

STUDY SERIES  
(*Survey Methodology #2010-02*)

**Usability Evaluation of the Governments  
Division Public Web Site**

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## **Abstract**

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In February and March of 2009, the U.S. Census Bureau's Statistical Research Division (SRD) conducted a usability evaluation of a paper prototype of the Governments (GOVS) Division Web site. Staff externally recruited eight participants based on referral from the sponsor and test administrator. Participants completed ten pre-determined tasks designed specifically for the usability study. Four key findings were identified during the usability evaluation: 1) participants did not use the top-navigation controls; 2) terminology was confusing to participants; 3) labeling was often unclear; and 4) the Web-page prototypes attempted to present too much information. The usability staff discussed all recommendations with the project sponsors in the GOVS Division and those recommendations are also included in this report. Future changes to the GOVS site design should be evaluated for usability to maintain the iterative approach towards improvement adopted by the GOVS redesign team.



## **Executive Summary**

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In July 2008, usability staff in the U.S. Census Bureau's Statistical Research Division (SRD) conducted a usability evaluation of a low-fidelity prototype of the Governments (GOVS) Web site. To evaluate the Web site, the GOVS redesign team, in conjunction with usability staff, created ten tasks that would emulate the typical actions of a user of the Web site.

Low-Fidelity Prototype. The low-fidelity prototype was the second iteration in the redesign process created by the GOVS redesign team and used the new look-and-feel template for Economic Directorate Web sites. The prototype included a one-page representation of the GOVS main site and a 12-page version of the Employment-and-Payroll sub-site.

Purpose. The primary purpose of the study was to identify elements of the user-interface design that were problematic and led to ineffective and unsatisfying experiences for people using the Web site prototype.

Method. Eight participants completed Web site tasks by working with paper prototypes as directed by the test administrator. The participants discussed step-by-step what they would do to complete each task if the prototype were a working Web site. Five tasks related to the Employment-and-Payroll page, and five tasks related to the GOVS main page. The order in which participants viewed the paper prototypes was randomized to reduce order effects.

All participants reported having at least one year of experience using a computer and navigating Web sites. After completing the tasks, the participants completed a satisfaction questionnaire and answered debriefing questions. GOVS team members were encouraged to observe the sessions and to share any feedback they had with the test administrator.

Results: This report provides a summary of findings and recommendations for issues identified during the usability testing. Four usability issues of high importance are summarized here:

1. *Navigation/Orientation:*  
Participants did not use or see the top-navigation controls for most of the tasks.
2. *Terminology/Jargon/Acronyms:*  
Several participants found the terminology to be difficult for the average person.
3. *Issues with Labeling:*  
Most headings were very similar and varied only by one word. Participants commented that some words appeared too frequently across the heading labels. Several participants mentioned that at first they thought all the headings were the same.
4. *Issues with Page Layout:*  
Participants commented that several areas of the Web pages had too much information and text. Several participants also remarked that there were too many links on the pages. Participants described the Employment-and-Payroll page as too long and said they would not scroll to see the bottom of the page.

Based on the findings of this evaluation, SRD's Usability Lab recommends further redesign and usability testing of the GOVS Web site.

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## **1.0 Introduction**

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The user interface is an important element in the design of an informational Web site. For a data-dissemination Web site to be successful, its user interface must support the user in finding target information in an efficient, effective, and satisfying way. The Census Bureau's Usability Lab conducted an evaluation of paper prototypes of the Governments (GOVS) Web site in February and March of 2009. The testing evaluated the success and satisfaction of eight participants as they interacted with the user interface of the prototype. The participants attempted to complete Web site tasks that were developed specifically for the usability test.

### ***1.1 Background***

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In 2008, the Governments Division organized a redesign team to develop a new version of the current GOVS Web site on the Census Bureau public domain to better meet the information needs of their users. Iterative usability testing was planned to develop and test changes to the Web site.

In July 2008, the Usability Lab at the Census Bureau conducted two rounds of usability evaluations of the existing GOVS Web site and a medium-fidelity prototype of the GOVS Web site (Trofimovsky et al., 2008). The first round tested the then-current GOVS Web site to serve as a baseline for prototype testing. The second round of testing consisted of using a medium-fidelity prototype of the Web site developed by the GOVS redesign team.

In 2009, the GOVS redesign team developed new prototypes of the GOVS main page and the GOVS Employee-and-Payroll page by incorporating the new look-and-feel for the Economic Directorate Web sites. These prototypes were tested by the Statistical Research Division's Usability Laboratory during February and March of 2009. The findings and recommendations provided in this study are intended to inform the developer about areas where participants struggled while using the paper prototypes of the GOVS main page and the GOVS Employee-and-Payroll page.

### ***1.2 Purpose***

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The primary purpose of usability testing is to identify elements of the user-interface design that are problematic and lead to ineffective and unsatisfying experiences for users. The purpose of this low-fidelity usability test was to evaluate the conceptual design of the redesigned GOVS Web site from the user's perspective.

### ***1.3 Usability Goals***

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The usability goals for this test were to identify the users' expectations and logic as they attempted to find information. The main goal was to examine the compatibility of the design concepts, also known as the designer's conceptual or mental model of the product, with those of the users (Rubin, 1994). Through low-fidelity testing, we expected to gain an understanding of whether users grasped the concepts of the new GOVS Web site and how easy it was for them to reach their task goals. The following specific goals were established in consultation with the team:



**Goal 1: To achieve a high level of accuracy in completing the given tasks using the Governments Web site prototype.** The user should be able to successfully complete 70% of the tasks.

**Goal 2: To achieve a moderate-to-high level of ease of use for the Governments Web site prototype.** Participants should rate task items as at least moderately easy to accomplish.

**Goal 3: To experience a moderate-to-high level of satisfaction from experience with the GOVS Web site prototype.** The overall mean from the Satisfaction Questionnaire should be higher than the mid-point on a 9-point scale (where 1 is the lowest rating and 9 is the highest rating). A usable interface should receive ratings of 5-7 across users. The same should be true for the individual satisfaction items.

## **2.0 Methods**

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This section describes the participants involved in the study, how and where the testing was conducted, and the materials used in the study.

### ***2.1 Participants and Observers***

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Before actual testing occurred, usability staff conducted two dry-runs of the usability test. Based on these pilot sessions, the methods and procedure of the usability test were refined to ensure an effective usability test. The dry-run sessions followed the same procedure as the actual usability sessions. Since the dry-runs were used for refining the methods and procedure of the evaluation, the data collected were not included in the reported findings and recommendations.

The Usability Laboratory recruited eight external (non-federal employees) participants with ages ranging from 23-60 based on referral from the sponsor and the test administrator. All participants reported having a Bachelor's degree or higher.

Based on participants' self-reported information, the researchers made the following 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 Governments Web site.
- Participants had no known disabilities.

Observers from the GOVS redesign team were invited to watch a live feed of the usability sessions in a separate room from the test participant and test administrator. At the end of each session, the test administrator and observers discussed the findings from that session and compared them to findings from other sessions.

### ***2.2 Procedure***

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Each usability session lasted about sixty minutes. Following security procedures, participants reported separately to the visitor's entrance at the Census Bureau Headquarters and were escorted to the Usability Lab. Upon arriving, each participant was seated in the testing room. The test administrator greeted the participant and read the general introduction (Appendix A)

explaining the purpose of the session, the testing procedure, and the importance of participant contribution. Before beginning the usability study, the participant read and signed the consent form (Appendix B) explaining that all information gathered during the study was confidential and that the session would be videotaped.

Next, the test administrator asked the participant to do a practice task using a paper version of the Weather.com home page to practice thinking aloud. During testing, we used the think-aloud technique to understand the participant's cognitive processes as they interacted with the interface. Think-aloud is modeled on Ericsson and Simon's (1993) approach to collecting verbal protocols, which was used to maintain a running verbal commentary of the participants' task-related expectations and reasoning. A participant engaging in think-aloud verbalizes his or her available, conscious thoughts and decisions while performing the tasks. If at any time a participant becomes quiet, the test administrator encourages the participant to continue to think-aloud, using prompts such as "What are you thinking?" and "Can you tell me your thoughts?"

After the practice task, the test administrator placed the task questions (Appendix C) and Satisfaction Questionnaire (Appendix D) on the desk beside the participant and left the testing room. The test administrator went to the control room and did a sound check. During this time, the participant completed the Questionnaire on Computer Use and Internet Experience (Appendix E). Upon the participant's completion of the questionnaire, the test administrator began the video recording.

Participants completed the tasks designed specifically for the GOVS Web site using the paper prototypes. The test administrator instructed participants to think of the piece of paper as a computer screen and to use their finger as a mouse and "click" on the links they would select if it were an actual functioning Web site.

After completing the tasks, the participant filled out the Satisfaction Questionnaire (Appendix D). Then the test administrator asked the participant debriefing questions, allowing for a conversational exchange about the Web site.

## ***2.3 Facilities and Equipment***

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Testing took place at the Usability Lab at the Census Bureau in Suitland, MD, Room 5K509.

### **2.3.1 Testing Facilities**

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The participant sat at a table in a small room beside the test administrator facing a one-way glass mirror and a wall camera. The test administrator guided the session by handing the participant task questions and setting up the paper prototypes for each question.

### **2.3.2 Audio and Video Recording**

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Two video cameras were used. The overhead camera recorded the paper prototypes and the participant's handling of the material, such as pointing to specific boxes and areas. The wall-mounted camera recorded the participant's face. Video was fed through a PC Video Hyperconverter Gold Scan Converter, mixed in a picture-in-picture format with the camera video, and recorded with 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 two microphones: a desk microphone located close to the participant and a ceiling microphone. The audio sources were mixed in a Shure audio system to eliminate feedback and then fed to the videocassette recorder.

## ***2.4 Materials***

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All session materials were prepared beforehand and standardized to maintain consistency across sessions. Copies of the materials used during testing are available in the appendices.

### **2.4.1 General Introduction**

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The test administrator read the background material and explained several key points about the session to the test participant at the beginning of each usability session. The purpose of the general introduction was to assure the participants that they were contributing to the development of a Web site, and that they were not being personally evaluated. See Appendix A.

### **2.4.2 Consent Form**

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Prior to beginning the usability test, each participant completed a consent form. The purpose of the form was to explain the rationale of the study and to obtain permission to videotape the session. See Appendix B.

### **2.4.3 Questionnaire on Computer Use and Internet Experience**

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Prior to the usability session, the participant completed the questionnaire on computer use and Internet experience. See Appendix E.

### **2.4.4 Tasks**

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The participants completed ten tasks (see Appendix C). Five tasks related to the Employment-and-Payroll page, and five tasks related to the main page. The order in which participants viewed the paper prototypes was randomized to reduce order effects. See Appendix F for the screenshot of the Government main page and Appendix G for screenshots of the Government Employment-and-Payroll pages. A breakdown of prototype presentation is presented in Table 1.

**Table 1. Presentation of Prototypes**

<b>Participant</b>	<b>First prototype presented</b>
1	Main page
2	Main page
3	Main page
4	Employment-and-Payroll page
5	Employment-and-Payroll page
6	Employment-and-Payroll page
7	Main page
8	Employment-and-Payroll page

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### **2.4.5 Satisfaction Questionnaire**

The original version of the Questionnaire for User Interaction Satisfaction (QUIS) includes dozens of items related to user satisfaction with an interface (Chin, Diehl & Norman, 1988). For the context of the GOVS Web site and prototype, an adapted version of the QUIS was used to assess the user’s satisfaction levels after completing the designated tasks. See Appendix D for the Satisfaction Questionnaire used in this study.

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### **2.4.6 Debriefing Questions**

After completing the tasks, participants answered debriefing questions about their overall experience with the GOVS Web site prototype. See Appendix H for a list of the debriefing questions. The test administrator asked additional questions based on the specific issues each participant had during their session and any questions observers had.

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## **2.5 Performance and Satisfaction Measurement Methods**

For this evaluation, we measured performance in terms of accurate task completion. Satisfaction measures included a scaled rating of ease of use (task difficulty) for each task.

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### **2.5.1 Accuracy**

Performance on tasks was scored with a rating of zero or one. A score of one indicated that the interface supported the user in completing the task. A score of zero showed that the interface did not support the user in any aspect of the task. From the ratings, we computed the average accuracy score (1) across the participants and (2) across the tasks. Prior to the usability study, the sponsor and the Usability Lab staff set an overall accuracy goal of 70% across participants.

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### **2.5.2 Ease of Use**

To assess task difficulty we asked the participant, “How easy or difficult was it to find information, overall?” after each task. Tasks were scored on a scale from 1 to 10 with a score of 1 indicating a very easy task and a score of 10 indicating a very difficult task. In conjunction with the Usability Lab staff, the sponsor established the goal that participants should rate task difficulty below the mid-point of the scale (with a score of 5 or lower).

### **2.5.3 Satisfaction**

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The subjective satisfaction score was computed from the participants' ratings on the Satisfaction Questionnaire. After completing the usability session, participants indicated their satisfaction with the Web site using the tailored nine-item Satisfaction Questionnaire survey. The questionnaire is used to calculate the average Overall Satisfaction score on a nine-point Likert scale. Participants also rated their overall reaction to the site on a scale from one to nine, with one being the lowest possible rating and nine the highest possible rating. From the Satisfaction Questionnaire data, we reported ranges and mean values for the rated attributes of the Web site. We also identified below-mean values for individual items, which indicate that problems exist even when the overall mean is acceptable or better.

## **3.0 Results and Recommendations Based on Usability Testing**

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In this section, we discuss the results from the usability testing, and present both quantitative data and usability findings. Recommendations for reducing or eliminating identified usability problems are also presented.

### ***3.1 Participant Accuracy in the Prototype Testing***

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#### *First-Click Accuracy: GOVS Main Page*

The prototype of the GOVS main page consisted of one page. In testing this page, we counted an action as successful if it would have put the user on a correct path to the task objective. We counted an action as a failure if it would not have put the user on a correct path to the task objective. The actions we evaluated were the participants' decisions about which link to click on first to move off the GOVS main page. Participants identified their "first click" by pointing to the spot on the paper prototype they would first click if they were using a live site. The accuracy score provides input for a first-click analysis which identifies whether participants began a task on the correct path. Table 2 provides participants' accuracy data for the five tasks.

**Table 2. First-Click Accuracy on the GOVS Main Page**

Participant	Task 1	Task 2	Task 3	Task 4	Task 5	Average success by participant
	Where would you go to find the number of firefighters in California?	How much money did governments in North Carolina make from tobacco taxes in 2006?	Find the number of county governments in Connecticut.	What percentages of their money do school districts receive from the federal, state, and local sources?	How much money did the federal government spend on the Postal Service in FY 2006?	
1*	0	1	1	1	1	80%
2*	1	0	1	0	1	60%
3*	1	0	1	1	0	60%
4	1	0	1	1	1	80%
5	1	0	1	1	0	60%
6	0	0	1	1	1	60%
7*	0	1	1	0	1	60%
8	1	0	1	1	1	80%
<b>Average success by task</b>	<b>62.5%</b>	<b>25%</b>	<b>100%</b>	<b>75%</b>	<b>75%</b>	<b>67.5%</b>

\* = Participants received tasks on the main page first.  
 Note: 0 = failed; 1 = succeeded.

The user interface supported the participants 67.5% of the time in selecting a link that would move them onto the correct path toward their task goal. Thus, the overall, first-click success score was somewhat lower than the goal for 70% accuracy. At 67.5%, the overall score was a little better than a two-thirds success rate.

On the GOVS main page, Task 2 seemed to be the most problematic. Six of eight participants expected to find information about tobacco taxes under the Tax Statistics link. Many participants commented they would start under “Tax Statistics” because the task included the word “taxes.” All participants identified the correct link for Task 3.

Often, if participants experience difficulties with their first click, task time increases and accuracy decreases (Wolfson, Bailey, Nall, & Koyani, 2008). Thus, test results suggest that users will have problems reaching their task objectives on a live GOVS main page in approximately one third of their attempts, if the tested design is implemented without changes.

*Task Accuracy: Employment-and-Payroll page*

The prototype of the Employment-and-Payroll page consisted of 12 pages. Instead of being limited to a first-click analysis for this page, usability staff members were able to record whether the design supported participants in reaching their actual task goals. Table 3 presents the accuracy data for the Employment-and-Payroll page.

**Table 3. Task Accuracy Data for the Employment-and-Payroll Page (N=8)**

Participant	Task 1	Task 2	Task 3	Task 4	Task 5	Average by participant
	How many employees did the Oregon state government employ in 2007?	Download the local government "Government Employment and Payroll" estimates.	Find response rates for state and local governments in Maryland for 2007.	When was the 2007 Census of Government Employment survey forms mailed out?	How is air transportation defined?	
1	0	0	0	0	1	20%
2	1	0	0	0	0	20%
3	1	0	0	0	0	20%
4*	1	0	0	0	1	40%
5*	1	0	0	0	1	40%
6*	1	1	0	1	0	60%
7	0	0	0	1	1	40%
8*	1	1	0	0	1	60%
<b>Average by Task</b>	<b>75%</b>	<b>25%</b>	<b>0%</b>	<b>25%</b>	<b>63%</b>	<b>37.5%</b>

\* = Participants attempted tasks on the Employment-and-Payroll page first.

Note: 0 = failure; 1 = success

The user interface supported participants on average 37.5% of the time. Here the overall task success score was markedly lower than the goal for 70% accuracy. It is also lower than the accuracy score for the GOVS main page. It should be noted, however, that this comparison is between first-click data and full task-completion data. Many factors, such as lucky guessing, may inflate first-click success over actual task-completion success.

One reason for the low accuracy rate on the Employment-and-Payroll page may be that participants did not see or use the top-navigation bar. The success rate was 75% in Task 1, a task which did not require the test participant to use the top-navigation bar. Conversely, success rates are markedly lower for the other tasks. These other tasks required participants to use the top-navigation bar to find information. Seeing and using the top-navigation bar is generally essential to the user's success while working with the interface. Five of eight participants did not use the top-navigation bar until Task 5. The navigation controls should be the first thing that users see when they arrive at a site (Lazar, 2006).

### ***3.2 Participant Ease of Use in the Prototype Testing***

After each task, participants were asked to rate how easy or difficult it was for them to find the target information on a scale of 1-10, where 1 is very easy and 10 is very difficult. Tables 4 and 5 provide participant ratings for ease-of-use of the GOVS main page and the Employment-and-Payroll page. We do not recommend comparing these results since the two prototypes were so different in length and since task completion was not possible with the prototype GOVS main page.

**Table 4. Ease-of-Use Ratings for the GOVS Main Page, Paper Prototype  
(1 = very easy, 10 = very difficult)**

Participant	Task 1	Task 2	Task 3	Task 4	Task 5	Average by Participant
	Where would you go to find the number of firefighters in California?	How much money did governments in North Carolina make from tobacco taxes in 2006?	Find the number of county governments in Connecticut.	What percentages of their money do school districts receive from the federal, state, and local sources?	How much money did the federal government spend on the Postal Service in FY 2006?	
1*	7	1	1	1	4	2.8
2*	9	6	7	5	4	6.2
3*	4	2	1	2	8	3.4
4	2	2	4	3	1	2.4
5	3	4	3	4	5	3.8
6	2	1	1	2	3	1.8
7*	5	2	3	2	3	3.0
8	5	2	3	5	2	3.4
<b>Average by task</b>	<b>4.6</b>	<b>2.5</b>	<b>2.9</b>	<b>3.0</b>	<b>3.8</b>	<b>3.4</b>

\* = Participants attempted tasks on the main page first.

**Table 5. Ease-of-Use Ratings for the Employment-and-Payroll Pages, Paper Prototype  
(1 = very easy, 10 = very difficult)**

Participant	Task 1	Task 2	Task 3	Task 4	Task 5	Average by Participant
	How many employees did the Oregon state government employ in 2007?	Download the local government "Government Employment and Payroll" estimates.	Find response rates for state and local governments in Maryland for 2007.	When was the 2007 Census of Government Employment survey forms mailed out?	How is air transportation defined?	
1	4	6	6	7	1	4.8
2	3	9	10	10	8	8.0
3	3	5	10	10	6	6.8
4*	4	3	3	4	1	3.0
5*	3	4	8	8	2	5.0
6*	4	6	2	4	1	3.4
7	2	2	4	4	1	2.6
8*	4	3	2	5	1	3.0
<b>Average by task</b>	<b>3.4</b>	<b>4.8</b>	<b>5.6</b>	<b>6.5</b>	<b>2.6</b>	<b>4.6</b>

\* = Participants attempted tasks on the Employment-and-Payroll page first.

Participants seemed to rate the tasks that required using the top-navigation bar on the Employment-and-Payroll page (Tasks 2-4) as more difficult than they rated the other tasks.



### 3.3 User Satisfaction

An overall subjective satisfaction score was computed from the participants' ratings on the nine-point Satisfaction Questionnaire. Values below the mid-point of the scale on individual item scores may indicate that problems exist even when the overall mean across items is higher. See Table 6 for satisfaction ratings by participant and Satisfaction Questionnaire item.

**Table 6. User Satisfaction Results (1 = lowest rating, 9 = highest rating)**

<b>Participant</b>	<b>Overall reaction to the Web site</b> (terrible/wonderful)	<b>Screen layouts</b> (confusing/clear)	<b>Use of terms</b> (inconsistent/consistent)	<b>Information displayed on the screens</b> (inadequate/adequate)	<b>Arrangement of information on the screens</b> (illogical/logical)	<b>Tasks can be performed in a straight-forward manner</b> (never/always)	<b>Organization of info on the site</b> (confusing/clear)	<b>Overall experience of finding info</b> (difficult/easy)	<b>Census Bureau-specific terms</b> (too frequent/appropriate)	<b>Average by Participant</b>
<b>1*</b>	7	6	7	5	6	6	4	4	2	<b>5.2</b>
<b>2*</b>	3	2	4	7	3	3	4	2	5	<b>3.7</b>
<b>3*</b>	4	5	7	6	4	5	5	6	8	<b>5.6</b>
<b>4</b>	7	9	7	7	7	8	9	6	5	<b>7.2</b>
<b>5</b>	4	5	6	3	2	5	3	5	3	<b>4.0</b>
<b>6</b>	6	7	8	8	5	6	8	8	9	<b>7.2</b>
<b>7*</b>	8	8	7	8	8	9	8	8	7	<b>7.9</b>
<b>8</b>	6	5	6	6	5	6	6	6	8	<b>6.0</b>
<b>Average by item</b>	<b>5.6</b>	<b>5.9</b>	<b>6.5</b>	<b>6.3</b>	<b>5.0</b>	<b>6.0</b>	<b>5.9</b>	<b>5.6</b>	<b>5.9</b>	<b>5.8</b>

\* = Participants attempted tasks on the main page first.

The mean of 5.8 is above the mid-point of the scale (4.5) but does not reach the team's goal of 7 for the overall satisfaction mean. The goal for individual items to be scored an average of 7 or above was also not fulfilled. We also did not meet the goal of participants rating the individual items at a 7 or higher. These goals may have been optimistically high at this stage of development.

Since participants completed one satisfaction questionnaire that asked about both Web sites together, is impossible to tell whether participants were more satisfied with the GOVS main page or the Employment-and-Payroll page. It was also not possible to tell if participants had based their ratings on some combination of their satisfaction with both pages. In general, satisfaction ratings tend to be inflated when compared to performance scores (Andre & Wickens, 1995). This typical finding is more evident for the Employment-and-Payroll page than it is for the GOVS main page.

Four participants provided additional feedback in the comments section on the QUIS, as follows:

- *Participant 1*: “At first I felt like I was struggling to find the information I needed; this Web site seemed a lot more difficult than finding the forecast for my area. But once I got a hang of things, the Web site became easier to use, and means of searching for my answers were more obvious (like the ‘Surveys’ tab at the top of the page). Some of the ‘Census’ language was confusing as well, and I didn’t know which link to click on to get the info I was looking for.”
- *Participant 4*: “Felt content was arranged logically, headings clear, most sought after information is obvious, easy to find location.”
- *Participant 6*: “A lot of words to read on each page. I wanted to just scan and find the right link but ended up having to read most of the text.”
- *Participant 7*: “The Web site works well for lay people and academics (searching for extremely specific data) alike. The layout is user friendly and not ‘cold’.”

## **4.0 Usability Issues and Recommendations**

---

In this section, we discuss reasons for the performance deficits and the usability violations identified during testing. The usability problems are prioritized from high to low in terms of their effect on participant performance. The usability issues deal primarily with the lack of useful guidance for the user and the overwhelming amount of information throughout the site. Fixing the high and medium priority problems as they occur throughout the Web site should result in improvement in the participants’ performance using the Web site and should also improve satisfaction.

### **4.1 High-Priority Usability Problems**

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Usability staff rated four issues at the level of high priority. These issues caused participants to be unable to complete the task successfully.

#### **4.1.1 Issues with the Top-Navigation Bar**

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Based on our observations, participants did not use the top-navigation bar for most of the tasks. This lack of use had the most detrimental effect on the Employment-and-Payroll pages. None of the tasks on the GOVS main page required participants to use the top-navigation bar. Five participants eventually used the top-navigation bar, but only three participants used the top-navigation bar before the last task.

We are unable to provide direct evidence for our observation that participants did not typically “see” the top-navigation bar because we did not perform eye-tracking in this study. In this case, we attribute lack of use to the top-navigation bar’s failure to attract participants’ attention.

The last task asked participants to define air transportation. A few participants thought this was an odd question since air transportation did not seem related to Employment or Payroll. This clued some users to look for a definitions page. One participant explained, “I didn’t see that (top-navigation bar) before; that changes everything.” She explained that if she had noticed the top-navigation bar sooner, she would have used it in some of the earlier tasks.

One participant pointed out that the order of buttons changed from the GOVS main page to the Employment-and-Payroll page. She explained that if she was used to having “Get Forms” as the second link on the top navigation of the main page, she would have been confused if the button was in a different location on a lower-level Employment-and-Payroll page.

*Recommendation:* The top-navigation bar blends into the header, leading participants to skip over the tabs and move directly to the main content. This is a recurring issue the Usability Laboratory has identified with many Web sites (Beck & Murphy, 2008; Olmsted-Hawala et al., 2009; Romano, Holland & Murphy, 2009). Although the GOVS redesign team must adhere to the design template, the redesign team should strive to visually separate the tabs from the banner. Possible ways to achieve this include making the text in the tabs bigger and bolder to emphasize the importance of the tab labels, and by choosing a tab background color with higher contrast to the banner.

The order of the links on the top-navigation bar is inconsistent from page to page. The order should be the same from page to page. This consistency will allow users to learn the Web site’s navigation tools and build expectations about where to find information.

Future usability testing of clickable high-fidelity prototypes should use eye tracking to investigate if and when participants are looking at the top-navigation bar.

#### **4.1.2 Issues with Terminology**

---

On the Employment-and-Payroll page, several participants commented that the terminology was too difficult for the average user. Terms such as “individual data code” and “individual unit data” were unclear. A few participants mentioned they wanted more detailed descriptions on the GOVS main page to help them with the terminology. Several participants commented that some terms, such as “Individual data code” and “Governments Integrated Directory,” were for Census Bureau employees, not for the novice user. Participant 1 remarked, “As an average American, a lot of these terms I don’t understand.” Participant 2 said, “I see Governments Integrated Directory and I get a blank response... Who knows what that is unless they work for an agency?”

*Recommendation:* Eliminate Census jargon throughout the site. Where it is not possible, add a brief description about the information. Create text that is understandable to all users, not just experts. Write the description in a style appropriate for the Web. For example, write in short, bulleted phrases and sentences (Redish, 2007). Novice users should not feel that some information is not for them. If a technical term must be used, provide a tooltip with a definition as well as a definitions section on the site.

#### **4.1.3 Issues with Labeling**

---

Participants commented that some of the words appeared too frequently in labels. For example, on the GOVS main page, several participants commented that the word “Government” was used too often. One participant mentioned that she already knew she was on the Governments page, and she did not think it was necessary to put the word “Government” in front of most of the headings.

Most participants had difficulty distinguishing between the different headings on the Employment-and-Payroll page. Most headings were very similar and varied only by one word. Several participants mentioned that at first they thought all the headings were the same. Participant 4 said, “I am trying to figure out if the sections are different. They all seem the same.” Participant 2 mentioned there was ambiguity between “local” and “state and local.” Users scan instead of read Web pages, (Redish, 2007) and a subtle distinction between headings may be hard to notice.

Information for 2006 was available under the “Historic Data” link, but some of the participants did not think “Historic Data” would include data for recent years. Participant 1 said, “Historical sounds like a really long time ago,” while Participant 6 commented that, “Historical data makes it seem 100 years ago, and not in the last 10 years.”

The “Build-a-Table” link label created some issues for participants. None of the participants used the Build-a-Table feature to find the answer to a task on either the GOVS main page or the Employment-and-Payroll page. During the debriefing, the test administrator asked participants whether they noticed the Build-a-Table link and where they thought the link would take them. Four of the eight participants seemed to grasp the function of Build-a-Table. Participant 2 said that it would build her a chart similar to Excel, while Participants 7 and 8 commented that it would present information in a customizable table. Other participants were uncertain what the function of Build-a-Table would be. For example: Participant 1 said, “I saw it and didn’t know what it meant,” while Participant 5 commented, “I have no clue. Build-a-Table. What?”

Although some of the participants seemed to understand how Build-a-Table operated, none of them used the function. Participant 2 suggested that it seemed to be a “useful tool” to have but its function was not clear. Participant 6 described the concept of Build-a-Table as “clever,” although she expressed uncertainty about what she could do with it.

*Recommendation:* Create clear and meaningful labels. Users should not have to guess the meaning of a link or the functionality of a feature. Labels need to be short, concise, and meaningful to the novice user. Participants suggested several titles to replace “Historic Data”: “Recent Annual Data,” “Archive,” “Previous Years,” and “Past Data.” Changes in labeling should be evaluated in future usability testing.

Add a description to explain the Build-a-Table feature. A few participants commented they liked the description of Build-a-Table on the main page. Consider adding a description to the Employment-and-Payroll page such as “Create a customized table using Build-a-Table.”

#### **4.1.4 Issues with Page Layout**

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Participants commented that several areas of the Web pages had too much information and text. Their comments applied to both the GOVS main page and the Employment-and-Payroll page. Several participants commented that they would rather see the heading of the main page as a link with a generic description instead of links into the data.

Participants had mixed feelings about the GOVS main page. Participant 1 described the layout of the page as helpful, particularly the way the topics were broken down. She said, “If these

were the questions I had in mind from the beginning, I would have success in looking for an answer.” Participant 3 commented that the GOVS Main page was laid out better than the Employment-and-Payroll page and had more descriptions and better headings. She said that there was just enough information and that she would not add any more. Participants 4 and 5 also liked the grouping of items on the GOVS main page. Conversely, Participants 2 and 8 described the page as “very busy” with “too many boxes.”

The Employment-and-Payroll page was overwhelming for most users. Five of the eight participants remarked that they did not like the Employment page. Participant 2 remarked, “You should not throw that much information at people. There is enough information to make me glaze over.” Participant 2 said that the Employment-and-Payroll page was “terrible.” She added, “There is too much data, too many boxes and information.” Participants 3, 5, and 6 noted that it was hard to differentiate between the different sections on the page. A few participants commented that, if the page were on a computer screen, they did not think they would scroll to the bottom of the page. Participants commented that many of the link names were repeated in each box.

*Recommendation:* As suggested by participants, eliminate the links in the boxes and create a brief description about each subject area on the GOVS main page. This will reduce perceived clutter on the page while at the same time providing useful guidance to users. On the Employment-and-Payroll page, convert the headings into links (e.g., a link for “Latest State Government Employment and Payroll 2007”), and create a page one level deeper that lists the links currently in each box (e.g., “Individual Unit Data File”). Add a brief description about each data set in the boxes. The description should include the difference between “state,” “state and local,” and “local” governments.

## ***4.2 Medium-Priority Usability Problems***

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We identified two issues in this category: 1) dense text; and 2) poorly organized presentation of ways to access downloadable data. Unless they are redesigned, these elements will slow users down as they look for target information.

### **4.2.1 Issues with Style of Presenting Information**

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Some of the Employment-and-Payroll pages use paragraphs in order to convey information. Users want to skim and scan through Web pages to get the information they are seeking (Redish, 2007). In particular, the Data Quality, Data Processing, Data Collection, and About the Survey pages have dense text. Participants made numerous complaints that there was “too much data on each page.”

*Recommendation:* Support users’ goals and parse down the information, making the pages easier to scan. Use shorter sentences and phrases, or bullet the information. Break the information into sections with meaningful titles (Redish, 2007).

### **4.2.2 Issues with Organization of Information**

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The organization of the downloadable data available on the Employment-and-Payroll page does not emphasize the important elements of each link. The link titles use jargon, such as “Estimates

ID File” instead of unique identifiers. Several links with different content have titles that are the same, such as “Individual Unit ID file.”

*Recommendation:* Use the description of each link to create a unique title for each item. People tend to scan for links that will take them to the information they want (Krug, 2000). Make it easy for people to identify the kind of information behind each link without having to pore over each description.

### ***4.3 Low-Priority Usability Problems***

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Usability testing identified no low-priority usability issues.

### **5.0 Limitations**

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We recognize that low-fidelity usability testing reduces realism, but the benefits outweigh the costs. Several studies have shown that paper prototyping and low-fidelity iterative prototyping uncover problems similar to high-fidelity usability testing (Catani & Biers, 1998; Novick, 2000; Virzi, Sokolov & Karis, 1996). As the present study shows, the evaluation of low-fidelity prototypes can identify design issues well before developers implement final screens.

### **6.0 Conclusion**

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With paper-prototyping, the Usability Lab at the Census Bureau has identified key areas where the technical communication of information to the public falters. Improving communication through the public Web site requires attention to a few basic principles of user-centered design:

- Speak the users’ language; do not expect the user to understand technical terms.
- Write for reading on the Web (i.e., avoid dense text composed of sentences and paragraphs). Make it easy for users to scan for information on Web pages.
- Provide visual and cognitive relief for users by judicious organization of site content and generous use of white space. Avoid information overload.
- Maintain consistency in the site’s look and feel to help users develop accurate mental models of the site’s content and expectations for its behavior.

In the case of the redesign of the GOVS Web site, lab members, working together with the re-design team, proposed conducting a series of usability tests to evaluate successive iterations of the site as they are developed.

## 7.0 References

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## **Appendix A. General Introduction for Iteration 1 Usability Test**

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

Today, we will be evaluating a section of the Governments Web site by having you work on several tasks. We are actually evaluating a brand new Web site that is not yet live. So, to test it today, we will be using paper prototypes of the Web site. I will show you paper versions of various pages of the site and you will tell me how you would perform if this Web site was live. I will give you specific task questions, and you will tell me how you would find the information. I may ask you more questions as we go on. The entire session should last about an hour.

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

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

Before we start, I want to tell you that you can't make a mistake or do anything wrong. Difficulties you may run into reflect the design of the Web site, not your skills or abilities. If you have a problem using parts of it, do not blame yourself. This product is intended for people like you. Where it works well, that's great. Where it does not work well that is also great. Your comments and thoughts will help the developers make changes to improve the site. I did not create the site, so please do not feel like you have to hold back on your thoughts to be polite. We are not evaluating you or your skills, but rather you are helping us see how well the site works. Please share both your positive and negative reactions to the site. And remember, there are no right or wrong answers.

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

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

Okay now we'll practice thinking aloud.



*(Test Administrator gives paper version of weather.com home page and asks practice question.)*

Okay that is what I will need you to do during the tasks. Do you have any questions about the “think aloud” process we’ve just practiced and that I’ve asked you to use?

**Appendix B. Consent Form**

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**Consent Form  
For Individual Participants**

**Usability Testing of the GOVS Web site**

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

You have volunteered to take part in a study to improve the usability of the Governments Web site. In order to have a complete record of your comments, your usability session will be videotaped. We plan to use the tapes to improve the design of the product. Only staff directly involved in the research project will have access to the tapes. Your participation is voluntary and your answers will remain strictly confidential.

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

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

Participant's Name: \_\_\_\_\_

Participant's Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Researcher's Name: \_\_\_\_\_

Researcher's Signature: \_\_\_\_\_

Date: \_\_\_\_\_

## **Appendix C. Task List**

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### **Main Governments page**

1. Where would you go to find the number of firefighters in California?
2. How much money did governments in North Carolina make from tobacco taxes in 2006?
3. Find the number of county governments in Connecticut.
4. What percentages of their money do school districts receive from the federal, state, and local sources?
5. How much money did the federal government spend on the Postal Service in FY 2006?

### **Government Employment-and-Payroll page**

1. How many employees did the Oregon state government employ in 2007?
2. Download the local government “Government Employment and Payroll” estimates data file for 2006?
3. Find response rates for state and local governments in Maryland for the 2007 survey.
4. When were the 2007 Census of Government Employment survey forms mailed out?
5. How is air transportation defined?

## Appendix D. Satisfaction Questionnaire

---

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

Additional Comments:

## Appendix E. Questionnaire on Computer Use and Internet Experience

---

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

(Check all that apply.)

Home

Work

2. If you have a computer at home,

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

Dial up

Cable

Other \_\_\_\_\_

Don't know

b. Which browser do you typically use at home? Please indicate the version if you can recall it.

Firefox

Internet Explorer

Netscape

Other \_\_\_\_\_

Don't know

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

MAC OS

Windows 95

Windows 2000

Windows XP

Windows Vista

Other \_\_\_\_\_

Don't know

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

0 hours

1-3 hours

4-6 hours

7 or more hours

4. Please rate your overall experience with the following:

Circle **one number**.

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

5. What computer applications do you use?

Mark (X) for all that apply

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

For the following questions, please circle **one number**.

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

## Appendix F. Governments Main Page

U.S. Census Bureau

People | Business | Geography | Newsroom | Subjects A to Z | Search@Census

# Federal, State, and Local Governments

Main | Get Forms | Definitions | FAQs

Census.gov > Business & Industry > Governments

Information about governments – the number of governments in the U.S., [how they are organized](#), and their economic activities. The Census Bureau also conducts surveys about special topics related to government for other federal agencies.

- Site Resources**
  - What's New
  - Census of Governments
  - Press Releases
  - Build-a-Table
  - Program Overview
  - Summary Reports
- Special Topics**
  - Criminal Justice Statistics
  - Elementary-Secondary Education Statistics
  - Library Statistics
- Reference Documents**
  - Government Finance & Employment Classification Manual
  - Publications
- Contact Information**

### Government Employment & Payroll

Statistics on the number of federal, state and local government civilian employees and their gross payrolls. Data are available from 1992 to 2007:

- [View or download](#) a data table
- Customize a table using [Build-a-Table](#)

### Federal Spending

Federal spending on selected programs:

- Annual: [Consolidated Federal Funds Report \(CFFR\)](#)
- Quarterly: [Federal Assistance Award Data System \(FAADS\)](#)
- Tool for Respondents: [Federal Audit Clearinghouse](#)

### Government Finance Statistics

[Annual Government Finance Surveys](#)  
Financial activity of governments including revenues, expenditures, debt and assets:

- [2007](#) Annual Survey of State Government Finances
- [2005-2006](#) State and Local Government Finances
- [2006](#) Public Elementary – Secondary Education Finances

### Tax Statistics

Annual survey of state tax revenue and quarterly summary of tax revenue for state and local governments:

- [2008](#) State Government Tax Collections
- [Quarterly Summary](#) of State and Local Government Tax Revenue

### Government List & Structure

**Lists of Governments in the U.S.**

- [2007 edition](#) of Governments Integrated directory
- [2002 edition](#)
- [1997 edition](#)

[Descriptions by state](#) of how governments are organized

### Government Employee Retirement Systems

Financial statistics on state and local government employee retirement systems. Annual data are available from 1993 to 2007. Quarterly data are available from 2003 – 2008:

- [View or download](#) a data table

U.S. CENSUS BUREAU  
Helping You Make Informed Decisions

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Figure 1. Paper prototype of Governments main page

# Appendix G. Government Employment-and-Payroll

**U.S. Census Bureau** | People | Business | Geography | Newsroom | Subjects A to Z | Search@Census

## Government Employment and Payroll

Main | About the Survey | Get Forms | Historical Data | How the Data are Collected | Definitions | FAQs

Census.gov → Business and Industry → Governments → Government Employment and Payroll

### Government Employment and Payroll

#### Latest State Government Employment and Payroll 2007

**Viewable Data**

- [US Summary Table](#)
- State Summary Tables |

**Downloadable Data**

- [Excel Spreadsheet](#) – Data by government function for each state
- [State Data File](#) – Data by function code for each state [file layout](#)
- [State Data ID File](#) – Descriptive information for each ID in the State Data File [file layout](#)

---

#### Latest State and Local Government Employment and Payroll 2007

**Viewable Data**

- [US Summary Table](#)
- State Summary Tables |

**Downloadable Data**

- [Excel Spreadsheet](#) – Data by government function for each state
- [Total Data File](#) – Data by level of government and function code for each state [file layout](#)
- [Total Data ID File](#) – Descriptive information for each ID in the Total Data File [file layout](#)
- [Individual Unit Data File](#) – Data by function code at the individual unit level [file layout](#)
- [Individual Unit ID File](#) – Descriptive information for each ID in the Individual Unit Data File [file layout](#)

---

#### Latest Local Government Employment and Payroll 2007

**Viewable Data**

- [US Summary Table](#)
- State Summary Tables |

**Downloadable Data**

- [Excel Spreadsheet](#) – Data by government function for each state
- [Total Data File](#) – Data by level of government and function code for each state [file layout](#)
- [Total Data ID File](#) – Descriptive information for each ID in the Total Data File [file layout](#)
- [Individual Unit Data File](#) – Data by function code at the individual unit level [file layout](#)
- [Individual Unit ID File](#) – Descriptive information for each ID in the Individual Unit Data File [file layout](#)
- [County Area Data File](#) – Data by function code at the Individual County Level [file layout](#)
- [County Area ID File](#) – Descriptive information for each county in the County Area Data File [file layout](#)

---

#### Latest Federal Government Employment and Payroll 2007

- [Viewable Data](#) – Data by government function
- [Downloadable Data](#) – Data by government function in Excel

**Related Sites**

- [Build-a-Table](#)
- [Government Finance and Employment Classification Manual \(2006\)](#)

**Announcements**

2007 Census of Government Employment data was re-released on Jan. 29, 2009 to reflect late responses received.

**Release Schedule**

October 2009: 2008 Annual Survey of Government Employment

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[Excel] or the letters [xls] indicate a document is in the Microsoft® Excel® Spreadsheet Format (XLS). To view the file, you will need the [Microsoft® Excel® Viewer](#) available for **free** from Microsoft®.

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Figure 2. Paper prototype of Government Employment-and-Payroll page (1)





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[Census.gov](#) → [Business and Industry](#) → [Governments](#) → [Government Employment and Payroll](#) → About the Survey

### About the Survey

The U.S. Census Bureau conducts an annual survey of government employment as authorized by Title 13, United States Code. This survey measures the number of federal, state and local government civilian employees and their gross payrolls for one month. Data are for the month of October for 1995 and all years prior. Beginning with the 1997 survey, data are for the month of March. There was no survey between October 1995 and March 1997. Beginning in 2003, federal data are for the month of December.

The Census of Government Employment is conducted every five years (years ending in '2' and '7'). All governments across the country are surveyed in these years. The Annual Survey of Government Employment is conducted in the intervening years and collects data from a sample of state and local governments. A new sample is selected every five years (years ending in '4' and '9').

For more information about the population of interest and sampling frame for a specific year, please select a year.

▼

**Figure 3. Paper prototype of Government Employment-and-Payroll page (2)**

U.S. Census Bureau People | Business | Geography | Newsroom | Subjects A to Z | Search@Census

## Government Employment and Payroll

Main
About the Survey
Get Forms
Historical Data
How the Data are Collected
Definitions
FAQs

[Census.gov](#) → [Business and Industry](#) → [Governments](#) → [Government Employment and Payroll](#) → [About the Survey](#) → 2007

Select a Year
 

▼

Go

### About the Survey: 2007

**Sponsor:** U.S. Census Bureau as authorized by Title 13, United States Code

**Organization that Conducted the Survey:** U.S. Census Bureau

**Population of interest/description of sampling frame:**

The survey measures the number of State, Local and Federal civilian government employees and their gross payrolls for the pay period including March 12, 2007.

The survey provides data for state and local governments on full-time and part-time employment, part-time hours worked full-time equivalent employment, and payroll statistics by governmental function (elementary and secondary education, higher education, police protection, fire protection, financial administration, central staff services, judicial and legal, highways, public welfare, solid waste management, sewerage, parks and recreation, health, hospitals, water supply, electric power, gas supply, transit, natural resources, correction, libraries, air transportation, water transport and terminals, other education, state liquor stores, social insurance administration, and housing and community development).

For data on the federal government, Employee counts are the on-board "head count" as of the end of the reporting period. The data collected for this survey capture all Federal civilian employees, including seasonal and intermittent employees, and employees on foreign assignments residing outside the 50 states and the District of Columbia. Employees of the Central Intelligence Agency, the National Security Agency, and the Defense Intelligence Agency are not included in any of the data presented by government function. Federal judges, members of Congress and their staffs, employees of the Congressional Budget Office, and elected (with the exception of the President) and appointed officials of the Executive Branch are included. Employees of non-appropriated funds of defense activities are not classified as Federal employees; therefore, they are excluded from both OPM surveys. The payroll data are a total monthly payroll only. There is no detail available for full-time or part-time employee payrolls.

Three functions apply only to the Federal Government and have no counterpart at the state and local government levels: national defense and international relations, postal service, and space research and technology.

The universe for this survey contains the 50 state governments and 89,476 local governments (counties, municipalities, townships, special districts, school districts) including the District of Columbia.

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**Figure 4. Paper prototype of Government Employment-and-Payroll page (3)**

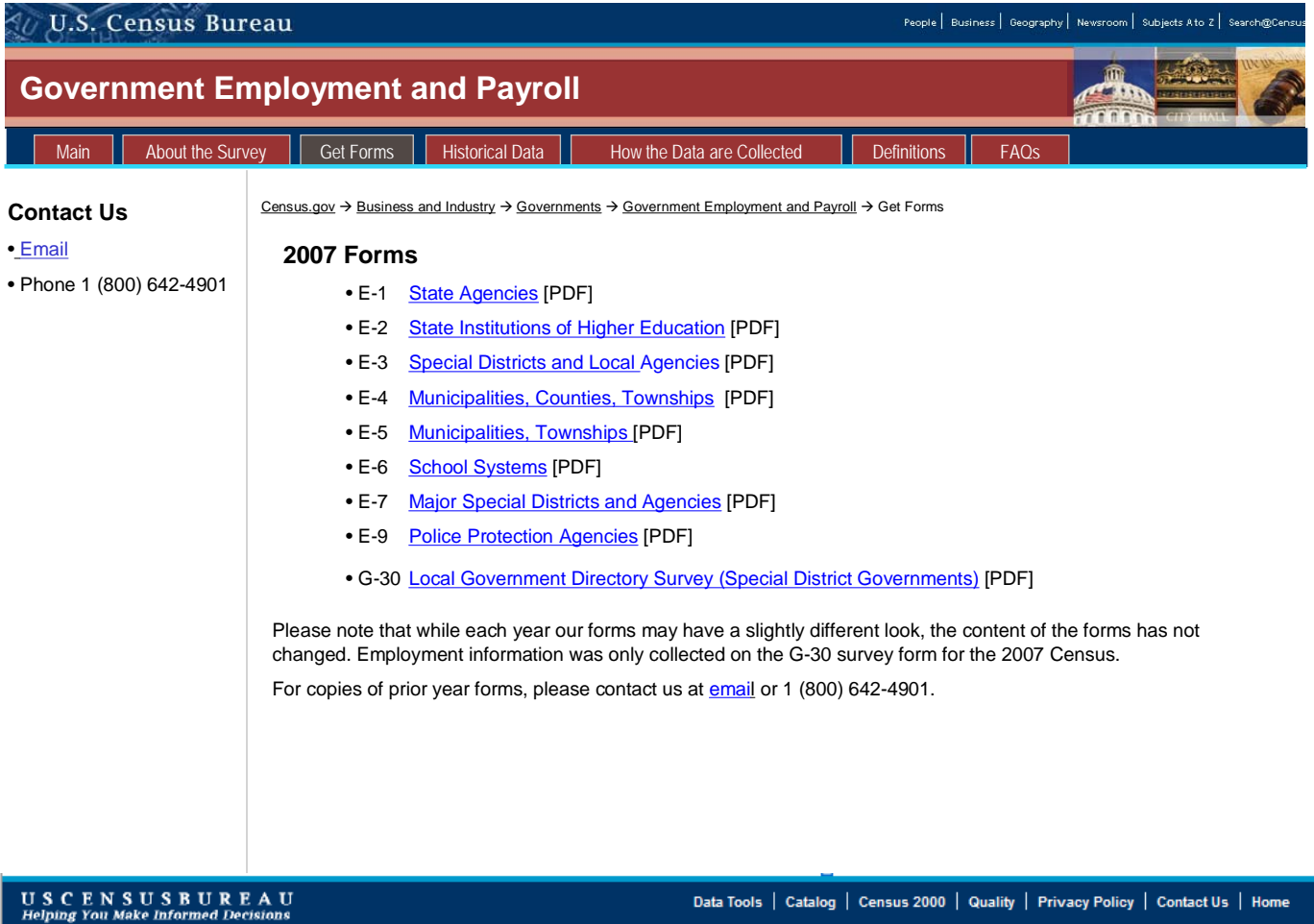


Figure 5. Paper prototype of Government Employment-and-Payroll page (4)

# Government Employment and Payroll



- Main
- About the Survey
- Get Forms
- Historical Data
- How the Data are Collected
- Definitions
- FAQs

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[Census.gov](#) → [Business and Industry](#) → [Governments](#) → [Government Employment and Payroll](#) → Historical Data

## Historical Data

Data from the Census of Government Employment and Annual Survey of Government Employment are available for each year between 1992 and 2007 with the exception of 1996. No survey was conducted in 1996. For data prior to 1992, please contact us at [email](#) or 1 (800) 642-4901.

For viewable and downloadable tables for prior years (1992-2007), please select a year.

Select a Year

Figure 6. Paper prototype of Government Employment-and-Payroll page (5)



Select a Year

Census.gov → Business and Industry → Governments → Government Employment and Payroll → Historical Data → 2006

### Historical Data: 2006

#### Cautionary Note

**Effect of the 2005 Weather Disasters in Louisiana and Mississippi on government employment information.** In certain areas, the 2005 weather disasters in Louisiana and Mississippi resulted in response rates for the local governments that compromised the statistical accuracy in those areas. [Read more](#) about the specific effects.

#### 2006 State Government Employment and Payroll

##### Viewable Data

- [US Summary Table](#)
- State Summary Tables

##### Downloadable Data

- [Excel Spreadsheet](#) – Data by government function for each state
- [State Data File](#) – Data by function code for each state [file layout](#)
- [State Data ID File](#) – Descriptive information for each ID in the State Data File [file layout](#)

#### 2006 State and Local Government Employment and Payroll

##### Viewable Data

- [US Summary Table](#)
- State Summary Tables

##### Downloadable Data

- [Excel Spreadsheet](#) – Estimates by government function for each state
- [Estimates Data File](#) – Estimates by level of government and function code for each state [file layout](#)
- [Estimates ID File](#) – Descriptive information for each ID in the Estimates Data File [file layout](#)
- [Individual Unit Data File](#) – Reported data by function code at the individual unit level [file layout](#)
- [Individual Unit ID File](#) – Descriptive information for each ID in the Individual Unit Data File [file layout](#)

#### 2006 Local Government Employment and Payroll

##### Viewable Data

- [US Summary Table](#)
- State Summary Tables

##### Downloadable Data

- [Excel Spreadsheet](#) – Estimates by government function for each state
- [Estimates Data File](#) – Estimates by level of government and function code for each state [file layout](#)
- [Estimates ID File](#) – Descriptive information for each ID in the Estimates Data File [file layout](#)
- [Individual Unit Data File](#) – Reported data by function code at the individual unit level [file layout](#)
- [Individual Unit ID File](#) – Descriptive information for each ID in the Individual Unit Data File [file layout](#)

#### 2006 Federal Government Employment and Payroll

- [Viewable Data](#) – Data by government function
- [Downloadable Data](#) – Data by government function in Excel

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[Excel] or the letters [xls] indicate a document is in the Microsoft® Excel® Spreadsheet Format (XLS). To view the file, you will need the [Microsoft® Excel® Viewer](#) available for **free** from Microsoft®.

Figure 7. Paper prototype of Government Employment-and-Payroll page (6)

[Census.gov](#) → [Business and Industry](#) → [Governments](#) → [Government Employment and Payroll](#) → How the Data are Collected

## How the Data are Collected

The How the Data are Collected (methodology) section contains information on collection periods, collection methods, editing, imputation, sampling error, response rates and nonsampling error. For information on how the data are collected for a specific year, please select the year below.

Select a Year  ▼

**Figure 8. Paper prototype of Government Employment-and-Payroll page (7)**

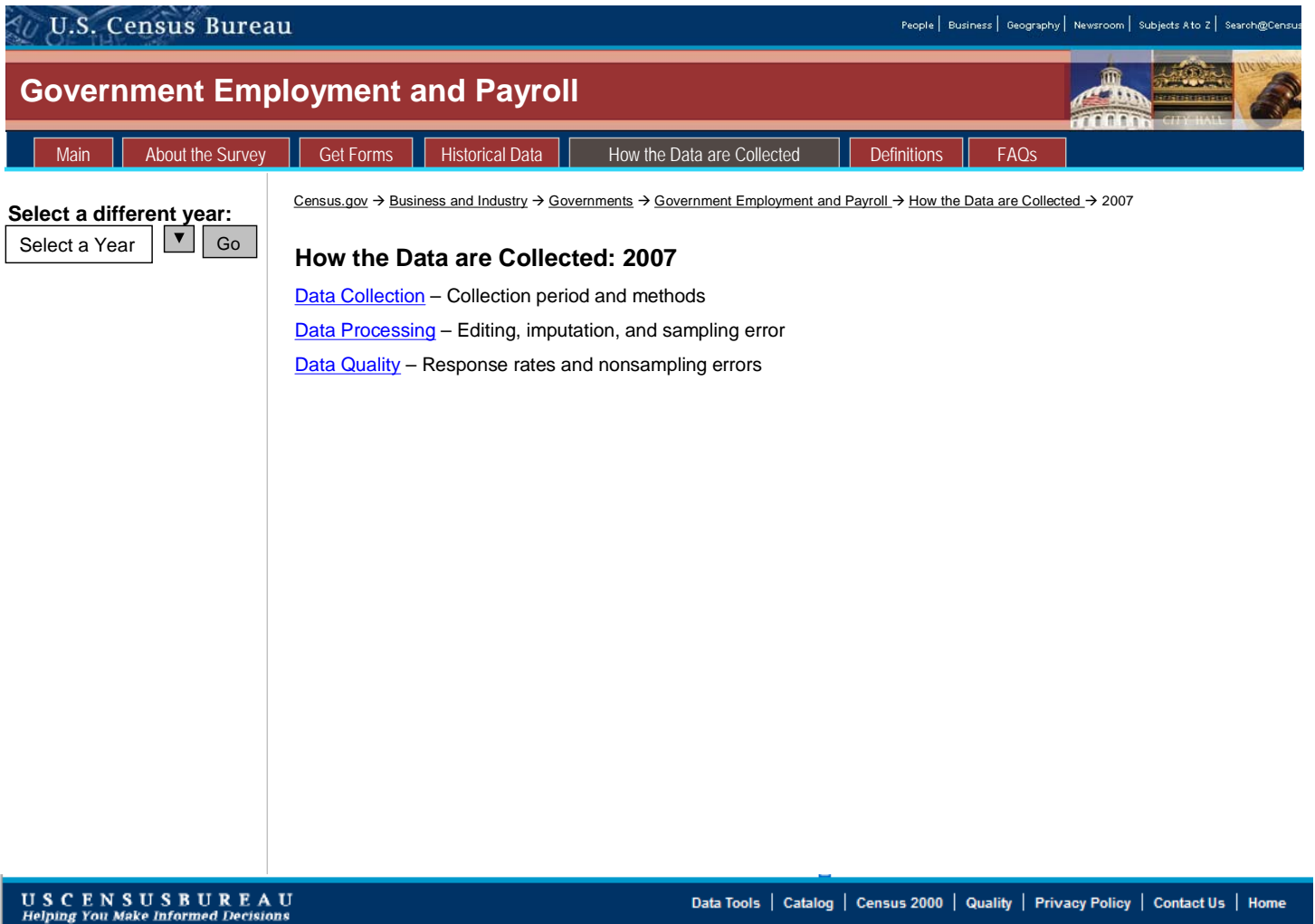


Figure 9. Paper prototype of Government Employment-and-Payroll page (8)

**How the Data are Collected for 2007:**

- [Data Collection](#)
- [Data Processing](#)
- [Data Quality](#)

[Census.gov](#) → [Business and Industry](#) → [Governments](#) → [Government Employment and Payroll](#) → [How the Data are Collected](#) → [2007](#) → Data Collection

**Data Collection**

**Dates of Collection:**

**G-30 Special Districts Form**

- 10/25/2006    Mailout
- 01/23/2007    Follow up mail
- 03/19/2007    Data editing completed

**2007 Census of Government Employment Survey Forms**

- 03/26/2007    Mailout
- 04/26/2007    Reminder letter mailout
- 06/01/2007    Follow up mail
- 05/12/2008    Data editing completed
- 09/30/2008    Imputations completed
- 10/06/2008    Final file
- 10/22/2008    Released to Census Bureau internet
- 11/26/2008    Revised data released to Census Bureau Internet
- 01/29/2009    Revised data released to Census Bureau Internet

**Methods**

Data in these files are based on information obtained in the G-30 2007 Census of Government Local Government Directory Survey (Special District Governments) and the 2007 Census of Government Employment.

As a part of the organization phase of the census, the G-30 2007 Census of Governments Local Government Directory Survey form was mailed to special district governments. The data items collected were identical to those collected on the E-4 and E-7 2007 Census of Government Employment forms. The only difference was the time period for the requested data. The G-30 form requested monthly data for October 2006 while the E-3 and E-7 requested data for March 2007.

Instructions on the form informed respondents that if they completed the employment portion of the G-30 form, they would not receive a 2007 Census of Government Employment form. This was done to reduce respondent burden. All respondents receiving the G-30 mail questionnaire had the option of responding using the Web site developed for reporting data. Approximately 12.2% of the special district G-30 respondents chose to respond on the Web.

In March 2007, the E-3 and E-7 forms were mailed to all special districts in the 2007 universe that had not provided employment data to the G-30 organization phase of the census. Units reporting employment data on the G-30 form are identified on the data file with a flag of "D" in position "96" on the individual unit file.

Census Bureau staff compiled Federal government data from records of the U.S. Office of Personnel Management. These data are based on the Monthly Report of Federal Civilian Employment (Standard Form 113A). Census Bureau staff collect some data through special arrangements with the governments. Forty four of the state governments provided data from central payroll records for all or most of their agencies/institutions. Elementary and secondary school system data in Florida, North Carolina, North Dakota, and Washington were supplied by special arrangements with the state education agency in each of these states. Data for Delaware school districts were provided by the state central collection respondent. Data for agencies and institutions for the remaining state governments were obtained by mail canvass questionnaires. Local governments were also canvassed using a mail questionnaire. All respondents receiving the mail questionnaire had the option of responding using the Employment Web site developed for reporting data. Approximately 37.9% of the local government respondents and 16.7% of the state agency respondents chose to respond on the Web.

**Figure 10. Paper prototype of Government Employment-and-Payroll page (9)**



**How the Data are Collected for 2007:**

- [Data Collection](#)
- [Data Processing](#)
- [Data Quality](#)

[Census.gov](#) → [Business and Industry](#) → [Governments](#) → [Government Employment and Payroll](#) → [How the Data are Collected](#) → [2007](#) → Data Processing

## Data Processing

### Editing

Editing is a process that ensures survey data are accurate, complete, and consistent. Efforts are made at all phases of collection, processing, and tabulation to minimize errors.

Although some edits are built into the Internet data collection instrument and the data entry programs, the majority of the edits are performed after the case has been loaded into the Census Bureau's database. Edits consist primarily of two types: consistency and a ratio of the current year's reported value to the prior year's value.

The consistency edits check the logical relationships of data items reported on the form. For example, if a value exists for employees for a function then a value must exist for payroll also. If part-time employees and payroll exist then part-time hours must exist and vice versa.

The current year/prior year edits compare data for the number of employees, the function reported for the employees, and the average salary between reporting years. If data falls out of acceptable tolerance levels, the item is flagged for review. Some additional checks are made comparing data from the Annual Finance Survey to data reported on the Census of Government Employment to verify that employees reported on Census of Government Employment at a particular function have a corresponding expenditure on the Finance Survey.

For both types of edits, the edit results are reviewed by analysts and adjusted when needed. When the analyst is unable to resolve or accept the edit failure, contact is made with the respondent to verify or correct the reported data.

### Imputation

Not all respondents answer every item on the questionnaire. There are also questionnaires that are not returned despite efforts to gain a response. Imputation is the process of filling in missing or invalid data with reasonable values in order to have a complete data set for analytical purposes. For census years, the complete data set is also needed for sample design purposes.

For nonresponding general purpose governments and for schools, the imputations were based on recently reported historical data from either a prior year annual survey or the most recent Census of Governments, if it was available. These data were adjusted by a growth rate that was determined by the growth of responding units that were similar (in size,

geography, and type of government) to the nonrespondent. If there was no recent historical data available, the imputations were based on the data from a randomly selected responding donor that was similar to the nonrespondent. This donor's data was adjusted by dividing each data item by the population (or enrollment) of the donor and multiplying the result by the nonrespondent's population (or enrollment). The imputations for nonresponding special districts were done similarly. If prior year reported data were available, the data were adjusted by a growth rate that was determined by the growth of reporting units that were similar. Special districts are similar if they are of the same organization code and similar geography, e.g., police protection in a state or water transport in a region. For nonresponding special districts with no recently reported data available, data were used from a randomly selected donor that was similar to the nonrespondent. In cases where good secondary data sources exist, the data from those sources were used.

Note: Between years 2002 through 2006, individual unit imputed data were not released to the public. Beginning with 2007, the imputed data are available on the Individual Unit Data file. Data flags are available on the Individual Unit Data file to denote the imputed data.

### Sampling Error

The data for the census year are not subject to sampling and do not contain sampling error. The user should be mindful that the data for years not ending in '2' or '7' are from sample surveys and are subject to sampling error. Discussions of sampling error are available in the survey methodology descriptions for those years.

**Figure 11. Paper prototype of Government Employment-and-Payroll page (10)**



**How the Data are Collected for 2007:**

- [Data Collection](#)
- [Data Processing](#)
- [Data Quality](#)

[Census.gov](#) → [Business and Industry](#) → [Governments](#) → [Government Employment and Payroll](#) → [How the Data are Collected](#) → [2007](#) → Data Quality

## Data Quality

### Nonsampling Error

Although every effort (as described in the Data Processing section) is made in all phases of collection, processing, and tabulation to minimize errors, the data are subject to nonsampling errors such as inability to obtain data for every variable from all units in the universe, inaccuracies in classification, response errors, misinterpretation of questions, mistakes in keying and coding, and coverage errors. The section on [Data Processing](#) describes our efforts to mitigate errors due to nonresponse, keying, reporting errors, etc.

### Overall Unit Response Rate

The overall unit response rate to the 2007 Census of Government Employment was 88.5%. All of the 50 state governments responded to the survey. In determining the unit response rate, a unit was determined to be a respondent if it provided information on all of the key variables in the survey. This unit response rate was calculated for each state as well as for the total U.S., and gives the percentage of the units in the eligible universe that actually responded to the survey.

$$\text{Overall Response Rate} = \frac{\text{Number of units who reported all key variables}}{\text{Number of units in the eligible universe}}$$

### Total Quantity Response Rate

The Total Quantity Response Rate was also calculated for the key variables for each state. This response rate is computed separately for each key variable by summing the data provided by the respondents for the key variable and dividing this sum by the sum of the respondent data and the imputed data for the key variable. The result is multiplied by 100. Total Quantity Response Rates for full-time equivalent and total payroll for all function codes are available in the [downloadable excel file](#).

$$\text{Total Quantity Response Rate for key item} = \frac{\sum \text{Response data for key item}}{\sum \text{All data for key item}} \times 100$$

### Response Rates Tables

[State and Local Response Rates](#) - Unit and Total Quantity response rates by state for state and local governments combined

[Local Response Rates](#) - Unit and Total Quantity response rates by state for local governments

[State and Local Excel Spreadsheet](#) - Data and response rates by government function for each state for state and local governments combined

[Local Excel Spreadsheets](#) - Data and response rates by government function for each state for local governments

**Figure 12. Paper prototype of Government Employment-and-Payroll page (11)**

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[Census.gov](#) → [Business and Industry](#) → [Governments](#) → [Government Employment and Payroll](#) → Definitions

**Definitions**

[A](#) | [B](#) | [C](#) | [D](#) | [E](#) | [F](#) | [G](#) | [H](#) | [I](#) | [J](#) | [K](#) | [L](#) | [M](#) | [N](#) | [O](#) | [P](#) | [Q](#) | [R](#) | [S](#) | [T](#) | [U](#) | [V](#) | [W](#) | [X](#) | [Y](#) | [Z](#)

**A** [Return to Top](#)

**Air transportation:** Activities associated with the operation and support of publicly operated airport facilities.

**All other and unallocable:** Employees engaged in activities that are not applicable to other employment functions, or are multi functional.

**C** [Return to Top](#)

**Corrections:** Activities pertaining to the confinement and correction of adults and minors convicted of criminal offenses. Pardon, probation, and parole activities are also included here.

**E** [Return to Top](#)

**Electric power:** Activities associated with the production or acquisition and distribution of electric power.

**Elementary and secondary education total:** All activities associated with the operation of public elementary and secondary schools and locally operated vocational-technical schools. Special education programs operated by elementary and secondary school systems are also included as are all ancillary services associated with the operation of schools, such as pupil transportation and food service.

**Elementary and secondary instructional employees:** Includes classroom teachers, principals, supervisors of instruction, librarians, teacher aides, library aides, and guidance and psychological personnel.

**Elementary and secondary other employees:** Includes all persons not included as instructional employees (e.g., school superintendents and other administrative personnel, clerical and secretarial staffs, plant operation and maintenance personnel, health and recreation employees, transportation and food service personnel, and any student employees).

**Figure 13. Paper prototype of Government Employment-and-Payroll page (12)**

## Appendix H. Debriefing Questionnaire

1. What did you think about the layout of the different pages?
2. What is something you would change or something you want to stay the same?
3. What do you like best about this proposed Web site? Least?
4. Do you think there is too much, too little, or just enough information on the different pages?
5. Was there anything you did not see that you would like to see on the new site?
6. Any additional thoughts about these proposed Web sites?
7. Do you think having response rate equations are helpful?
8. Did you see the link on the left to “build-a-table”? What do you think of the location of this link?
9. Do you think Build-a-table would have helped you answer any of the tasks (show participants tasks)?

Date: \_\_\_\_\_