REPORT ON USABILITY TESTING OF
CENSUS BUREAU’S DYNAMAPS CD-ROM PRODUCT

DRAFT

Submitted by:

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Executive Summary

DynaMaps is a CD-ROM based generalized map-based information visualization tool for dynamic queries that was developed by staff at the University of Maryland’s Human Computer Interaction Laboratory and has been further developed by Census Bureau personnel. This report describes the methods, findings, and design recommendations that resulted from the usability test of the DynaMaps CD-ROM product containing the data from the USA 1998 Counties CD-ROM. Census Bureau and UserWorks, Inc. staff conducted the usability testing in order to solicit feedback from users, to document any usability problems, and to consider design solutions. Ease and efficiency of use and user satisfaction were used as parameters for assessing usability of DynaMaps. The usability test was conducted on August 16th and 22nd, 2001 at the Census Bureau’s Usability Lab in Suitland, MD.

Six Census Bureau personnel served as representative users in the present evaluation. An attempt was made to select a mix of people in terms of their experience with Census Bureau data and their expertise using computers and the web. Only one of them had seen the product before.

Representative tasks were developed to test the various functional areas of the product. The participants were given written task scenarios and asked to perform the tasks. Participants were encouraged to ‘think aloud’ as they performed each task. The Test Administrator allowed participants time to figure out how to accomplish the sub-tasks. When they got lost or confused, the Test Administrator asked questions in an attempt to discern the underlying causes of the difficulty. On occasion the participant was given a hint about how to do the task so that their ability to then do the task could be assessed. The Data Logger noted the problems participants had and their comments on which features were easy or difficult, which features were clear or confusing and why, which features were important or not and why, and features that should be changed, added or eliminated.

The data logger notes, test administrator notes, and the post-test questionnaire data were reviewed. Data from observation of task performance and participant comments on various features were aggregated into usability issues and problems were categorized according to their severity. Data from post-test questionnaires completed by participants were compiled and user ratings were presented as mean values.

Most participants found DynaMaps to be feature-rich and were generally impressed by the functionality. They liked the use of the sliders for drilling down to the data and its corresponding representation in the map window. They also liked the fact that they could view details for states and counties in the Details window. Some said that the Scatter plot feature was useful in identifying trends. Some commented that they liked the ability to resize windows.

Despite these positive comments, participants also had several negative comments. Most of the ratings - including ratings relating to usability and the overall ratings - were not as high as are usually found when Census products are tested. Consistent with this, many usability issues were discovered. Addressing these issues would help in making DynaMaps a more intuitive and easy-to-learn product. The usability problems were classified as high, medium or low severity based on the scale:

- High severity – likely to result in failure to accomplish tasks
- Medium severity – likely to cost the user time or errors
- Low severity – not likely to substantively affect performance, but worth considering
The high severity problems included:

- Participants were very frustrated with the slow response of the DynaMaps application when working with counties data. Even though a fast T1 line was used, the display took a few seconds to change after participants performed actions, so they were not sure if the system was processing their commands. Sometimes they repeated an action and did not get the expected result since the system accepted both actions.

- Participants had problems with zoom controls:
  - Some participants did not think of zooming into the map when working with particular states or counties. They had to be prompted to do so. It is possible that they did not know they could zoom in because of the “zoom in” button design. It looks more like a “search” button (since it has a magnifying lens icon) than a “zoom” button (which typically has a magnifying lens with a plus sign.)
  - Once in zoom mode, participants had difficulty returning to the normal select mode.
  - A few participants were confused as to why there were two icons for zooming in.
  - Some participants did not understand the functionality of the “zoom in” and “zoom out” buttons (with rectangular icons) and never used them.

- Participants found it difficult to locate the variable of their interest in the Sliders window. This was due to two reasons – first, the variables were not sorted in any logical way and second, the participants had to scroll a lot since there were 34 variables in total.

- Many participants were not aware of the existence of the right slider – they only manipulated the left slider.

- The Scatter Plot was widely misunderstood. Several commented that they didn’t use scatter plots and were not sure how or why they would use it here. Several participants had to be prompted to use the Scatter Plot for the task that required its use. It was not clear what was plotted by default. One participant thought the variables selected in the Set Criteria window were plotted. One or two said they’d rather not see the plot in default view since it made the screen busier.

Design recommendations were suggested to address the usability problems. In cases where there was more than one solution, alternative design solutions were provided. Please note that there may be other solutions that better resolve a usability problem. In addition, design changes can cause new problems as well as fixing known problems. So it is highly advisable to conduct further usability testing after changes to the interface are made.
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1.0 Introduction

DynaMaps is a CD-ROM based generalized map-based information visualization tool for dynamic queries that was developed by staff at the University of Maryland’s Human Computer Interaction Laboratory and has been further developed by Census Bureau personnel.

The Census Bureau asked UserWorks, Inc. to support the usability testing of the DynaMaps prototype in order to solicit feedback from users, to document any usability problems, and to consider design solutions. Ease and efficiency of use, and user satisfaction were used as parameters for assessing the usability of DynaMaps. In assessing usability, we also considered both initial ease of use by new users and eventual ease of use by experienced users. Data from the USA 1998 Counties CD-ROM was used during testing.

This report describes the methods, findings, and design recommendations that resulted from the usability test conducted on August 16th and 22nd 2001 at the Census Bureau’s Usability Lab in Suitland, MD.

2.0 Methodology

2.1 Participants

Six Census Bureau personnel served as representative users in the present evaluation. They exercised the DynaMaps application individually. The participants constituted a mix of potential users in terms of their experience with the Census Bureau and their expertise using computers and the web. Only one of them had seen the product before. Tables 1 and 2 contain participants’ responses to the demographics questionnaire.

<table>
<thead>
<tr>
<th>Participant</th>
<th>Age Range</th>
<th>Gender</th>
<th>Education (highest level)</th>
<th>Job Title</th>
<th>Division / Branch</th>
<th>Hours per week use computer</th>
<th>How long used computer regularly</th>
<th>Proficiency using Windows (1 - novice to 7 - expert)</th>
<th>Hours per week use web</th>
<th>How long used web regularly</th>
<th>Proficiency using web (1 - novice to 7 - expert)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>50-59</td>
<td>F</td>
<td>High School</td>
<td>Stat Assistant</td>
<td>HHES</td>
<td>40</td>
<td>8 yrs</td>
<td>6</td>
<td>20</td>
<td>8 yrs</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>30-39</td>
<td>F</td>
<td>2-yr college</td>
<td>HHES</td>
<td>35</td>
<td>14 yrs</td>
<td>4</td>
<td>35</td>
<td>6 mos</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>50-59</td>
<td>F</td>
<td>4-yr college</td>
<td>Branch Chief</td>
<td>ESMPD</td>
<td>40</td>
<td>20 yrs</td>
<td>4</td>
<td>15</td>
<td>3 yrs</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>40-49</td>
<td>M</td>
<td>Advanced</td>
<td>Math Stat</td>
<td>SRD</td>
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<td>15 yrs</td>
<td>4</td>
<td>5</td>
<td>1 yr</td>
<td>4</td>
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<tr>
<td>5</td>
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<td>F</td>
<td>Masters</td>
<td>Marketing</td>
<td>MSO</td>
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<td>5</td>
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<td>5 yrs</td>
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<td>30</td>
<td>10 yrs</td>
<td>6</td>
<td>8</td>
<td>4 yrs</td>
<td>6</td>
</tr>
</tbody>
</table>

Table 1. Demographic Information and Computer/Web Experience
Table 2. Experience with Census Bureau data

<table>
<thead>
<tr>
<th>Participant</th>
<th>Time use CB website</th>
<th>Time use CB USA Counties CD-ROM</th>
<th>Time use other CB CD-ROMs</th>
<th>How often work with CB data</th>
<th>How often use GIS</th>
<th>Other ways use Census data</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>&gt; 10 hrs/week</td>
<td>never</td>
<td>&lt; 1 hr/week</td>
<td>4-10 hrs/week</td>
<td>&lt; 1 hr/week</td>
<td>Assist data users</td>
</tr>
<tr>
<td>2</td>
<td>&gt; 10 hrs/week</td>
<td>never</td>
<td>&gt; 10 hrs/week</td>
<td>never</td>
<td>&gt; 10 hrs/week</td>
<td>Help customers find info</td>
</tr>
<tr>
<td>3</td>
<td>&lt; 1 hr/week</td>
<td>never</td>
<td>&lt; 1 hr/month</td>
<td>never</td>
<td>&lt; 1 hr/week</td>
<td>Produce data - don't really use it</td>
</tr>
<tr>
<td>4</td>
<td>&lt; 1 hr/month</td>
<td>never</td>
<td>&gt; 10 hrs/week</td>
<td>never</td>
<td>&gt; 10 hrs/week</td>
<td>Custom processing, research</td>
</tr>
<tr>
<td>5</td>
<td>1-4 hrs/week</td>
<td>never</td>
<td>4-10 hrs/week</td>
<td>&lt; 1 hr/month</td>
<td>Data product development</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>4-10 hrs/week</td>
<td>never</td>
<td>&gt; 1 hr/week</td>
<td>&gt; 10 hrs/week</td>
<td>Analysis of customer data</td>
<td></td>
</tr>
</tbody>
</table>

2.2 Testing Facilities

All test sessions were conducted in the Census Bureau’s usability lab. The lab setup consisted of a user room and an adjacent control room. The participant was seated in the user room, which was equipped with a Pentium-based, Windows 98 workstation on which the DynaMaps prototype was run. Screenshots are shown in Appendix A. The Test Administrator and the Data Logger were seated in the control room.

The lab facilities allowed the Test Administrator both a direct view (through one-way glass) and two video camera views of the participant. One camera captured the front view of the participant and the other camera captured a top-down view of the participant’s keyboard. The participant’s computer screen was scan-converted and displayed on a video monitor in the Control Room. The front view of the participant and the scan-converted image were fed into a video mixer to create a picture-in-a-picture configuration, which was displayed on a separate monitor in the Control Room and fed to videotape. A microphone and speaker system linking the Control and User Rooms allowed the Test Administrator to listen to and speak to participants. The digital VCR laid down machine-readable time code on the tape. This same time code was fed to a computer on which the data logging person typed time-stamped observational notes, using the UsabilityWare data logging software.

2.3 Test Materials

Test materials were generated to communicate testing requirements to the participants, collect the data, and to satisfy legal and ethical considerations. Materials that were used for testing included:
2.4 Task Scenarios

Representative tasks were developed to test the various functional areas of the product. As much as possible, terms used in the product were not used in the task-related questions that were posed to users so as not to “lead” them. The following written tasks were created.

EXPLORATION TASK
You just received the DynaMaps software and you want to spend a little time finding out what it does and how it works. Take 5 minutes to explore the software.

TASK 1
a) Which state had the highest number of births per 1000 people in 1994?
b) What is the figure?

TASK 2
You are interested in opening a catering service for high-income families in New York, Vermont, New Hampshire or Massachusetts.
a) Using the most recent figures available, find which one of these states has the highest median family income.
b) What is the median family income?
c) Which of these states has the next highest median family income?

TASK 3
Of the states that in 1989 had at least 20% of the population living below the poverty level, which one had the lowest unemployment rate in 1996.
a) Name the state.
b) Give the unemployment rate in 1996.
c) What was that state’s median household income in 1989?

TASK 4
a) Find the relationship between education level and income across states.
b) Find a state that is an exception to the pattern, and describe in what way it is different.

TASK 5
You are preparing a report in which you are comparing Utah and Nevada on a number of variables relating to poverty. You want to see the data for the two states displayed together. Find the percent of persons below the poverty level in 1989 and 1993 in these two states and the per capita money income in these states in 1989.
**TASK 6**

a) Look at the relationship between the percentage of the population that is Hispanic and the birthrate. Describe what the relationship is. Identify two states that are exceptions to this in different ways.

b) Identify Alaska and indicate whether it is an outlier, and if so in what way.

**TASK 7**

a) Which area of the country has the highest number of births per 1000 population?

b) Which states have a birthrate between 16 and 17 per 1000 population?

**TASK 8**

a) Does the pattern of earnings in retail by states show, approximately, a skewed distribution similar to diagram 1 below, a normal distribution similar to diagram 2 below or a skewed distribution similar to diagram 3 below?

![Diagram 1](image1)  ![Diagram 2](image2)  ![Diagram 3](image3)

b) In terms of earnings in retail sales, are a larger number of states similar to Ohio or are a larger number similar to Montana?

**TASK 9**

You are looking to retire to a county in Florida that has a highly educated population, a low serious crime rate, and low per capita property taxes. Find two counties that fit these criteria.

**TASK 10**

a) Identify a county in the northwestern part of the United States that has high earnings in manufacturing and low earning in the service sector.

b) Name the county and state that it is in. Give the figures for manufacturing and retail trade for this county.

All participants were asked to perform Tasks 1, 2 and 6 since they were deemed as critical tasks. Depending on availability of time they completed some or all of the other tasks.

On August 16th the tasks related to Counties data (Tasks 9 and 10) were not completed since the DynaMaps prototype was not fully functional and could not access the Counties data.

**2.5 Testing Procedures**

The participants were given an introduction about the purpose and nature of the testing by the Test Administrator. They were then asked to sign the consent/permission to be videotaped form. The Test Administrator also asked the participants to complete a short demographics questionnaire.

Each test participant was involved in a single test session, which lasted approximately 1.5 hours. The participants were given written task scenarios on paper and asked to perform the tasks.
Participants were encouraged to ‘think aloud’ as they performed the task. The Test Administrator allowed participants time to figure out how to accomplish the sub-tasks. When they got lost or confused, the Test Administrator asked questions in an attempt to discern the underlying causes of the difficulty. On occasion the participant was given a hint about how to do the task so that their ability to then do the task could be assessed.

The Data Logger noted the problems participants had and also the errors they got and how they corrected the errors. Also recorded were participant comments on which features were easy or difficult, which features were clear or confusing and why, which features were important or not and why, and features that should be changed, added or eliminated.

At the end of the test, the participants were asked to complete a post-test questionnaire (based on QUIS – the Questionnaire for User Interaction Satisfaction developed at the University of Maryland) to rate their impression of DynaMaps based on the tasks performed. They were also debriefed about their experience with the survey.

2.6 Data Analysis

The data logger notes and the post-test questionnaire data were reviewed and the following data were compiled:
- Data from observation of task performance and participant comments on various features were aggregated into usability issues and categorized according to their severity.
- Data from post-test questionnaires completed by participants were compiled and user ratings presented as mean values.
- Data on participants’ demographic background, computer and web experience, and experience with Census Bureau data

The results from this data analysis and compilation are presented below in the Findings section.

3.0 Results

3.1 Findings and Recommendations based on Task Performance

Most participants found DynaMaps to be feature-rich and were generally impressed by the functionality. They liked the use of the sliders for drilling down to the data and its corresponding representation in the map window. They also liked the fact that they could view details for states and counties in the Details window. Some said that the Scatter plot feature was useful in identifying trends. Some commented that they liked the ability to resize windows. In general, participants were able to accomplish their tasks, although in some cases they had to be prompted to use certain aspects of DynaMaps.

However, several usability issues were also discovered. Addressing these issues would help in making DynaMaps a more intuitive and easy-to-learn product. The following section describes the usability problems identified from observation of task performance and from participant comments. It also includes design recommendations for product improvement. The usability problems are classified as high, medium or low severity based on the following scale:
- High severity – likely to result in failure to accomplish tasks
- Medium severity – likely to cost the user time or errors
• Low severity – not likely to substantively affect performance, but worth considering

Please note that there may be other solutions that better resolve a usability problem. In addition, design changes can cause new problems as well as fixing known problems. So it is highly advisable to conduct further usability testing after changes to the interface are made.

3.1.1 MAP WINDOW

Problem 1: Participants were very frustrated with the slow response of the DynaMaps application when working with counties data. Even though a fast T1 line was used, the display took a few seconds to change after participants performed actions, so they were not sure if the system was processing their commands. Sometimes they repeated an action and did not get the expected result since the system accepted both actions.
Severity: High
Recommendation: The lag between the user’s action and the system response is too long. This needs to be shortened to a more acceptable level. For the time being, the cursor can be changed to an hourglass whenever the system is processing information.

Problem 2: Participants had problems with zoom controls:
- Some participants did not think of zooming into the map when working with particular states or counties. They had to be prompted to do so. It is possible that they did not know they could zoom in because of the “zoom in” button design. It looks more like a “search” button (since it has a magnifying lens icon) than a “zoom” button (which typically has a magnifying lens with a plus sign.)
- Once in zoom mode, participants had difficulty returning to the normal select mode.
- A few participants were confused as to why there were two icons for zooming in.
- Some participants did not understand the functionality of the “zoom in” and “zoom out” buttons (with rectangular icons) and never used them.
Severity: High
Recommendation:
- The “zoom in” button icon should be changed to a magnifying glass with a plus sign.
- There should be a redundant keyboard shortcut to get out of the zoom mode such as the Escape key.
- In addition to the “zoom in” icon, there should be a “zoom out” icon. (a magnifying glass with a minus sign). The two existing “zoom in” and “zoom out” buttons (with rectangular icons) can be eliminated.

Problem 3: A few participants were not sure whether the states were being selected or deselected when they turned dark gray (after moving the slider). They were confused and initially thought that the gray designated states that fit the criteria rather than the reverse.
Severity: Medium
Recommendation: There is no clear solution for this problem, but one possible way to convey the de-selection process is use a Windows’ light gray instead of the current dark gray. Since Windows uses this light gray color to indicate anything inactive, unavailable or unselected, users may be better able to identify the light gray colored states as those that are not selected.
Problem 4: When participants hit the Reset button (to deselect a previous selection) after zooming and manipulating the map, they were frustrated since it changed the display back to the original and reset the sliders.
Severity: Medium
Recommendation: It would help to have a keyboard shortcut such as the Escape key or a Select None button that would deselect all the current selections without changing the map view. Alternately an Undo button could be added which reverses users’ actions one step at a time.

Problem 5: When participants choose the Counties toolbar button, data for all counties for all states were loaded. They wanted to be able to select a State from the map and then load counties data only for that State. However, they could not do so from the map and they did not realize that this could be done from the File menu.
Severity: Medium
Recommendation: When users select the Counties button a dialog should be displayed which allows users to choose specific states and loads counties data for only these states when they close this dialog. This dialog should also have an All States checkbox if users want to get the counties data for all states, but there should be a note adjacent to this checkbox explaining that such a large data set will slow the application down.

Problem 6: On the first day of testing, the participants were not aware of the fact that multiple states or counties could be selected. On the second day of testing, a message in the Details window did mention this fact and participants saw this, but found the instructions confusing. The instructions said “… use control click to select multiple regions.”
Severity: Medium
Recommendation: Instructions in the Details window for multiple selection can be changed to “… to select multiple states or counties:
• Click and drag over a region or
• Hold control key and click on states or counties.”

3.1.2 SET CRITERIA WINDOW

Problem 7: Participants found it difficult to locate the variable of their interest in the Sliders window. This was due to two reasons – first, the variables were not sorted in any logical way and second, the participants had to scroll a lot since there were 34 variables in total
Severity: High
Recommendation: It may be preferable not to pre-load any variables and instead to allow users to choose the variables they want to work with. Many participants commented that it was unlikely that they would work with so many variables and preferred to be able to select which variables to display in the Set Criteria window. Instead of pre-loading the variables, the Set Criteria window would be blank and contain instructions on how to load the variables, such as “Choose File > Load Data and select the variables you want to work with.” However, if variables were to be pre-loaded, then it would be preferable to sort the variables in a logical manner such as by topic or in alphabetical order. It would also help to have a Search function so that users can search for a variable and the search results would highlight all occurrences of the variable in the Set Criteria window.
Problem 8: Many participants were not aware of the existence of the right slider – they only manipulated the left slider.
Severity: High
Recommendation: The functionality of the sliders would be more clear if there were “>” and “<” arrow markings on the left and right sliders respectively.

Problem 9: Some participants commented that they could not be very precise with the sliders and would like the ability to enter values.
Severity: Medium
Recommendation: In addition to using the sliders to set the criteria, users should be able to enter values. The upper and lower range values should be displayed in text fields, in which users can enter their values if they so choose. If users enter an invalid value (a value outside the range or in an invalid format), a diagnostic error should be displayed such as “enter a value between xxx and yyy.”

3.1.3 DETAILS WINDOW

Problem 10: In the Details window, participants generally liked the concept of the pop-ups that were displayed when they hovered over the column headers. However, they were annoyed when the pop-ups did not disappear when they moved their cursor away and obscured relevant information. Also, in some instances, the pop-ups were displayed even though participants had not specifically hovered over the corresponding column header.
Severity: Medium
Recommendation: The pop-ups should be consistent – they should be displayed only when users hover over the corresponding column header and they should disappear when the users move the cursor out of the pop-up area.

Problem 11: When participants selected more than one state and scrolled to the right to get to a variable of interest, they no longer knew which row represented which state. The same problem applies to the counties data.
Recommendation: The Details window should have a row header that remains on the left of the window when users scroll to the right. Depending on the data set, this row header should have the state name or the county name.

3.1.4 SCATTER PLOT WINDOW

Problem 12: The Scatter Plot was widely misunderstood. Several participants commented that they didn’t use scatter plots and were not sure how or why they would use it here. Several participants had to be prompted to use the Scatter Plot for the task that required its use. It was not clear what was plotted by default. One participant thought the variables selected in the Set Criteria window were plotted. One or two participants said they’d rather not see the plot in default view since it made the screen busier.
Severity: High
Recommendation: It might be better to leave the Scatter Plot window empty, like the Details window, and have “Select a variable” displayed in the x and y axis drop-downs. There could also be some general instructions in the graph area such as “Select variables for x and y axis.”
Also, it might be a better use of screen real estate if the Scatter Plot window was narrower and the Details window was wider.

**Problem 13:** Before plotting, participants had to look at the variable name, and then its corresponding number in the Set Criteria window, and then select the variable numbers in the x and y axis dropdowns. They found this cumbersome and annoying.

**Severity:** Medium

**Recommendation:** Scatter Plot x and y axis dropdowns should have variable names instead of numbers. Also the x-axis dropdown should be moved to the bottom right of the window and the y-axis dropdown should be moved to the top left corner.

### 3.1.5 OTHER PARTICIPANT SUGGESTIONS

- Consider creating a tutorial and presenting users the option to read the tutorial the first time they access the application. The tutorial should also be accessible from Help if users want to get to it at a later stage.
- When users manipulate a particular variable slider in the Slider window, that variable column header should be highlighted in the Details window so that they don't have to search for it.
- When users select two variables in the Sliders window, these two variables should be automatically plotted in the Scatter Plot window.

### 3.2 Findings from Post-test Questionnaire and Debriefing

The Post-Test Questionnaire (See Appendix D) was administered after the test was completed to obtain feedback from the participants based on their overall experience with DynaMaps. The results are shown in Table 3 (data collected from the first participant was not included since a different questionnaire was used for the other five participants.)
Participants had both positive and negative comments. Most of the ratings - including ratings relating to usability and the overall ratings - were not as high as are usually found when other Census products are tested. Even the best ratings - Moving the sliders (difficult - easy) and Character readability (easy - hard) were relatively low. Organization of information (confusing - clear) and Arrangement of information (logical - illogical) were rated the lowest, probably because of the lack of logical ordering of variables in the Set Criteria window and confusion caused by the Scatter Plot. The ratings for all the other parameters were either at the midpoint or a little below. These ratings generally correspond to comments made during the session as well as during the debriefing.
Appendix A – DynaMaps Screenshots

DynaMaps Version dated August 16, 2001

DynaMaps Version dated August 22, 2001
1st icon: To load new information
2nd: select states & counties
3rd: zoom in on selected area
4th: click on and move image
5th: zoom in
6th: zoom out
7th: resets map to original size
8th: load states data
9th: load counties data
10th: resets everything to original state
Appendix B - Informed Consent Form

The Census Bureau routinely tests products used for collecting data or disseminating data in order to produce the best products possible.

You have volunteered to take part in a study to improve a product used for collecting Census Bureau data. In order to have a complete record of your comments, your interview session will be audio-taped/video-taped. We plan to use the tapes to improve the product. Staff involved in this product design research will have access to the tapes. The tapes may also be used for training others to conduct this type of research and in presentations to professional audiences.

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

__________________________                        ____________________________
Participant's Signature    Researcher's Signature

__________________________                        ____________________________
Printed Name     Printed Name

__________________________                        ____________________________
Date      Date
Appendix C - Demographics Questionnaire

DEMOGRAPHIC INFORMATION

Age: ____ < 21  ____ 21-29  ____ 30-39  ____ 40-49  ____ 50-59  ____ 60+

Gender: ____ MALE  ____ FEMALE

Education (Highest level completed):
__ High School  __ 2-Year College  __ 4-Year College  __ Masters  __ Advanced

Job Title of Occupation: _____________________________________________________________

Division and Branch: ______________________________________________________________

COMPUTER & WEB EXPERIENCE

Approximately how many hours per week do you use a computer? ________________

For how long have you used a computer regularly? ________________________________

Rate your experience with the Windows operating systems:
Novice  1  2  3  4  5  6  7  Expert

Approximately how many hours per week do you use the World Wide Web? ________

For how long have you used the Web regularly? ________________________________

Rate your proficiency in using the Web:
Novice  1  2  3  4  5  6  7  Expert

CENSUS EXPERIENCE

About how much time do you spend using the Census Bureau’s web site?
Never  <1 hr/month  <1 hr/week  1-4 hrs/week  4-10 hours/week  >10 hrs/week

About how much time do you spend using the Census Bureau’s USA Counties CD-ROM?
Never  <1 hr/month  <1 hr/week  1-4 hrs/week  4-10 hours/week  >10 hrs/week

About how much time do you spend using other Census Bureau CD-ROMS?
Never  <1 hr/month  <1 hr/week  1-4 hrs/week  4-10 hours/week  >10 hrs/week

How often do you work with other Census data?
Never  <1 hr/month  <1 hr/week  1-4 hrs/week  4-10 hours/week  >10 hrs/week

How often do you use Census or non-Census Geographic Information Systems (GIS)?
Never  <1 hr/month  <1 hr/week  1-4 hrs/week  4-10 hours/week  >10 hrs/week

Please indicate the major ways that you use Census data:
# Appendix D – Post-test Questionnaire

**Questionnaire for User Interaction Satisfaction (QUIS)**

Instructions: For each item, please circle the number that most appropriately reflects your impressions about using this website.

1. **Tasks can be performed in a straight-forward manner:**
   - Never  1  2  3  4  5  **Always**

2. **Organization of information on the system:**
   - Confusing  1  2  3  4  5  **Very clear**

3. **Use of terminology throughout the site:**
   - Consistent  1  2  3  4  5  **Inconsistent**

4. **Arrangement of information on the screen:**
   - Logical  1  2  3  4  5  **Illogical**

5. **Census Bureau-specific terminology:**
   - Too frequent  1  2  3  4  5  **Appropriate**

6. **Characters on the computer screen:**
   - Hard to read  1  2  3  4  5  **Easy to read**

7. **Learning to operate the system:**
   - Difficult  1  2  3  4  5  **Easy**

8. **Experienced and inexperienced user’s needs are taken into consideration:**
   - Never  1  2  3  4  5  **Always**

9. **System speed:**
   - Too slow  1  2  3  4  5  **Fast Enough**

10. **Performing an operation leads to a predictable result:**
    - Never  1  2  3  4  5  **Always**

11. **Moving the sliders to the position required:**
    - Difficult  1  2  3  4  5  **Easy**

12. **Overall reactions to the site:**
    a. Terrible  1  2  3  4  5  **Wonderful**
    b. Frustrating  1  2  3  4  5  **Satisfying**
    c. Difficult  1  2  3  4  5  **Easy**