusion of the usability evaluation, the video recording was stopped. Overall, each usability session lasted between thirty and forty-five minutes.

6.0 Results and Recommendations Based on Usability Testing

Results of the usability study are discussed in this section. The quantitative data, usability findings, and eye-tracking data are presented below, along with recommendations for resolving the issues.

6.1 Participant Accuracy

The overall accuracy score was 45 percent. The accuracy scores were not in line with the goal of 75 percent to 100 percent accuracy. Accuracy scores ranged from 13 percent to 75 percent across users and from 0 to 86 percent across tasks. Compared to the first round of testing (73 percent), user accuracy decreased by 38 percent. Table three provides the accuracy scores for the tasks.

Table 3. User accuracy results from the second round of testing of the Wholesale Web site.

Participant	Tasks								Overall Success Rate
	1	2	3	4	5	6	7	8	
1	Success	Failure	Success	Success	Failure	Failure	Success	Success	63%
2	Success	Failure	Failure	Failure	Failure	Failure	Success	Success	38%
3	Failure	Success	Success	Success	Failure	Failure	Failure	Success	50%
4	Success	Failure	Failure	Failure	Failure	Failure	Failure	Failure	13%
5	Success	Failure	Success	Success	Failure	Success	Success	Success	75%
6	Success	Failure	Failure	Failure	Failure	Failure	Success	Success	38%
7	Success	Success	Failure	Failure	Failure	Failure	Success	Failure	38%
Success By Task	86%	29%	43%	43%	0	14%	71%	71%	45%

Tasks

1. Find Monthly Wholesale Inventories for February 2008.
2. Find the definition of Title 13.
3. Find the form for a Company Reporter.
4. Find the official email address of the Wholesale Trade Survey Office.
5. Find the purpose and two uses of the Wholesale data.
6. Find if it is mandatory for firms to respond to the survey.
7. Find when 2007 AWTS data will be released.
8. Find the summary of changes for 2006 data.

It appears from the findings that the interface did not support the user with tasks 2, 5, and 6 based on the observations of the participants.

In some instances, users found the correct answer with additional resources by using the links under the Related Sites or with the Census Bureau navigation at the top and bottom of the page. One related links participants used frequently was the Business Help Site. Participants relied on the Business Help Site when a piece of information was not obviously available and often found the solution to the task. This may be one reason for decrease in accuracy may be due to many participants relying on the Business Help Site to find the solutions to the tasks. While the test participant found the information, this strategy did not satisfy the criteria for a successful task. Since the task was not completed using Wholesale Trade Survey interface, the task was considered a failure.

Most participants responded positively to the Business Help Site and felt this was a useful place to find information. For comparison with the results in Table 3, Table 4 includes the accuracy rates of the participants who completed the tasks using the Business Help Site.

Participant	Tasks								Overall Success Rate
	1	2	3	4	5	6	7	8	
1	Success	Failure	Success	Success	Failure	Failure	Success	Success	63%
3	Success	Failure	Failure	Failure	Success	Success	Success	Success	63%
4	Failure	Success	Success	Success	Failure	Failure	Failure	Success	50%
5	Success	Failure	Failure	Failure	Success	Success	Failure	Failure	50%
6	Success	Failure	Success	Success	Failure	Success	Success	Success	75%
7	Success	Failure	Failure	Failure	Success	Success	Success	Success	63%
8	Success	Success	Failure	Failure	Success	Success	Success	Failure	63%
Success By Task	86%	29%	43%	43%	71%	71%	71%	71%	61%

Table 4. Accuracy rates including tasks completed with the Business Help Site.

When we include the tasks completed successfully using the Business Help Site, in addition to the Wholesale interface, the accuracy scores increase from 43 percent to 61 percent. The document discusses the Business Help Site in further detail in the high-priority recommendations section for the second round of testing.

6.2 User Satisfaction

The user satisfaction ratings are detailed and averaged in Table 5. The average QUIS score was 6.94 out of 9, which is almost in line with the satisfaction goal of 7 or higher set for the Web site. While the accuracy score was well below 75 percent, participants rated their satisfaction high. It is well known that users tend to give higher satisfaction ratings than might be expected from their accuracy scores. The high level of satisfaction may be due, in part, to the Business Help Site aiding the users in finding information.

Table 5. User Satisfaction results in the second round of testing of the Wholesale Web site (1 =low, 9 = high).

Participant	QUIS Items									Average score by participant
	1	2	3	4	5	6	7	8	9	
1	6	6	8	8	5	7	7	7	7	6.78
2	6	8	7	5	7	6	5	8	6	6.44
3	6	5	8	7	9	8	8	8	9	7.56
7	8	8	8	9	7	8	8	8	8	8.00
5	6	8	7	8	6	6	7	7	6	6.78
6	4	3	7	5	5	5	5	4	4	4.67
7	8	9	9	9	9	8	9	7	7	8.33
Average score by question	6.28	6.71	7.71	7.28	6.85	6.85	7.00	7.00	6.71	6.94

QUIS Items

1. Overall reaction to the Web site
2. Screen layout
3. Use of terminology throughout the Web site
4. Information displayed on the screens
5. Amount of text on the screen
6. Tasks can be performed in a straightforward manner
7. Organization of information on the site
8. Navigation throughout the site
9. Overall experience of finding information

6.3 Positive Findings

1. Most participants thought the Web site’s layout was clear.
2. Several participants commented on the Web site’s consistent layout and navigation.
3. About half the participants mentioned that the amount of information on the main page was not overwhelming.
4. One participant mentioned he/she liked the breakdown of the Monthly and Annual Information.

6.4 Usability Findings

The performance deficits may be due to the issues uncovered during the usability testing. A discussion of usability findings follows. The usability problems are prioritized from high to low in terms of their effect on participant performance. The usability issues deal primarily with difficulty in locating information within the Web site and inconsistencies that caused user confusion.

6.4.1 High-Priority Issues

These issues caused participants to struggle to the point that they were unable to recover and complete the task successfully.

6.4.1.1 Terminology in the top navigation is not salient

The terminology in the top navigation is not salient, and some of the words are outdated. One task required users to access the Overview to find the purpose and the use of the Wholesale Trade Survey. Out of seven participants, two used the overview to find the information. More than half the participants used the Business Help Site to find the information.

Similar to the first round of usability testing, participants did not recognize that the glossary contained the definitions of terms used throughout the Web site. The second task asked participants to find the definition of Title 13. Out of the seven participants, two participants used the glossary to find the definition to Title 13. The word 'Glossary' may be an outdated word.

Participants struggled with Methodology as well. Methodology is a technical and advanced word that may not have meaning to the novice user. During the first round of usability testing, the Usability Lab recruited participants internally, and the participants did not struggle with this terminology. This may be due to the advanced knowledge and training of the individuals recruited for the usability test. Many of the participants worked in a research division and knew the meaning of methodology. The participants recruited for the second usability test were from a diverse background with varying education levels ranging from some college to graduate degrees. Methodology may be a term novice users are not familiar with using.

Recommendation: Eliminate jargon, and rename the links in the top navigation so the terminology is more salient to users. Terms on the top navigation could be considered "jargon" by non-expert users. In general, the Census Bureau has three types of users:

- Novice users – Have no or little knowledge of Census Bureau terms
- Intermediate users – Have some knowledge of some of the Census Bureau terms
- Expert users – Are familiar with Census Bureau terminology

Overall, it is important to design Web sites and terminology around the novice-intermediate user. By designing a Web site around the novice user, no user group is excluded. Experts have a more satisfying experience as well because information is more accessible and understandable.

To increase meaningfulness, the Usability Lab recommends the following changes to the terminology on the top navigation:

- Overview → About The Surveys
- Glossary → Terms or Definitions
- Methodology → How the Surveys Are Conducted

Generally, the longer and more descriptive the link, the easier it is for users to understand the content within the new page. The titles for links should be explicit and state what content the user expects to find (Redish, 2007). As space permits, expand the link names, such as Overview and Methodology, so they are more descriptive and meaningful to the novice user.

6.4.1.2 Content on the top navigation does not stand out to users

With the current design of the top navigation bar, the menu options are justified to the center and small (See Figure 12). A further issue with the centered top navigation is the dead space located on each side of the top navigation bar.



Figure 12. The top navigation gets lost within the page.

White space (or empty space) is an important part of the design (Redish, 2007). Too little white space causes issues while sifting through information, and too much white space is distracting or causes information to be overlooked. In the case of the Wholesale Web site, the dead space to the left and right of the top navigation bar may contribute to users overlooking the top-navigation bar. As shown in Figure 2, immediately below the top-navigation bar begins the content of the Main page. The content spans from the far left edge to the far right edge of the page. It is possible users will jump to the content, and the top navigation will become lost within the dead space.

One task required users to access the Get Forms link to find the form for a Company Reporter. Three out of seven participants were able to find the form successfully using the top navigation. However, for this task, the four participants who did not find the form for a Company Reporter did not try to use the top navigation. Figure 13 shows the results from the eye-tracking analysis.

As the eye-tracking results indicate, the participants who did not use the top navigation to find the form did not look at the top navigation. Instead, these participants jumped to the content on the center of the page. The participants who did use the top navigation to find the form noticed the “Get Forms” link on the top navigation. One of the participants commented that “Get Forms” link popped out at them on the top navigation, while others were confused as to where to find the information.

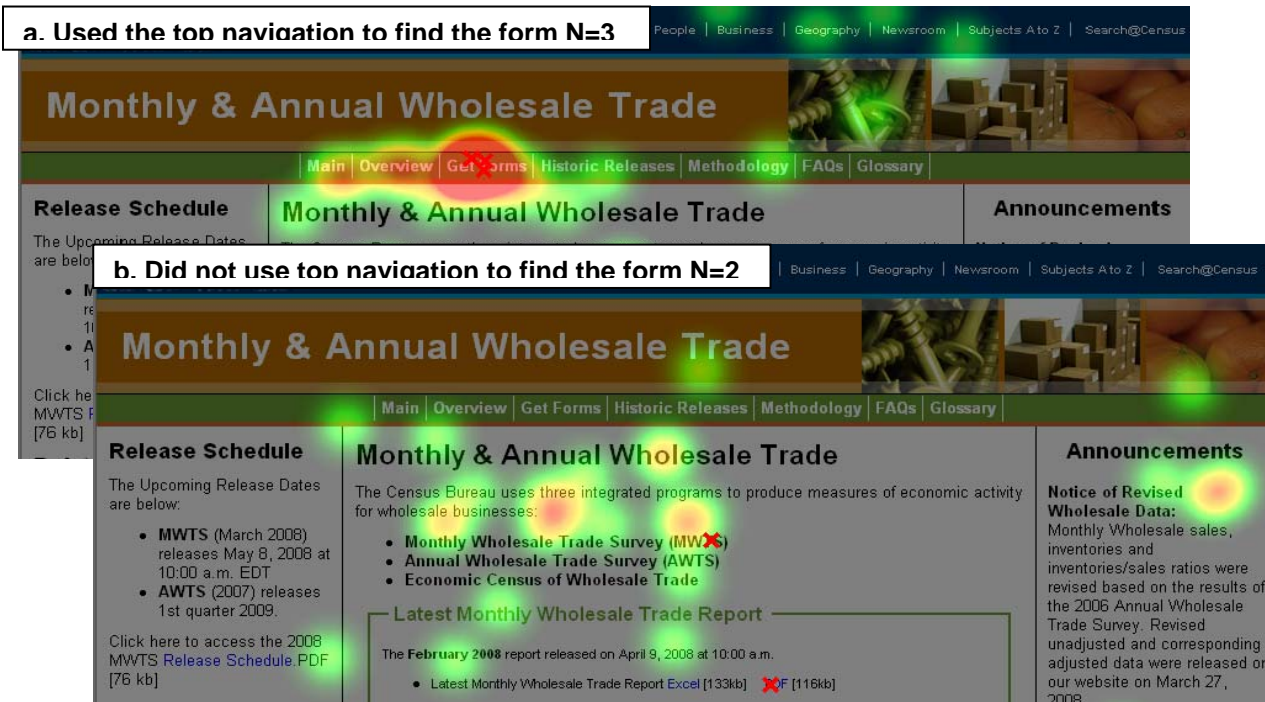


Figure 13. Comparing eye-tracking results for the success and failures on task 3

One participant, who demonstrated adequate knowledge about navigating a Web page, never clicked on the top navigation. He/she relied solely on the links on the left-pane navigation and the information in the center for the completion of the tasks.

Recommendation: Make the top navigation more visible. One way to do this is to increase the size of the height of the top navigation and increase the font size. Decrease the amount of dead space to the left and right of the top navigation bar. This can be done by increasing the size of the buttons on the top navigation. Increasing the button and font size will make the bar visible and more noticeable to users. Any changes to the primary navigation of the Web site would benefit from additional usability testing to confirm that the desired effect was achieved.

6.4.1.3 Contact information is unclear and misleading

Currently the contact information is in paragraph form. Research shows Web users do not read text in paragraph form, but rather skim the text for key information. Paragraphs increase time spent searching for information, decreasing efficiency (Redish, 2007).

All participants found the Contact Us section, but only three participants successfully completed the task. Over half the participants (N=4) thought the email for the Wholesale Web site was ask.census.gov. The text currently reads:

“Contact the Monthly and Annual Wholesale staff by email, by phone at (301)763-2703, or visit ask.census.gov for further information on Census Bureau surveys.”

The only way the email address is visible is by hovering over the link and looking in the bottom left hand corner in the browser window or by clicking on the link. When a user clicks on the link, the browser opens a default email system. If the user does not notice the email in the lower portion of the screen, this will be the first opportunity they will have to view the email address. If this is not their preferred email system, the user must copy the link into their preferred system adding additional time on task, and decreasing efficiency.

The link to ask.census.gov is the first link spelled out to the users. From the context of the sentence, to several participants thought this was where users sent emails directly to the Wholesale Office. Ask.census.gov takes users to a Census-Bureau-wide FAQ system with no further contact for the Wholesale Trade Survey office. Figure 14 provides an example of the current Contact information on the Wholesale Trade Survey Web site.

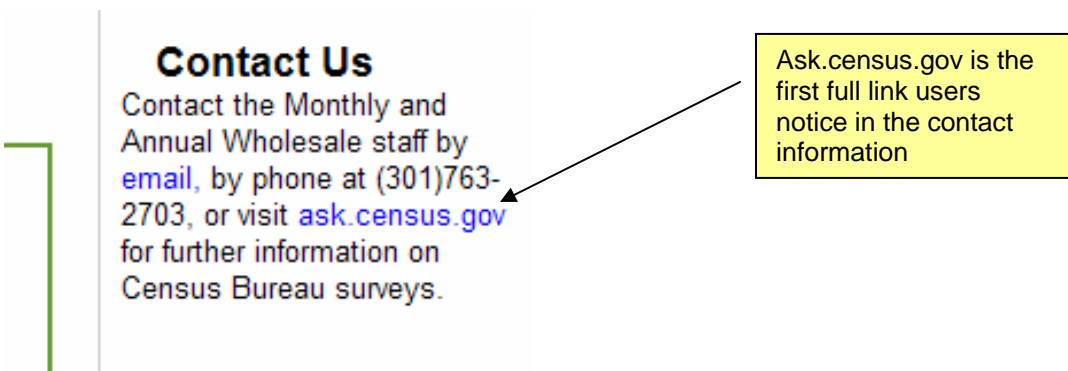


Figure 14. Current “Contact Us” information on the Wholesale Web site

Recommendation: Rewrite the contact information so it is more suitable for the Web. This includes short bulleted sentences (Redish, 2007). Write out the email address for the Wholesale Office instead of the using the word ‘email’. Figure 15 presents an example of how to rewrite the contact information.

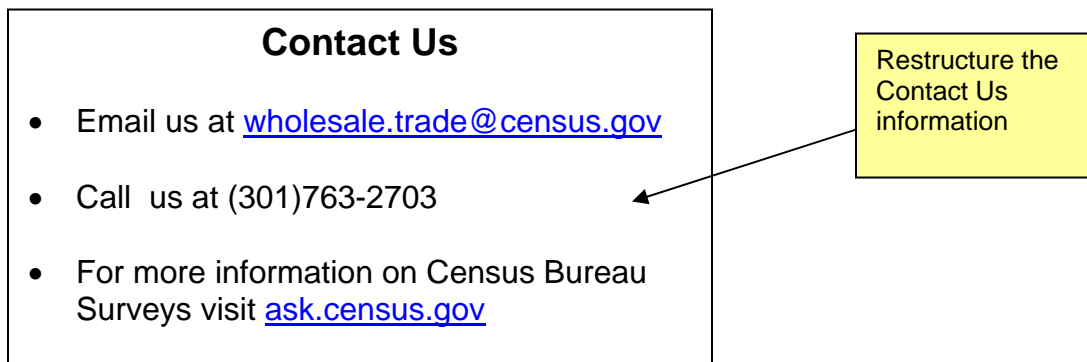


Figure 15. Restructure the contact information into a bulleted list.

Having the contact information in a bulleted list is clearer and more visually appealing. With the suggested structure, participants are less likely to confuse ask.census.gov for the official email address for the Wholesale Office.

Note: The Wholesale Trade Survey staff restructured the contact information into a bulleted list. Since ask.census.gov did not help the user contact the Wholesale Trade Survey office, it has been removed from the contact information to reduce user confusion.

6.4.1.4 Participants relied heavily on the Business Help Site

Throughout the testing, the test administrator observed participants relying on the Business Help Site to find target information. In many cases, participants found the Business Help Site to be helpful in finding the information they were looking for. Based on the criteria set for a successful task completion, using the interface of the Business Help Site to find the answer to a task was considered a task failure. In the case of task five, no participants were able to find the answer to the task with the Wholesale Trade Survey Web site. However, if the information retrieved from the Business Help Site was considered a success, accuracy rates jump to 71 percent. As the eye-tracking data show in Figure 16, the Business Help Site links were the only links visited on the Related Links, and they received a great deal of visual attention.



Figure 16. Participants used the Business Help Sites to find answers to the tasks (N=5)

Relying on the Business Help Site is a double-edged sword. Participants are able to find the desired information successfully, but the Wholesale Trade Survey interface is not supporting users in accomplishing their goal. Usability analysts think that the high satisfaction scores (mean = 6.94) were partially due to the perceived sense of accomplishment from finding the target information on the Business Help Site. After consultation with the Wholesale Trade Survey sponsor, it was determined that users need to be able to find information using the Wholesale Trade Survey interface without going to a secondary source, such as the Business Help Site.

Interestingly, the information contained in the Business Help Site for the AWTS and the MWTS is similar to the information located in the Methodology and the Overview sections of the Web site. Users are not able to find the information on the Methodology and Overview sections of

the Web page, but they are having success with the Business Help Site. This is probably happening for a couple of reasons. For one, the task questions used the acronym “AWTS” and “MWTS”. This may have primed the participants to look for the acronyms on the page. However, a more likely explanation is users did not understand Overview and Methodology as areas of the Web site where they could find the target information. As previously discussed, these terms are advanced and may be jargon to the novice user. The Related Links may stand out more than the top navigation drawing users’ attention to that portion of the screen. The white background behind the links may provide a better visual contrast and catch users’ attention more than the light green behind the links on the top navigation.

Recommendation: Several steps can be taken to help resolve this issue. Implement the recommendation of changing the link names so they are more meaningful to the novice user, and increase the size of the top navigation. This will draw users’ attention upwards and away from the related links. Remove the acronyms after the Business Help Site link. The acronyms may cause users to assume the information on the Business Help Site is part of the Wholesale Trade Web site. Instead of taking the users to content specifically for the Wholesale Trade Survey on the Business Help Site, create one link to the main page of the Business Help Site. Investigate what it is about the Business Help Site that users find so attractive. Design the main Wholesale Trade site to attract users’ attention in the same way. Changes to this portion of the Web page would benefit from further usability testing.

6.4.2 Medium Priority Issues

These issues caused some participants to struggle; however, they were eventually able to overcome the issue and complete the task successfully.

6.4.2.1 The bolded text in the center pane on the main page confused some participants

In some cases, the bolded text in the center of the main page was distracting and misleading. On Web sites, bolded text is reserved for headings to provide emphasis (Redish, 2007). Here the emphasis placed on the text confused several participants. The test administrator observed participants clicking on the bolded text as if the text strings were links. One participant expressed frustration as she clicked on a text string and did not navigate off the main page. Figure 17 shows the multiple clicks on the bolded text on the center pane captured by the eye-tracking software.



Figure 17. The bolded text in the center pane confused users (N=5).

The text in the center is crowded together with little visual relief. As mentioned, white space is an important design element. When used correctly, white space increases readability and improves the overall aesthetics of the Web site (Redish, 2007).

Recommendation: Un-bold the text and increase the amount of white space between the sections of the bulleted list in the center pane. Un-bolding the text will decrease the emphasis on the text and help users to understand that the text is informative, not meant to be used for navigation.

6.4.2.2 The location of the Monthly Release Schedule is confusing to some participants

Under the Release Schedule on the left pane navigation on the main page, the location of the Monthly Release Schedule is confusing because it violates user's expectations (See Figure 18).

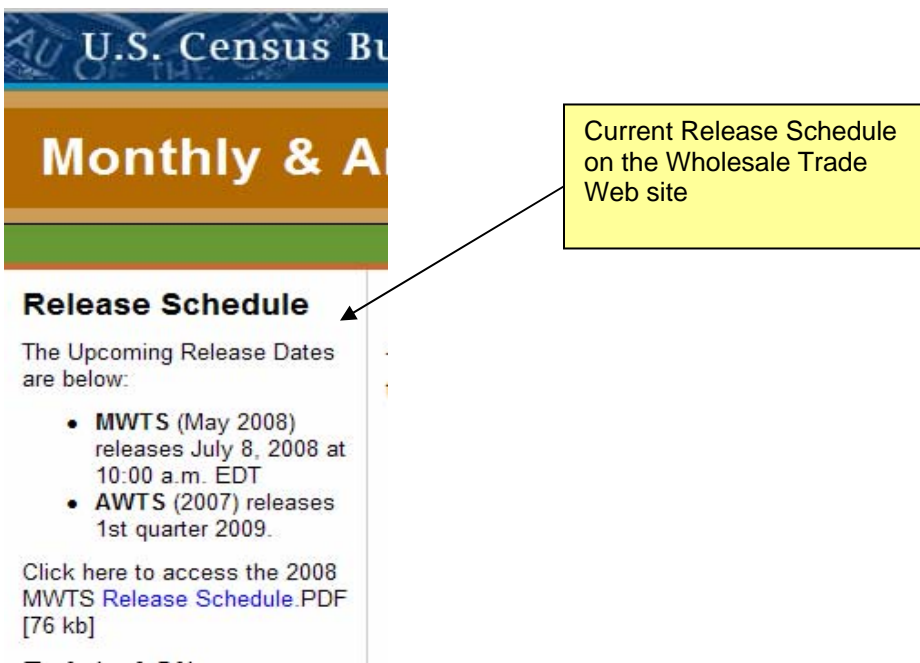


Figure 18. Current Release Schedule on the Wholesale Web site

The task asked participants to find the date of the next release for the Annual Wholesale Trade Survey data. Over half the participants opened the release schedule PDF for the Monthly Wholesale Trade Survey. A couple of the participants read the top of the PDF and realized this was associated with the Monthly survey. Two participants did not make this distinction. Users navigate through Web sites with expectations of where information should be on a page. The current layout violates users' expectations and causes confusion. Since the release Schedule for the Monthly Wholesale Trade Survey is immediately after the information for the Annual Release Schedule, it is easy to mistakenly associate the PDF with the Annual Wholesale Trade Survey.

Recommendation: Restructure the Release Schedule information so the information is grouped together to meet user expectations. Move the Monthly Wholesale Trade Survey bullet underneath the Annual Wholesale Trade Survey bullet. While the acronyms are

defined in the center of the page, consider replacing the acronyms MWTS and AWTS with the names of the survey. This will help users to understand the meaning of the acronyms and help to differentiate between the Monthly and Annual information. Figure 19 provides an example of how to restructure the information.

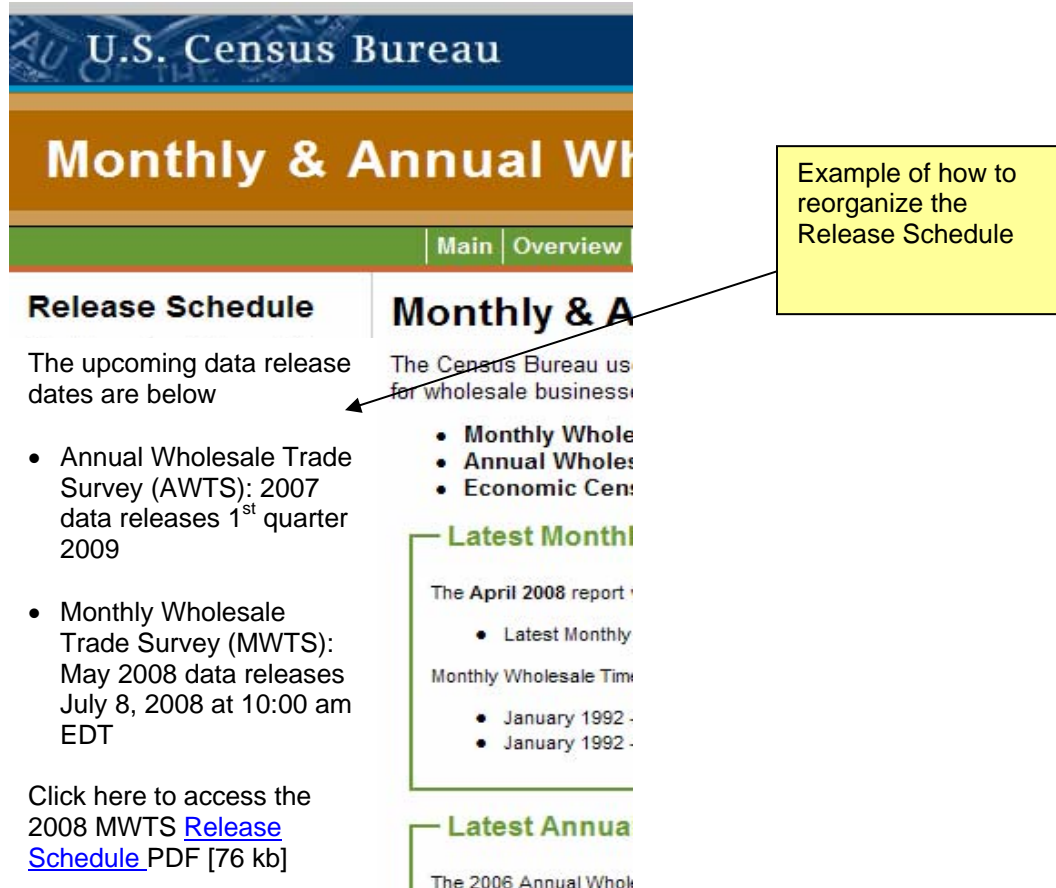


Figure 19. Consider reorganizing the Release Schedule to meet users' expectations

6.4.2.3 In some areas, text is dense, and the terminology is difficult for novice users

In certain areas of the Web site, text is dense and the terminology is difficult for novice users. A few participants commented that the terms were difficult to work through and hard to understand. The Wholesale team has taken steps to reduce the amount of text on the screen by adding a "Read More" section on various areas of the Web site. In the "Read More" sections, a PDF opens and the user has the option to read more information on the topic. This is a positive step in reducing the amount of text on the screen. One issue with the "Read More" PDF is that the user is unaware they are opening a PDF when the user clicks on the "Read More" link. This violates Census Bureau Standard 15.0.2.

Recommendation: Rewrite the text in a style that is more appropriate for the Web and is clearer to the novice user. This includes short, bulleted sentences written on a general level (Redish, 2007). Currently, the Monthly Overview page uses short, bulleted sentences to explain the survey. This is a good example of how to rewrite the text on the other Web pages. The short, bulleted sentences are easy to read and highlight the key concepts.

Keep the Read More information with a couple of changes. With the current design, the “Read More” section is the hyperlink with associated alt text. Consider changing the hyperlink to the main topic on which the sentence the user will be reading more information. For example, considering the following sentence:

“Read more about how the MWTS sample is stratified, selected, and maintained.”

A user using assistive technology has the option to read the links on the page while skipping the content of the page. Such users will hear “Read More” multiple times, but not know what information they are reading more about with the current layout. Consider revising the sentence so the hyperlink is the subject of the sentence. For example, change the example sentence to read:

“Read more about how the MWTS sample is stratified selected and maintained [PDF].”

Add “[PDF]” or the PDF symbol next to the hyperlink that opens the PDF. This will satisfy Census IT Standard 15.0.2 and notify users that the “Read More” link will take them to a PDF.

6.4.2.4 Linking to the glossary page is sometimes confusing

To help with the difficult terminology, the Wholesale Trade Survey team added a glossary page to define terms. While this helps users to gain a greater understanding, the current design is sometimes confusing. Throughout the text are hyperlinked words with no explanation where the user will go if they click on the link. One participant clicked on a term, and she was confused as to where the link took her. Since the page is long, she was taken directly to the term she clicked on, but the top navigation was above the fold (See Figure 20 for an example). Since she could not see the navigation, she expressed confusion and eventually scrolled up and wondered how she arrived on the glossary page.

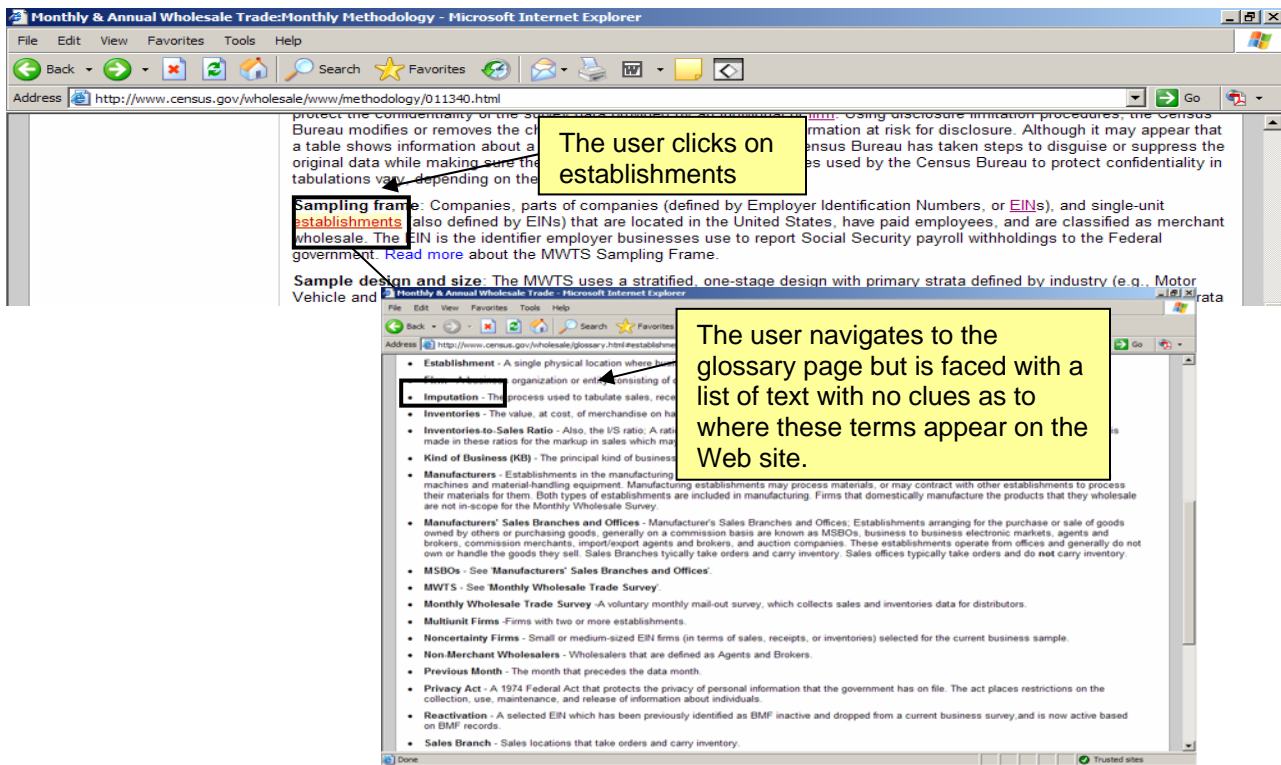


Figure 20. Users do not always know what page they are on when linking to the glossary page.

In some instances, the word does not take them to the glossary, but to another page within the Census Bureau portal. This violates user expectations. As Figure 21 shows, NAICS is a hyperlinked word similar to MBSOs. However, clicking on NAICS takes users to the NAICS Web site, but clicking on MBSOs takes users to the glossary. While this particular scenario was not observed during the usability testing, the lack of a clear indication of hyperlink destinations can lead to user frustration and confusion.

Currently, there is a bug in the Web site. The first time a user clicks on a hyperlinked word to go to the glossary, the word is blue indicating an unvisited link. When the user navigates out of the glossary, all the words linked to the glossary are purple and underlined, indicating they have all been visited when they have not.

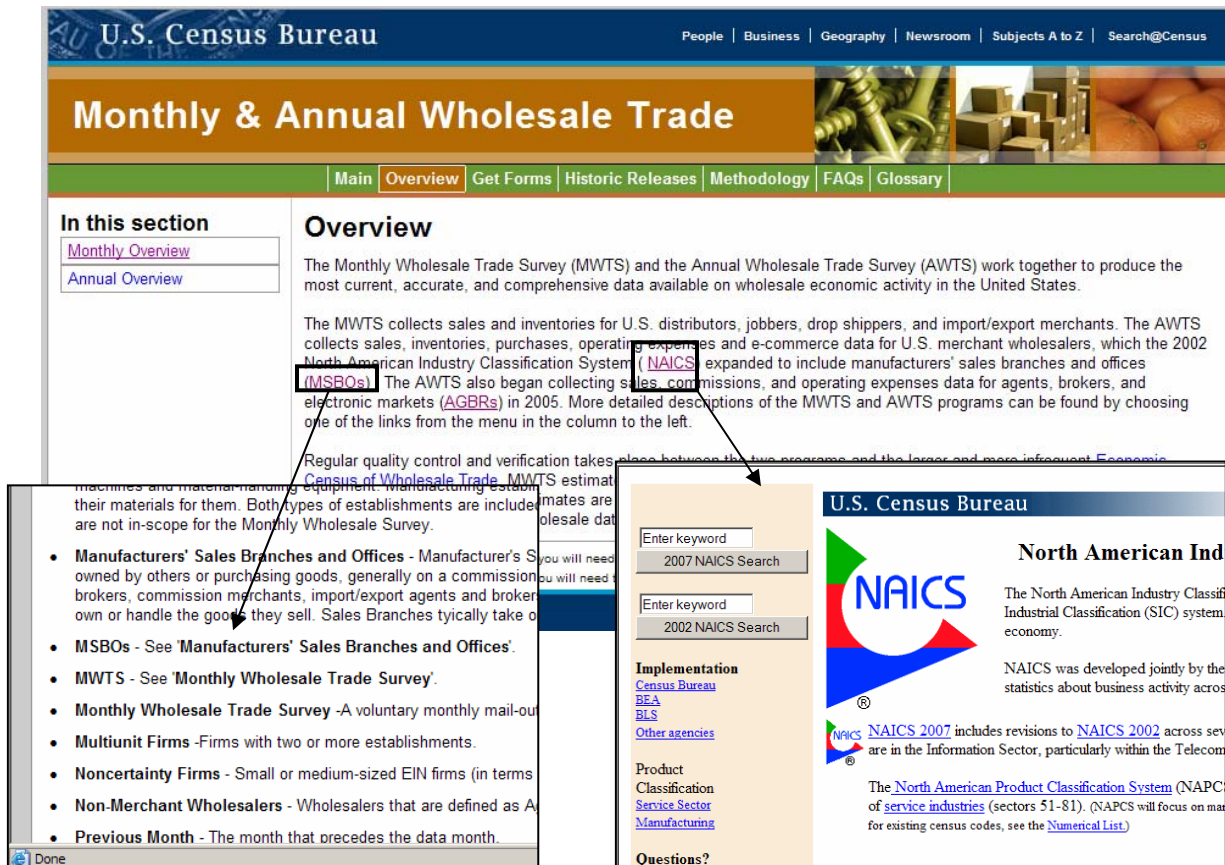


Figure 21. The hyperlinked words do not always take users to the glossary.

Recommendation: It is important for users to know where they are on a Web page. Several options exist for improving the navigation from the hyperlinked word to the glossary page. One option is to change the top navigation so it is dynamic and moves with the page. This way information does not get lost above or below the fold on the page. Another option is to create different pages within the glossary. Instead of having one long page with all the terms, consider having the terms alphabetized with a hyperlinked alphabet across the top of the page below the top navigation. This will reduce the length of the page and allow the user to view the top navigation at all times. The labeling needs to be clearer so users

understand what links take users to the glossary, and which links take users to a new Web site within the Census Bureau portal.

6.4.3 Low-Priority Issues

These problems caused minor annoyances but did not interfere with the flow of the tasks.

6.4.3.1 Links and data open in the same window (Replaces Wholesale Trade Survey page)

Currently, when a user clicks on a link within the Wholesale Trade Survey site that takes them to another Web site within the Census Bureau portal or opens the data files, the Web page and PDF open in the same window as the Wholesale Trade Survey page. This navigates users off the Wholesale Trade Survey page and onto a Web site within the Census Bureau Portal or in a PDF file. Users may not be aware or forget that the window is used for the new Web site or the data file and that the Wholesale page is no longer available, and close the window when they are finished looking at the Web site or a data file. While looking for the total inventories in the Monthly data file, one participant closed the window and expressed confusion when the Wholesale Web site was no longer available. This annoyance caused frustration, and decreased efficiency due to the additional time required to reopen the browser and navigate back to the Wholesale Web site.

Recommendation: Have a new browser window open when a user clicks on a link to a Web site off the Wholesale Trade Survey site, or when a user opens a data file (Excel or PDF format). When the user closes this new window, the Wholesale Trade Survey Web site is still available.

6.4.3.2 The heading “Latest Annual Wholesale Trade Report” is confusing

Due to the nature of the Wholesale Trade Survey, the data releases are posted several months later than the survey was conducted. For example, the 2006 Annual data were made available to the public in February 2008. The 2006 data is listed under “Latest Annual Wholesale Trade Report”. For many, 2006 is not recent, but rather in the past. When asked to find the summary of changes for the 2006 data, three out of seven participants went to Historical Releases to find the summary of changes.

Recommendation: Change the title of the heading from “Latest Annual Wholesale Trade Report” to “2006 Annual Wholesale Trade Report”. The same approach should be used for the Latest Monthly Wholesale Trade Report. This will allow users to see the trade report that is available more quickly and reduce confusion.

Note: After consultation with the Wholesale Trade Survey team, implementing this change would misrepresent the timeline which data are released to the user.

7.0 Discussion

During the first round of testing, the Web site’s user interface supported the participants well in six of the nine tasks. Before the Web site was released to the public, the Usability Lab recommended that the sponsor implement the recommended changes for the high-priority issues first, and then the medium- and low-priority issues if time permitted. Based on the implementation of changes to the interface, the second round of testing was planned and conducted.

During the second round of testing, the Web site's user interface supported the participants well in three of the eight tasks. This was drastically lower than during the first round of testing. The Usability Lab attributes this drop to several factors:

- The participants during the first round of testing were internal Census Bureau employees. The participants noted they were not familiar with the Wholesale Trade Survey Web sites, but they were familiar with the Census Bureau technical jargon and Census Bureau data products.

The external participants in the second round of testing were not familiar with Census Bureau products and terminology, and they were unfamiliar with the Wholesale Trade Survey interface. It is possible that issues with the interface were missed during the first round of testing since the participants were familiar with the Census Bureau products and terminology.

- The changes to the interface may have caused the users to struggle more. The Census Bureau Usability Lab suggests iterative testing to ensure the correct effect was achieved by implementing recommendations of earlier rounds of usability testing. In fixing issues to the initial interface, new issues may have been created.
- Features may have been added that detracted from the usability goal of the Web site. During the first round of testing, the Web site did not have a link to the Business Help site. One task asked participants to find the purpose and use of the Wholesale Trade Survey. During the first round of testing, 71 percent of the users were able to find this information using the Wholesale Trade Survey interface. During the second round of testing, no participants were able to find this information using the Wholesale Trade Survey Web site. However, 71 percent of the participants during the second round of testing were able to find the purpose and use of the survey on the Business Help site. This suggests that the Business Help Site was appealing to users and that it took their attention away from the Wholesale Trade Survey Interface.

After the findings and recommendations were presented to the Wholesale Trade Survey team, many of the recommended changes were implemented. Changes included the following:

- Links in the top navigation were renamed.
 - Overview – About the Survey
 - Methodology – How Surveys are Collected
 - FAQs – Common Questions
 - Glossary – Definitions
- The contact information was restructured into a bulleted list, and ask.census.gov was removed from the list.
- The Monthly release schedule PDF is now directly underneath the Monthly release schedule.
- The bolded text in the center of the main page was removed.
- The link to the Business Help Site was removed.
- The size of the top-navigation bar was increased.

As part of the Service Sector Statistics Division (SSSD), the Wholesale Trade Survey Web site has been selected to serve as a model to other Web sites within SSSD. A possibility is that this new template will be adopted by public sites throughout the Census Bureau. Based on the findings from the usability testing, the navigation and general organization of the SSSD Web sites will be designed similarly to the Wholesale Trade Survey Web site. The Usability Lab recommends each new site developed in SSSD undergo iterative usability testing to ensure the user interface supports the needs of diverse users.

8.0 References

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Appendix A - General Introduction

General Introduction

Thank you for your time today. My name is Jenna, and I will be working with you today. We will be evaluating a new design of the Wholesale Trade Survey Web site by having you work on several tasks. Your experience with the site is an essential part of our work. We are going to use your comments 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. Please share both your positive and negative reactions to the site. And remember, there is no right or wrong answer. We are not evaluating you or your skills, but rather you are helping us see how well the site works.

The Monthly and Annual wholesale surveys collect information about the sales and inventories for U.S. distributors and wholesale merchants to produce accurate and comprehensive data on wholesale economic activity in the United States.

Generally people use this Web site to look for data, how the survey was conducted, the type of data that are available, when data will be released, or to find a form to complete the Monthly or Annual Wholesale trade survey.

All the answers provided on the survey provided by the different companies that respond are protected under Title 13, which guarantees privacy and confidentiality.**

First, I would like to ask you to read and sign this consent form. It explains the purpose of the session and informs you that we would like to videotape the session, with your permission. Only those of us connected with the project will review the tape. We will use it mainly as a memory aid. We may also use clips from the tape to illustrate key points about the design of the Web pages.

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

[Start the tape when the participant signs the form.]

So today, you will be helping us test the usability of the Wholesales Trade Survey Site. Your feedback is valuable, and we appreciate your help. We are going to do some eye-tracking as well as have you work on some task scenarios that I will give you.

Before we get started, please take a moment to complete this computer usage and internet experience questionnaire. I am going to leave you here in the test room, 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.]

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

[Do Calibration]

Now that we have your eyes calibrated, we are ready to begin. For the next 60 minutes, I will ask you to work on 9 tasks. I would like you to tell me your impressions and thoughts about the Web site as you work through the tasks. I would like you to “think aloud” and talk to me about your decisions. So if you expect something to happen, tell me what you expect. If you expect to see some piece of information, tell me about what you expect. This means that as you work on a task, talk to me about what you are doing, what you are going to do, and why. Talk to me about why you clicked on a link or where you expect the link to take you.

Finally, during the session, I will remind you to talk to me if you get quiet, not to interrupt your thought process simply to remind you to talk to me. Please focus on verbalizing what you are thinking and expecting to happen. We are interested in the reasoning behind your actions, not just what you are doing.

I ask that each time you start a task, please read the task out loud, and 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.” After each task, I will return you to the homepage where you can begin the next task.

Please remember to begin each task by reading the task question aloud as well as stating the final answer. Also, as you work, please remember think aloud.

** The blue text describing the Wholesale Trade Survey and Title 13 were not included during the first round of testing.

Appendix B - Consent Form

Usability of Wholesale Trade Surveys Site For Individual Subjects

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

You have volunteered to take part in a study to improve the usability of the Wholesale Trade Survey 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. Staff directly involved in the usable design 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.

Researcher's Name: _____

Researcher's Signature: _____ Date: _____

Participant's Name: _____

Participant's Signature: _____ Date: _____

Appendix C - 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	4	5	5	6	7	8	9

5. What computer applications do you use?

Mark (X) for all that apply

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

For the following questions, please circle one number.

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

Appendix D - Task List for Round One and Round Two of testing

Task List Round One

1. You are writing a report on the U.S. economy. Suppose you are interested in finding the dollar value of total U.S. Wholesale Inventories for the month of September 2007 for a report you have. What is the dollar value of the total U.S. Wholesale Inventories for September 2007?
2. You have both read and heard of a term the Census Bureau uses called Title 13. You think that Title 13 protects your confidentiality. Go to the area that would explain what Title 13 is on the Web site.
3. You are the person who reports monthly sales to the Census Bureau. You did not receive your Monthly Wholesale Trade Survey in the mails this month. Where would you find the necessary form a Company Reporter would need to fill out?
4. You have a question about some of the data you have found on the Wholesale Web site. What is the official email address to the Wholesale Survey Office?
5. You are interested in finding historical data for either the Monthly or Annual Wholesale Trade programs. Where is a central location you can visit to see if either program offers historical publications? Does the Annual Trade Survey currently have historical publications available online?
6. You recently received notification that your business was selected to be part of the Monthly Wholesale Trade Survey sample, which provides monthly estimates of sales and inventories of wholesale trade industries. You want to know the methods as well as how many firms participate in the Monthly Wholesale Trade Survey. Typically how many firms participate in the Monthly Wholesale Trade Survey?
7. You run a wholesale business, and you are anticipating the next Annual Wholesale Trade Survey report. Where can you find out when the 2006 data will be released to the public?
8. For your new job, you must track Annual Wholesale Trade data going back to 2000. You are aware that changes and revisions have been made to the data over the years, and are concerned as which changes were made in 2005. Where can you find this information?
9. Your assistant is going to respond to the Annual Wholesale Trade Survey, but she is unclear about the purpose and uses of the survey. To answer your assistant's questions, use the Web site to find the purpose and uses of the Annual Wholesale Trade Survey.

Task List (Round 2)

1. You are writing a report on the U.S. economy that requires you to explain the role that wholesale inventories play in calculating GDP. Find the value of total U.S. Wholesale Inventories for the month of January 2008.
2. You have heard of a federal law called Title 13 that is integral to the work the Census Bureau does each day. You wonder if Title 13 concerns your rights as a respondent, but are not sure. Go to the area that would explain what Title 13 is on the website.
3. You are an accountant for a small company that wholesales pharmaceuticals to local retailers. You did not receive your Monthly Wholesale Trade Survey (MWTS) in the mail this month. Where would you find the necessary form a Company Reporter would need to fill out?
4. You have a question about some of the data you have found on the Wholesale website. What is the official email address to the Wholesale Survey Office?
5. Your assistant is going to respond to the Annual Wholesale Trade Survey (AWTS), but she is unclear about the purpose and uses of the survey. To answer your assistant's questions, use the website to find the purpose of the AWTS and at least two uses of AWTS data.
6. You recently received notification that your business was selected to be part of the Monthly Wholesale Trade Survey (MWTS) sample. You want to know how your data will be collected (via the Internet? Telephone? Etc.) as well as whether or not the survey is voluntary. Where on the website would you go to find how the MWTS collects data and if it's mandatory for firms to respond?
7. You run a wholesale business, and you are anticipating the next Annual Wholesale Trade Survey (AWTS) report. Find when the AWTS 2007 data will next be released to the public.
8. For your new position, you must track historic Annual Wholesale Trade data going back several years. You are aware that changes have been made to the data over time and would like to know what the changes were for 2006. Where can you find a summary of the revisions that have been implemented?

QUIS (Round 2)

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

- | | | | | | | | | | | | | |
|--|--------------|---|---|---|---|---|---|------------|---|---|---|----------------|
| 1. Overall reaction to the Web site: | terrible | 1 | 2 | 3 | 4 | 5 | 6 | wonderful | 7 | 8 | 9 | not applicable |
| 2. Screen layout: | confusing | 1 | 2 | 3 | 4 | 5 | 6 | clear | 7 | 8 | 9 | not applicable |
| 3. Use of terminology throughout the Web site: | inconsistent | 1 | 2 | 3 | 4 | 5 | 6 | consistent | 7 | 8 | 9 | not applicable |
| 4. Information displayed on the screens: | inadequate | 1 | 2 | 3 | 4 | 5 | 6 | adequate | 7 | 8 | 9 | not applicable |
| 5. Amount of text on the screen: | inadequate | 1 | 2 | 3 | 4 | 5 | 6 | adequate | 7 | 8 | 9 | not applicable |
| 6. Tasks can be performed in a straightforward manner: | never | 1 | 2 | 3 | 4 | 5 | 6 | always | 7 | 8 | 9 | not applicable |
| 7. Organization of information on the site: | confusing | 1 | 2 | 3 | 4 | 5 | 6 | clear | 7 | 8 | 9 | not applicable |
| 8. Navigation throughout the site: | impossible | 1 | 2 | 3 | 4 | 5 | 6 | easy | 7 | 8 | 9 | not applicable |
| 9. Overall experience of finding information: | difficult | 1 | 2 | 3 | 4 | 5 | 6 | easy | 7 | 8 | 9 | not applicable |
| 10. Additional Comments: | | | | | | | | | | | | |