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U.S. Consumer Expenditure Survey (CE)

Electronic Desktop Diary Design Improvements – Task Order #24

Final Report

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August 9, 2016

Prepared for:
U.S. Department of Labor
Bureau of Labor Statistics
Washington, DC 20212-0022

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Executive Summary 1

Westat in collaboration with Consumer Expenditure Survey (CE) staff participated in a development process to develop prototypes of the desktop version of the CE diary. Westat developed three initial prototypes during the Fall of 2015. After reviewing the three prototypes, the Bureau of Labor Statistics (BLS) decided on two versions to continue with further development.

Westat conducted usability testing of two different versions of the CE desktop diary—Prototype 1 and Prototype 2— in April and May of 2016. A total of 30 participants completed the testing at Westat's usability testing laboratory in Rockville, Maryland. All participants had experience using computers, smartphones, or tablets and 28 out of the 30 participants had a desktop or laptop computer at home. Participants completed a one-on-one interview. The participants entered expenses into both versions of the CE diary while the interviewer observed their behavior.

The analysis in this report is based on information from multiple sources. Both quantitative and qualitative debriefing information were analyzed. This includes ratings by the participants and an independent coder. The amount of time spent on different tasks in the usability interview was also analyzed. Finally, interviewer notes about problems the respondents encountered provided diagnostic information about the type of problems observed.

Overall, participants preferred the more streamlined and simpler Prototype 1 because it included all of the necessary information and tasks on a single screen. Some participants thought that Prototype 2 was more visually appealing; however, it took longer to learn how to use it. Overall, ratings by both the participants and independent coders and analyses of timings demonstrated that Prototype 1 performed better than Prototype 2 during the usability test. Although, Prototype 2 did better when it was presented second and participants had become more comfortable with the CE reporting tasks.

Westat recommends Prototype 1 if the need is to move forward relatively quickly with a straightforward design that is similar to the current paper version and other web versions of the CE diary. Although Prototype 2 did not perform as well as Prototype 1 in the usability testing, we think future research on the CE could focus on a more visually appealing design that would motivate participants to understand and complete the CE diary.

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Introduction 2

The Consumer Expenditure Survey (CE) is sponsored by the Bureau of Labor Statistics (BLS). Researchers use CE data to study consumer spending in the United States; the data also are used in the computation of the Consumer Price Index (CPI). The study consists of two distinct data collection efforts, the Consumer Expenditure Quarterly Interview (CEQ) survey and the Consumer Expenditure Diary (CED) survey. For the CED, respondents are asked to complete two, 1-week diaries in which they record purchases made by their household during that week. Together, these surveys provide current and continuous information on the buying habits of America's consumers. Recent trends for the CE surveys have shown declining response rates and concerns about measurement error. One recommendation given for addressing these issues was to provide respondents with the option to utilize mobile devices to record their purchases, which presents a number of benefits over paper diaries.

Westat produced a Data Capture and Financial Software Report, which identified new technologies that might be used to capture expenditure data (Westat, 2011[1]). An Evaluation of Financial Application Software team was formed to explore generic expense tracking apps available on current mobile devices to evaluate their features. This team concluded that a standard existing app could not meet the specific needs of collecting CE data and that a custom design would be required.

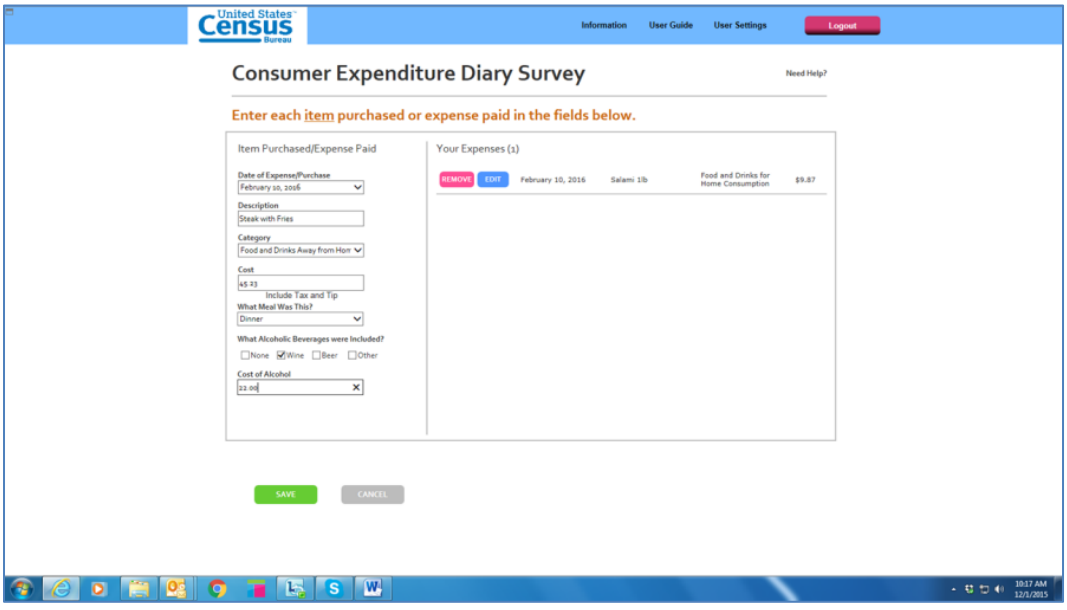
The U.S. Census Bureau conducted the Individual Diaries Feasibility Test (IDFT) in 2014 in which a desktop diary and a mobile diary were tested. Respondents were asked screening questions that assigned them to one of the two diary instruments. Using the initial findings from the IDFT, another project began as part of the overall CE Gemini Redesign project to further develop an electronic diary to be used in the CE Redesign Proof of Concept Test (POC). The updated design allows a respondent to access a single electronic diary via a desktop computer or a mobile device to record household expenses. The POC test was fielded in 2015. Due to time and resource constraints in preparation for the POC test, some ideas that were initiated for a desktop version were not able to be explored and implemented.

[1] Westat. (2011). *Data capture technologies and financial software for collecting consumer expenditure data*. Rockville, MD: Westat.

The development effort up until that point had focused most closely on the mobile version of the diary. For example, the mobile version has undergone several rounds of usability testing which has yielded recommendations for improving the design. Hence, these development efforts have created a mobile version that works well for the purposes of the CE. However, the BLS would like to have seen more development of the desktop version of the diary that takes advantage of the larger screen size and different input options involving the mouse and keyboard.

Westat, in collaboration with CE staff, participated in a process to develop prototypes of the desktop version of the CE diary. Westat developed three initial prototypes during the Fall of 2015. Prototype 1 included a significant amount of white space and guided the respondent through the steps to enter purchases on the left-hand side of the screen while showing a summary of reported purchases on the right. Prototype 1 is shown below in Figure 2-1. The categories are modified slightly from the typical CE categories by separating out the "other" category into home furnishings and decorative items, entertainment and recreation, transportation expenses, medical expenses and supplies, and education expenses and supplies. We maintained the categories of food and drinks away from home; food and drinks for home consumption; and clothing, shoes, jewelry, and accessories. We also include a category for all other products, services, and expenses.

Figure 2-1. Initial Prototype 1

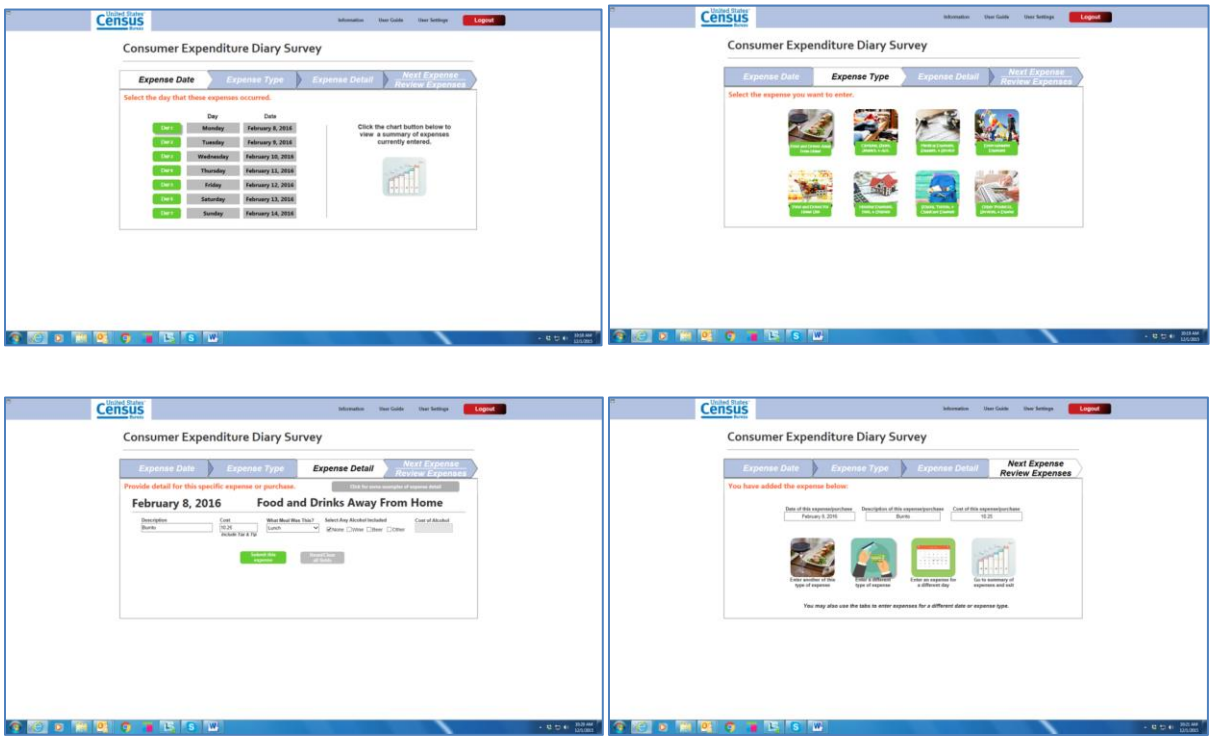


The principles behind Prototype 1 focused on presenting all respondent actions and feedback on one screen. All entry fields followed a clear linear (top to bottom) navigational path to keep the response task simple and to minimize any skip errors (errors of omission). Entry fields were

centered in the left-hand side of the activity frame. Results of these entries or response actions were visible in the right-hand side of the activity frame. This presented the respondent with their most recent entries allowing an opportunity to keep track of what was entered without requiring navigation to another screen.

Prototype 2, shown in Figure 2-2, walked the respondent through the data entry process in steps and provided more visual cues for categories of expenses. Initial Prototype 2 begins with the respondent selecting the day on which an expense occurred. The participant then selects a category for the expense by clicking on an icon. Hence, this prototype includes a visual cue for each of the expense categories as opposed to Initial Prototype 1 where text is selected from a dropdown menu. The expense categories are the same as Initial Prototype 1. The respondent enters the details about the item on the third screen. The fourth screen gives the participant options for entering another of the same type of expense for the same day, a different type of expense for the same day, an expense for a different day, or logging out of the diary. This gives the respondent the opportunity to enter in similar expenses without having to select the category or day again.

Figure 2-2. Initial Prototype 2

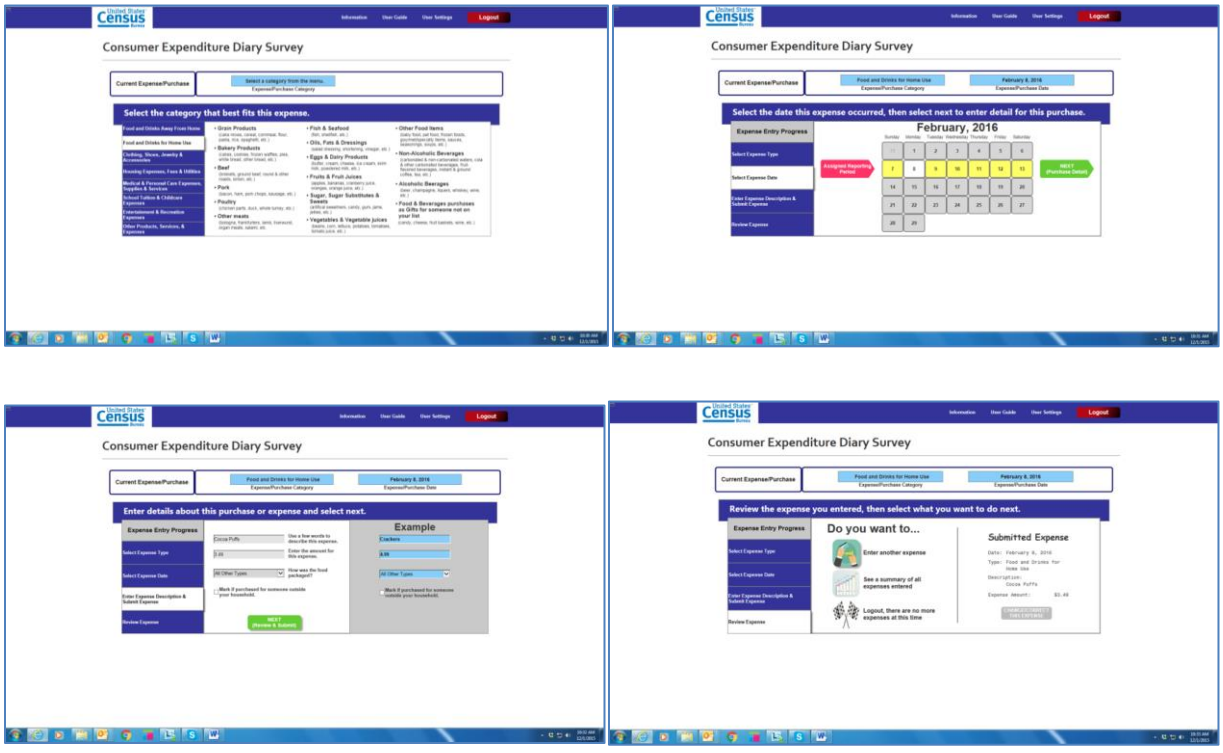


The principles behind Prototype 2 focused on decomposing each component of entering purchases. This allows efficiency gains in the response task, potentially reducing perceived burden or

redundancy, by not requiring the respondent to select the purchase date or category for each item. Prototype 2 also incorporates more visual cues to help communicate assigned days for purchase entry, and meaning behind category labels by showing prototypical category items. Visual cues are also used to help with navigation with the use of icons (or small picture) to help determine the next action to take after purchase(s) have been entered.

Initial Prototype 3, shown in Figure 2-3, provided more contextual information to the respondent about what types of expenses should be reported. For example, the first screen provides examples of the types of products that would be included under each category. The respondent selects the date from a calendar on the second screen. The details for the item are entered on the third screen. Finally, on the fourth screen, the respondent can select whether they want to enter another expense, see a summary of expenses entered, or logout.

Figure 2-3. Initial Prototype 3



The principle behind Prototype 3 focused on improving respondent understanding by providing information, such as, category examples to help the respondent select the appropriate category. Prototype 3 also followed the structure of many commercial websites where respondents are likely to shop to capitalize on navigational cues respondent may be familiar with. Like Prototype 2, this

prototype decomposed the task of entering expenses, but also incorporated more examples to help improve data quality.

Westat provided the three prototypes to BLS in December 2015. After reviewing the three prototypes, BLS selected two for further development. BLS chose Prototype 1 since it was the most similar to the current CE design, it appeared less burdensome, and the response task was relatively clear. BLS also chose to continue with Prototype 2 since it was a visibly appealing alternative. Prototype 3 development stopped because of concerns that the screen may appear too busy and imply a higher level of burden. In addition to selecting the prototypes, BLS made several suggestions to improving Prototype 1 and Prototype 2.

Westat continued development of the two prototypes through February of 2016. The two final prototypes were presented to BLS on February 9, 2016. Prototype 1 and Prototype 2 are shown below in Figure 2-4 and Figure 2-5. Additional screenshots are shown in Appendix B.

Figure 2-4. Final prototype 1

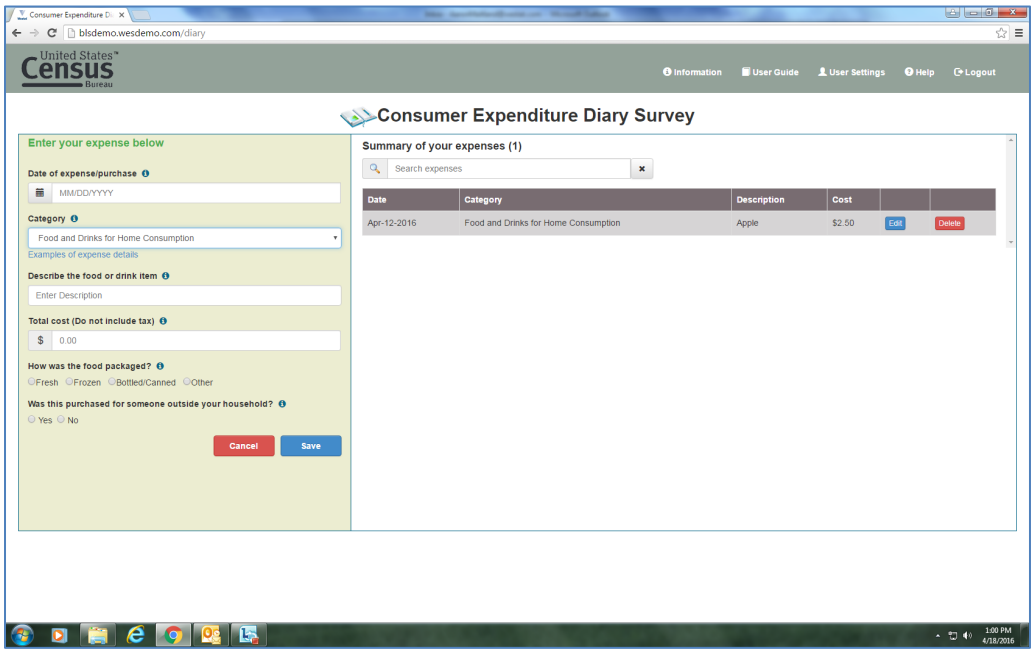
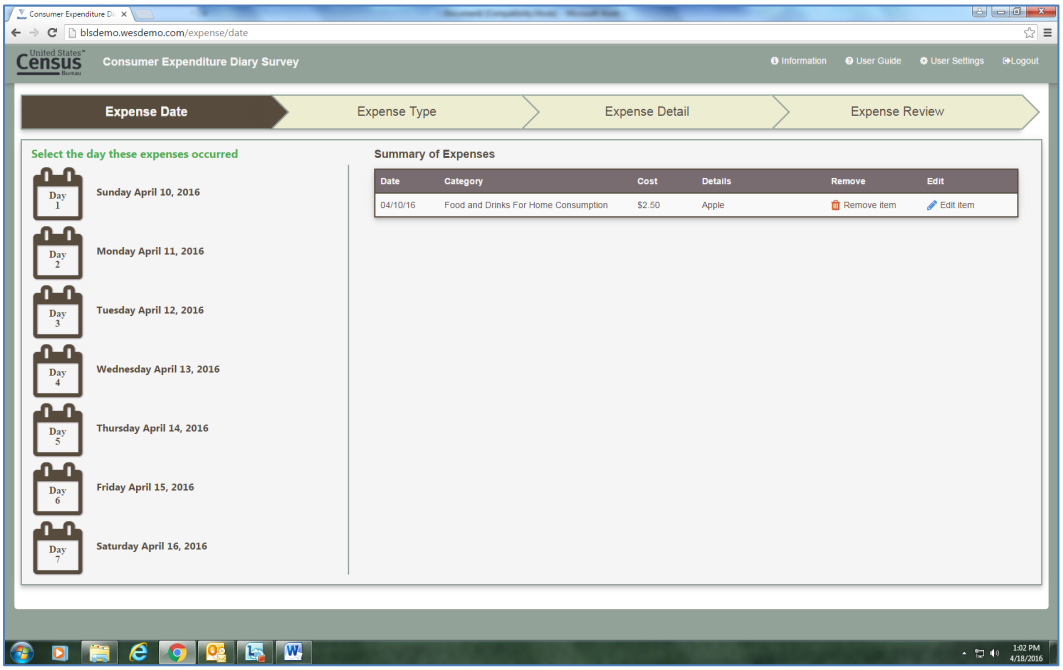


Figure 2-5. Final prototype 2



Westat prepared a protocol for usability testing of these two prototypes with CE staff and conducted the testing in April and May of 2016. This report provides the details about the testing of the two prototypes. Chapter 3 provides details about the methods that were used to conduct the testing. Chapter 4 presents the findings of the usability test. Finally, Chapter 5 presents Westat's recommendations for a desktop diary design for the CE.

Methods 3

Westat conducted usability testing of two prototypes of the CE desktop diary in April and May of 2016. A total of 30 participants completed the testing at Westat's usability testing laboratory in Rockville, Maryland.

Recruiting

Participants were recruited by running an advertisement on the Internet web site Craigslist. Table 3-1 shows the distribution of age, sex, race, and education for the 30 participants.

Table 3-1. Demographic distribution of test participants

Characteristic	Count
Age	
30 and under	6
31-49	5
50-59	12
60+	7
Sex	
Male	12
Female	18
Race	
White	13
Black	14
Other	3
Education	
High school or GED	9
Some college	10
College degree	11

All of the participants had experience using computers, smartphones or tablets and 28 out of the 30 participants had a desktop or laptop computer at home. One of the participants had a smartphone, but no desktop computer at home. Another participant had used computers at work, but did not have one at home. We asked participants during screening how often they use a desktop or laptop computer and 24 reported that they use the computer "Always" or "Very often," four reported that they use the computer "Sometimes" or "Rarely," and two reported that they "Never" use a desktop or laptop computer.

Procedures

Participants visited the usability lab at Westat for a one-on-one interview. The complete protocol is shown in Appendix A. The interviewer gave the participant some background on the study and then administered the consent form. Once consent was obtained the interviewer demonstrated how to enter expenses into the first prototype that the participant encountered. The demonstration helped to introduce the respondent to the diary and the data entry procedures since it was not possible to give a full explanation of the task as would be done in the actual diary placement due to time constraints in the lab. The interviewer entered one food and drinks away from home and one food and drinks for home consumption example. We demonstrated these two categories because of the differing data entry procedures between the categories. Food and drinks away from home requires the participant to enter all of the expenses on the receipt on one line and enter total cost including tax and tip. Food and drinks for home consumption (like all other categories) requires the participant to itemize the receipt and enter the cost of each item without tax.

Once the demonstration was complete the participant was asked to complete six tasks in one of the prototypes of the diary. One half of the participants were asked to use Prototype 1 for the first six tasks and the other half were asked to use Prototype 2 to complete the first six tasks. These tasks consisted of fictional scenarios and included receipts that were created by the study team for the participant to enter. At the completion of each individual task, the interviewer asked the participant "How easy or difficult was it to complete this task?" The interviewer recorded the participants' answers and noted their comments. The interviewer may have also probed on any issues that were observed during the completion of the task. At the end of all six tasks for the first prototype encountered, the interviewer administered probes about the participants' impressions of this version of the diary, how easy or difficult the diary was to complete, how confident they were in completing the diary, and how much training they felt the average person would need to use the diary.

After completing the tasks using the first prototype, the participant used the opposite prototype of the diary for the next six tasks. The interviewer demonstrated how to use the other prototype using the same examples that were used to explain the first prototype. The participant then completed six additional tasks. The interviewer followed the same probing procedures on both prototypes. Participants were asked to bring in a receipt of their own and to enter some of the items from that receipt on the second prototype that they encountered.

The interviewer administered some final probes at the end of the interview once the participants had completed all of the tasks for both prototypes of the diary. These probes asked participants to

indicate which prototype that they prefer, the most difficult part of completing the diary, the easiest part of completing the diary, and provide any comments about how to make the diary easier to complete.

Interviewers entered their findings from the debriefing questions and qualitative descriptions of any issues they observed during the interview into a unified notes document that was used for analysis.

Analysis

The analysis in this report is based on three primary sources: quantitative and qualitative debriefings, ratings and timings, and interviewers' notes.

Regarding the information provided through the debriefings, some of it is presented in quantitative tallies of the participants' ratings or preferences. For example, participants rated the difficulty of each task after it was completed. In addition, participants provided overall ratings of task difficulty, confidence, and the amount of training needed after completion of all six tasks for each prototype. Participants were also asked which prototype that they prefer after completing the tasks for both. Qualitative debriefing information is also summarized in this report. For example, participants were asked about their thoughts on each prototype. They were also asked to describe the easiest and hardest parts of completing the diary and also to comment on how to make the diary easier to complete.

Timings and independent ratings of task success were also used to evaluate the two prototypes. To obtain this information, two research assistants reviewed the video recordings to record the amount of time the participants spent on the task and also rated whether the person was not successful, partially successful, or fully successful at completing the task. Not successful means that the participant could not complete the task without help from the interviewer. Partially successfully means that the participant completed most of the task, but made a mistake on a minor element of the task or had to make multiple attempts. A fully successful rating means that the participant completed the task without any errors. The timings were recorded from the time that the participant started the task to the time that they completed the task and the interviewer asked them to rate the difficulty of the task. The ratings include some time where the participant might be talking to the interviewer and not actually spending time on the task.

Another source of information includes the interviewers' notes regarding the problems that participants encountered during each task. We use these notes to provide a rich explanation and diagnosis of the most serious problems. Many of the quantitative ratings and timings can be indicators of problems; however, these notes from the interviews provided the best diagnostic information about the problems that were encountered.

Findings 4

The findings are presented in three different sections. We first present the participants prototype preference based on their own self report. Next, we compare participants' ratings for each prototype. These ratings include overall ratings for each prototype and specific ratings on the tasks that were performed with each prototype. This section also includes the amount of time that participants spent on each task and independent ratings of success with each task. Finally, we present task-by-task descriptions of the issues that were encountered with each prototype.

Prototype Preference

Table 4-1 shows which prototype the participants preferred after completing all of the tasks with both prototypes in the usability testing session. Overall, 19 out of the 30 participants preferred Prototype 1. The table also shows that the preferences were affected by the order in which the participants used the prototypes. Each prototype was more likely to be preferred when it was the second prototype encountered by the participant in the usability test. Nearly all of the participants who used Prototype 1 last preferred that prototype. Preference was more evenly divided when Prototype 2 was used last.

Table 4-1. Prototype preference by order of presentation

Prototype	Order of presentation		Overall
	Prototype 1 first, Prototype 2 second	Prototype 2 first, Prototype 1 second	
Prototype 1	6	13	19
Prototype 2	7	2	9
Not sure	2	0	2
Total	15	15	30

The participants provided reasons why they preferred one or the other prototype. Prototype 1 was viewed as a simpler layout than Prototype 2 for most participants. The participants who preferred Prototype 1 mentioned that they liked having everything right in front of them including the data entry fields and the summary of everything already entered. Many of the participants who preferred Prototype 1 mentioned that they like having everything on one screen rather than having to navigate through multiple screens. In addition, the summary on the right-hand side with the easy-to-find

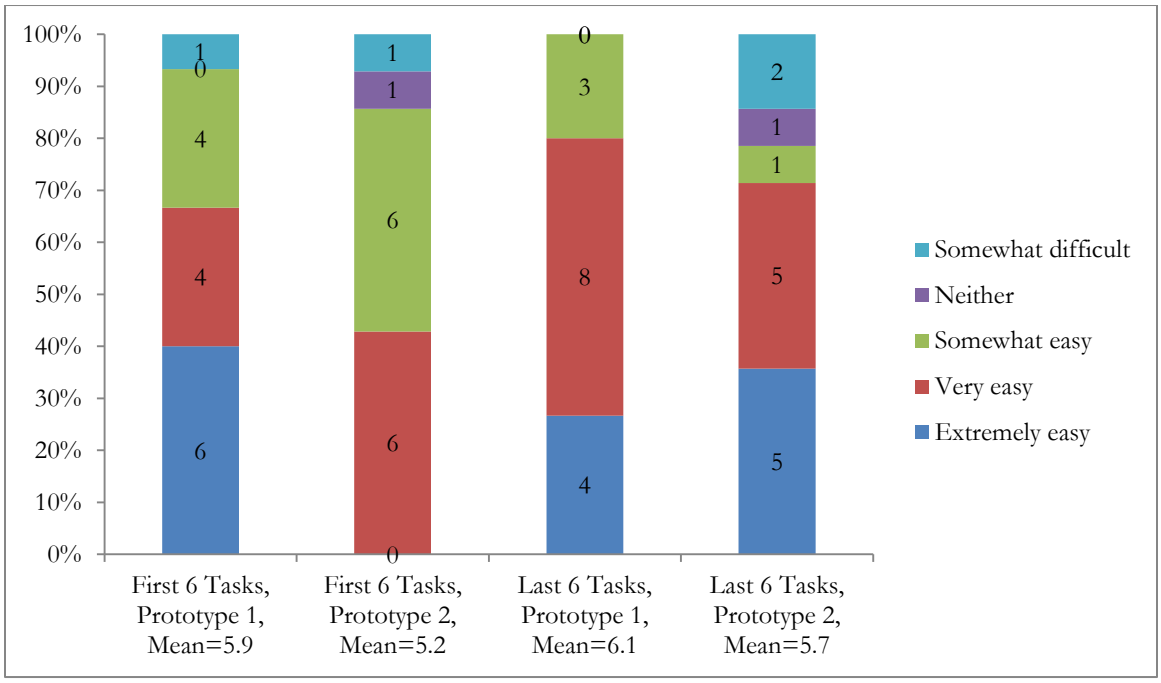
delete and edit buttons was also a clear advantage with Prototype 1. One negative aspect to Prototype 1 was that entering the date became repetitive for some participants.

Prototype 2 had some advantages that those who preferred that version mentioned. Several participants mentioned that they liked the first screen that lists the actual dates in the study. This was clearer for them than using the calendar. They also liked that they did not have to enter the date for every expense that was entered. Also, having the icons made it somewhat easier to select the categories more quickly. One participant mentioned that the icons made it easier because he has glasses and could see the categories much better. One drawback to Prototype 2 was that it was difficult to navigate to a screen where an entry could be edited or deleted. The expense review page did not include an obvious navigation icon for deleting or editing. Some participants also got confused about how to navigate between screens particularly during the early tasks.

Rating and Timing Data

Next, we show the ratings the participants provided after they completed each version of the tasks during the usability test. Figure 4-1 shows participant ratings of how easy or difficulty it was for the participants to use each prototype on the first six tasks and the last six tasks. Prototype 1 was rated as much easier compared to Prototype 2 on the first six tasks. The ratings of the prototypes are quite similar on the last six tasks.

Figure 4-1. Participant ratings of how easy or difficult the prototypes were on the first six tasks and the last six tasks (scale: 1=Extremely difficulty, 2=Very difficult, 3=Somewhat difficult, 4=Neither easy nor difficult, 5=Somewhat easy, 6=Very easy, 7=Extremely easy).[2]



[2] Note. The numbers on the bars in Figure 4-1, Figure 4-2 and Figure 4-3 represents the number of participants in each category.

Figure 4-2 shows participant ratings of how confident they were filling out the entries for each prototype on the first six tasks and the last six tasks. The number of participants reporting extremely or very confident ratings is quite similar across all tasks for Prototype 1; however, there is higher confidence for Prototype 2 on the last six tasks compared to the first six tasks.

Figure 4-2. Participant ratings of how confident felt completing the entries in the prototypes on the first six tasks and the last six tasks (scale: 1=Not at all confident, 2=A little confident, 3=Somewhat confident, 4=Very confident, 5=Extremely confident)

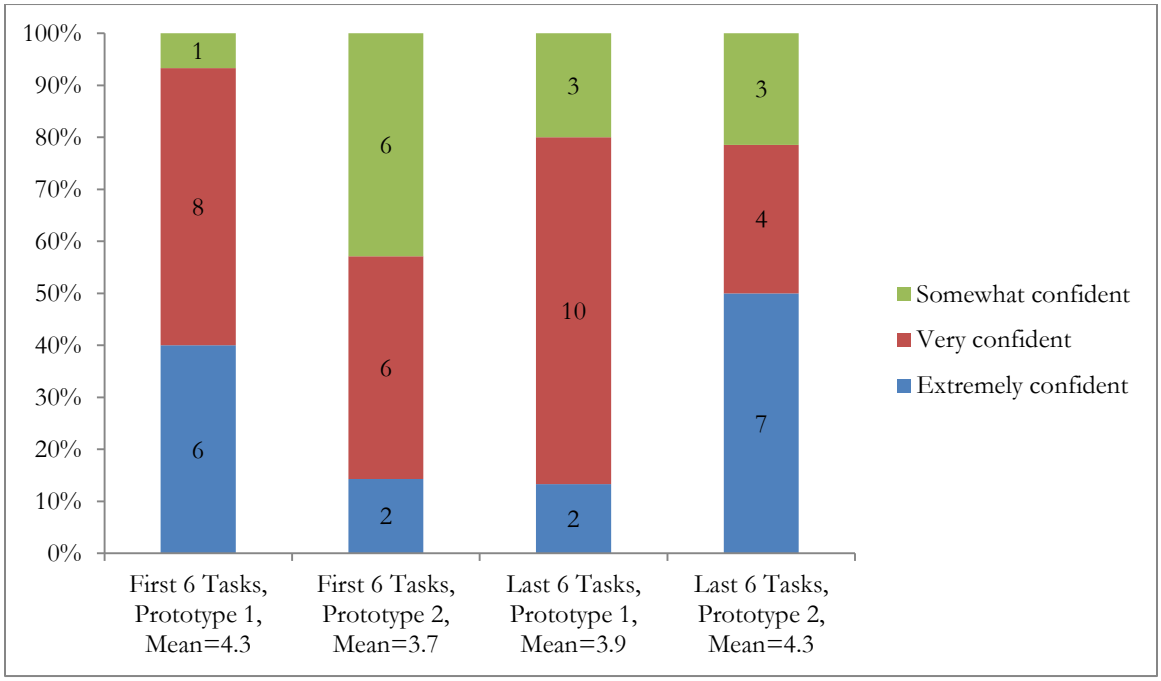


Figure 4-3 shows participant ratings of how much training participants think the average person needs to get started using each prototype depending on whether they completed the prototype for the first six tasks or the last six tasks. The majority of participants thought that the average person would need "none" or "a little" training across all prototypes regardless of when they encountered the prototypes. There is very little variation in the ratings across the groups.

Figure 4-3. Participant ratings of how much training the average person would need to get started with the prototypes on the first six tasks and the last six tasks (scale: 3=None, 2=A little, 1=A moderate amount, 0=A lot)

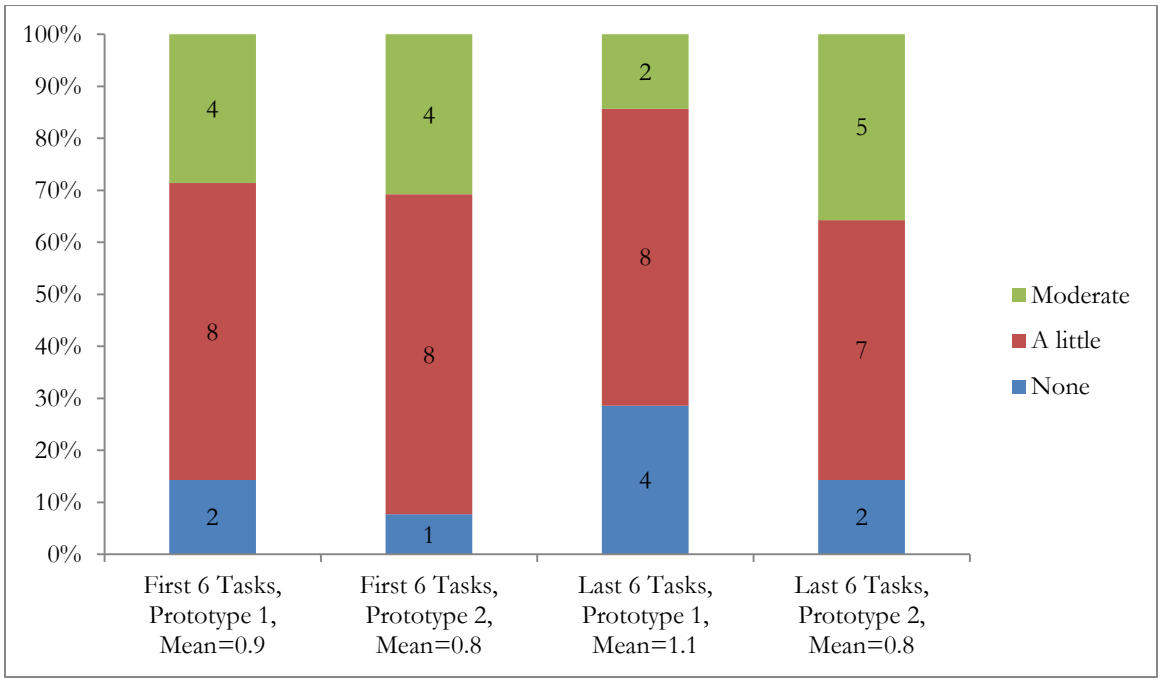


Table 4-2 shows the participants ratings of task difficulty by prototype. The mean rating across participants for each prototype is shown in the last column. Overall, Prototype 1 has a higher mean rating indicating that it is rated as the easier of the two diaries by participants. Task 2 (lunch), task 3 (groceries), task 5 (Return book), task 8 (Dinner), task 10 (Shopping trip 2), and task 11 (Return shirt) were tasks that seem to have been viewed as easier with Prototype 1 compared to Prototype 2. Table 4-2 does not show any tasks where Prototype 2 was clearly viewed as easier than Prototype 1 by the participants.

Table 4-2. Participant task difficulty ratings by prototype

		Rating					
Task	Prototype	5 Very easy	4 Somewhat easy	3 Neither	2 Somewhat difficult	1 Very difficult	Mean
1 (Log in 1)	1	13	2	0	0	0	4.9
	2	15	0	0	0	0	5.0
2 (Lunch)	1	10	5	0	0	0	4.7
	2	7	6	1	1	0	4.3
3 (Groceries)	1	7	4	2	1	1	4.0
	2	1	10	1	2	0	3.7
4 (Shopping trip 1)	1	8	4	3	0	0	4.3
	2	5	9	0	0	0	4.4
5 (Return book)	1	14	1	0	0	0	4.9
	2	5	3	0	2	3	3.4
6 (Medicine)	1	9	5	1	0	0	4.5
	2	8	4	0	1	0	4.5
7 (Log in 2)	1	15	0	0	0	0	5.0
	2	15	0	0	0	0	5.0
8 (Dinner)	1	9	5	0	0	0	4.6
	2	4	6	1	1	0	4.1
9 (Movie)	1	11	2	0	0	0	4.8
	2	11	2	0	0	0	4.8
10 (Shopping trip 2)	1	9	3	1	0	0	4.6
	2	6	3	2	2	2	4.0
11 (Return shirt)	1	9	0	0	3	0	4.3
	2	6	2	2	3	0	3.8
12 (Own expense)	1	10	1	0	0	0	4.9
	2	8	1	0	0	0	4.9
Overall	1	124	32	7	4	1	4.6
	2	91	46	7	12	3	4.3

Table 4-3 shows ratings of task difficulty from independent coders by prototype. The mean rating across coders for each prototype is shown in the last column. Similar to the participant ratings, Prototype 1 has a higher overall mean rating indicating that it is rated as the easier of the two diaries by the coders. Task 2 (lunch), task 3 (groceries), task 4 (Shopping trip 1), task 5 (Return book), task 6 (medicine), task 10 (Shopping trip 2), and task 11 (Return shirt) were tasks that seem to have been viewed as easier with Prototype 1 compared to Prototype 2. Table 4-3 does shows that task 9 may have been slightly easier with Prototype 2 compared with Prototype 1.

Table 4-3. Independent coder task difficulty ratings by prototype

		Rating					
Task	Prototype	5 Very easy	4 Somewhat easy	3 Neither	2 Somewhat difficult	1 Very difficult	Mean
1 (Log in 1)	1	10	3	0	0	0	4.8
	2	13	1	0	0	0	4.9
2 (Lunch)	1	7	8	0	0	0	4.5
	2	4	5	2	1	2	3.6
3 (Groceries)	1	4	5	2	4	0	3.6
	2	2	4	1	3	3	2.9
4 (Shopping trip 1)	1	7	5	3	0	0	4.3
	2	5	3	1	2	2	3.5
5 (Return book)	1	14	0	0	1	0	4.8
	2	2	2	0	2	8	2.1
6 (Medicine)	1	12	2	1	0	0	4.7
	2	9	1	0	1	1	4.3
7 (Log in 2)	1	13	1	0	0	0	4.9
	2	15	0	0	0	0	5.0
8 (Dinner)	1	4	8	1	1	1	3.9
	2	4	7	3	1	0	3.9
9 (Movie)	1	9	3	0	1	0	4.5
	2	10	3	0	0	0	4.8
10 (Shopping trip 2)	1	9	1	2	1	0	4.4
	2	4	5	2	3	0	3.7
11 (Return shirt)	1	8	3	1	1	0	4.4
	2	5	5	0	1	2	3.8
12 (Own expense)	1	10	2	0	0	0	4.8
	2	10	1	1	0	0	4.8
Overall	1	107	41	10	9	1	4.5
	2	83	37	10	14	18	3.9

Table 4-4 shows ratings of task success from independent coders and timings on each task by Prototype. Overall, Prototype 1 had a higher success rate and took less time to complete than Prototype 2. Participants appear to be more successful with Prototype 1 compared to Prototype 2 on task 4 (Shopping trip 1), task 5 (Return book), and task 6 (Medicine). Table 4-4 does not show any tasks where Prototype 2 had a clear advantage to Prototype 1 in terms of task success. The timing column of the tables illustrates that Prototype 1 took less time on the first six tasks. The differences in timing are much smaller for the last six tasks with the exception of task 11 (return shirt).

Table 4-4. Task success ratings by independent coders and task timing by prototype

		Success rating			Timing
Task	Prototype	Fully successful	Partially successful	Not successful	Mean (MM:SS)
1 (Log in 1)	1	14	1	0	00:21
	2	14	0	0	00:28
2 (Lunch)	1	8	6	0	01:27
	2	8	4	2	02:47
3 (Groceries)	1	2	12	0	05:17
	2	4	7	2	06:34
4 (Shopping trip 1)	1	8	6	0	04:00
	2	3	9	1	05:33
5 (Return book)	1	14	1	0	00:10
	2	4	2	8	01:36
6 (Medicine)	1	12	2	0	02:32
	2	8	3	1	02:38
7 (Log in 2)	1	14	0	0	00:15
	2	15	0	0	00:11
8 (Dinner)	1	3	10	2	02:17
	2	2	12	0	02:19
9 (Movie)	1	8	4	0	01:06
	2	9	3	0	00:50
10 (Shopping trip 2)	1	6	7	0	02:54
	2	9	4	0	03:27
11 (Return shirt)	1	11	2	0	00:23
	2	11	0	2	00:54
12 (Own expense)	1	10	2	0	01:51
	2	10	2	0	01:42
Overall	1	110	53	2	01:54
	2	97	46	16	02:22

Task-by-Task Issues

In this section, we summarize problems that were encountered with each prototype.

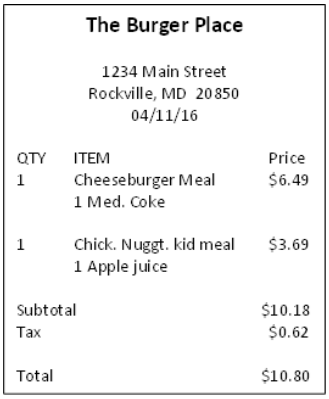
Task 1: Login 1

Enter your last name as the user name and enter "password1" for the password to log in to version 1.

No one experienced any issues with the log in screen on either prototype. One participant initially had some issues with the keyboard on the laptop computer, but had no problems with the actual task of entering the user name and password.

Task 2: Lunch

On April 11 you go out to eat lunch with your child and order one meal for yourself and one meal for your child. Enter the expense into the diary.



The Burger Place

1234 Main Street
Rockville, MD 20850
04/11/16

QTY	ITEM	Price
1	Cheeseburger Meal 1 Med. Coke	$6.49
1	Chick. Nuggt. kid meal 1 Apple juice	$3.69
Subtotal		$10.18
Tax		$0.62
Total		$10.80

Prototype 1

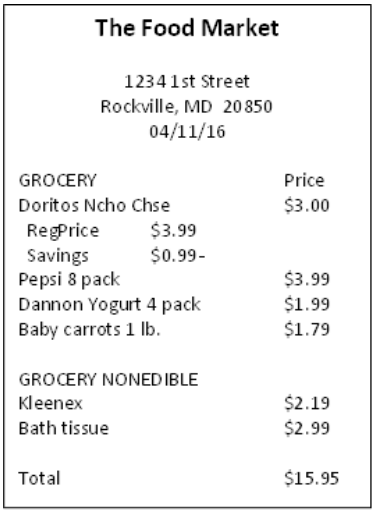
- Two participants attempted to type in the date rather than selecting the date with the calendar. Their entered date disappeared when they tried to save the entry since the date was not in the correct format. The two participants did not notice the calendar at first.
- One participant itemized the receipt by meal and entered the price without tax for each meal.
- Two participants skipped fields such as the type of meal or whether alcohol was included.

Prototype 2

- Three participants entered incomplete descriptions by not entering the drinks.
- One participant itemized the meals on the receipt incorrectly and entered the price of each meal without tax.
- One participant missed the cost field.
- Two participants were confused about whether to click finish or add item after entering the information from the receipt on the expense detail screen.

Task 3: Groceries

On the way home you stop at the grocery store and purchase some food. Enter these expenses in the diary.



The Food Market

1234 1st Street
Rockville, MD 20850
04/11/16

GROCERY		Price
Doritos Ncho Chse		$3.00
RegPrice	$3.99	
Savings	$0.99-	
Pepsi 8 pack		$3.99
Dannon Yogurt 4 pack		$1.99
Baby carrots 1 lb.		$1.79
GROCERY NONEDIBLE		
Kleenex		$2.19
Bath tissue		$2.99
Total		$15.95

Prototype 1

- Eight participants did not itemize until the interviewer reminded them that they needed to itemize these types of events. Once the participants were reminded to itemize they were able to enter the items correctly.
- Six participants entered the Kleenex and bath tissue as Food and Drinks for Home Consumption. Some thought that everything on the receipt should be entered into the same category and at least one participant was just focusing on the "home consumption" part of the category.

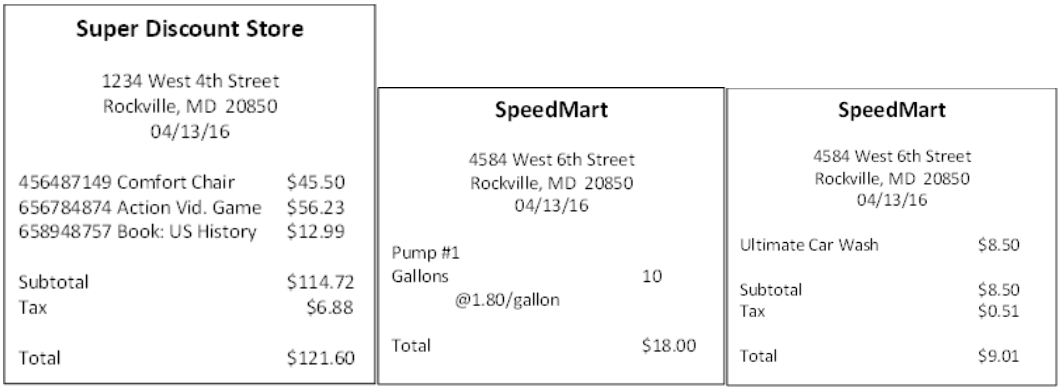
- One participant tried to type in the date, but entered the wrong format and the entered date was not accepted.
- One participant noted that it was tedious to select the date with the calendar for every item.

Prototype 2

- Four participants did not itemize until the interviewer reminded them that they needed to itemize these types of events. Once again, when the participants were reminded to itemize they were able to enter the items correctly.
- Three participants categorized the Kleenex and bath tissue as Food and Drinks for Home Consumption.
- One participant initially entered the wrong date. The interviewer made them aware of this and the participant had a difficult time finding the correct navigation icons to change to the correct date.
- One participant missed the cost field, which was noticed when he tried to click "Add expense."
- Two participants initially clicked on "Enter another of this type of expense…," which was incorrect. One of these participants clicked "go back" and correctly selected "Enter a different type of expense for…"

Task 4: Shopping Trip 1

On April 13 you go shopping at a local discount store and purchase a chair, a video game for your child, and a book to read. You also stop to purchase gas and get your car washed on the way home. Enter these expenses in the diary.



Super Discount Store

1234 West 4th Street
Rockville, MD 20850
04/13/16

456487149 Comfort Chair	$45.50
656784874 Action Vid. Game	$56.23
658948757 Book: US History	$12.99
Subtotal	$114.72
Tax	$6.88
Total	$121.60

SpeedMart

4584 West 6th Street
Rockville, MD 20850
04/13/16

Pump #1	
Gallons	10
@1.80/gallon	
Total	$18.00

SpeedMart

4584 West 6th Street
Rockville, MD 20850
04/13/16

Ultimate Car Wash	$8.50
Subtotal	$8.50
Tax	$0.51
Total	$9.01

Prototype 1

- One participant noted that it was tedious to select the date for every item. Another thought that it was tedious to use the calendar and that it should be easier to just type in the date. The date field only accepted one specific format. Another participant thought that the calendar button is not obvious enough.
- Five participants included the tax for the car wash. One participant corrected this by editing once the interviewer asked him about this.
- One participant missed the cost field and left it blank.

Prototype 2

- Five participants expressed confusion or had problems using the navigation button. A few participants were confused about whether to click on "Enter another of this type of expense…" or "Enter a different type of expense…", but eventually chose the correct icon sometimes with the help of the interviewer. Another participant was confused because the previous task had many items on the expense review page and the navigation icons were not visible on the screen. This participant tried using the back and forward buttons on the browser button until the interviewer instructed her to scroll down. She then selected the correct navigation icon.
- Three participants incorrectly entered all of the items from the discount store as home furnishings. This seemed to be due to these participants thinking that everything on one receipt belongs in the same category, but could have also been due to difficulties with navigating to other categories.
- One participant entered the price of the car wash including tax. Another participant noted that the instructions on whether or not to include tax were not very noticeable.

Task 5: Return Book

You decide to return the book that you bought. Please go back and delete that item.

Prototype 1

- There were no problems deleting the book from the list on Prototype 1.

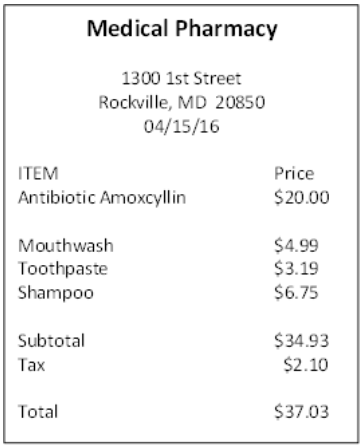
Prototype 2

- Only six participants were able to successfully complete this task. Four used the dropdown menu that listed expenses for different days. Two were able to navigate back to the expense date screen where all of the items were listed. Once participants got to the correct screen they were able to easily delete the book.

- The remaining participants could not successfully navigate to a screen that would allow them to delete the correct item. A few tried removing the last item from the expense review screen which was incorrect since it was typically the car wash item. Several tried clicking on the bread crumbs at the top of the screen to navigate to a different location. Some also tried clicking the back and forward buttons in the browser. As one participant said, "It doesn't tell you how to go back so you're just lost you don't know what to do...I don't know how to get back to the book to delete it." Another was looking for a home screen button, "all of these are asking to enter expense" referring to icons at the bottom of the screen "if there's a home button or something… I could go back to the main screen and maybe something is there."

Task 6: Medicine

On April 15 you stop at the pharmacy to purchase some medicine to treat your sore throat. You also pick up some personal care products. Enter these expenses in the diary.



Medical Pharmacy

1300 1st Street
Rockville, MD 20850
04/15/16

ITEM	Price
Antibiotic Amoxcyllin	$20.00
Mouthwash	$4.99
Toothpaste	$3.19
Shampoo	$6.75
Subtotal	$34.93
Tax	$2.10
Total	$37.03

Prototype 1

- One participant grouped mouthwash, toothpaste, and shampoo and recorded the sum of their prices in a single line because they were similar products. This might have been an artifact of the task since there was a space on the receipt between the medicine and these other three items.

- We did not observe any other problems. It was a little ambiguous which category the hygiene products should go into. Some participants categorized the hygiene products as medicine. Other categorized these products as other type of expense. Some mentioned that it would be nice to have a personal care category.

Prototype 2

- Similar to Prototype 1, one participant entered the hygiene products on one line and participants also noted the ambiguity with the hygiene products in terms of which category they should be placed into.

- One participant needed to be instructed to click on "add expense" in order to record the first item that was entered. This participant tried to click on "finish" before "add expense."

Task 7: Login 2

Enter your last name as the user name and enter "password1" for the password to log in to version 2.

- No problems were observed with logging in with either prototype.

Task 8: Dinner

On April 12 you and your spouse go out to eat dinner at a restaurant. Enter the expense into the diary.

East Coast Surf and Turf

54874 Rockville Pike
Rockville, MD 20850
04/12/16

QTY	ITEM	Price
1	Steak Dinner	$17.99
	1 Beer	$6.50
1	Shrimp Diner	$16.75
	1 Wine: glass	$9.00
Subtotal		$50.24
Tax		$3.01
Total		$53.25

Store Copy
East Coast Surf and Turf

Date: 04/12/16
Table 23
Lucy

Card Type: American Express
Card Number: **********1025
Expiration Date: ##/##

Reference Number: 12345678

Amount $53.25
Tip: $10.00
Total: $63.25

Prototype 1

- Six participants did not include the tip in the total cost. This was the first task on which the participants saw an extra receipt with the tip and the may have overlooked the credit card receipt.
- Two participants recorded the cost of alcohol incorrectly by only reporting the cost of either the beer or the wine.
- One participant incorrectly chose the food and drinks for home consumption category.
- One participant typed in the date in the wrong format and received an error message asking him to record the date.
- Two participants recorded an incomplete description as simply "steak and shrimp dinner" implying only one meal.

Prototype 2

- Two participants itemized the meal incorrectly.
- Three participants did not include the tip in the total cost.
- Two participants were confused about the "add expense" and "finish" buttons and needed to be instructed to click "add expense" before clicking "finish."
- Two participants recorded an incomplete description as "steak and shrimp dinner" implying only one meal.
- Two participants incorrectly recorded the price of alcohol including only the cost of the either the beer or the wine. Another participant made a mistake with slider buttons selecting the alcohol. The participant accidentally selected "Wine" and "other" thinking that the appropriate slider buttons appeared after the words.

Task 9: Movie

You and your spouse also go out to a movie that night after dinner. Enter this expense in the diary.

Cinema 16

60001 Rockville Pike
Rockville, MD 20850
04/12/16

QTY	SHOW	Price
2	Star Wars	$15.00
Subtotal		$30.00
Tax		$1.80
Total		$31.80

Prototype 1

- Three participants entered the cost including tax.

Prototype 2

- Two participants ignored the subtotal and incorrectly recorded the cost as $15. One participant included the tax in the cost.
- Three participants were confused about the "add expense" and "finish" buttons. There was only one item on the receipt so they just wanted to click "finish" once they were done entering the movie tickets.

- One participant incorrectly selected "Add another of this type of expense…" from the expense review screen and had a difficult time navigating to the correct place to "Add a different type of expense…"

Task 10: Shopping Trip 2

On April 14 you take the bus downtown to shop for some jewelry, cosmetics, and clothes. Enter the expenses in the diary.

Diamond Clothing and Jewelry

1234 U Street
Washington, DC 20011
04/14/16

456487149 Necklace	$98.10
656784874 Make-up:eye liner	$12.78
658948757 Dress shirt	$29.99
Subtotal	$140.87
Tax	$8.45
Total	$149.32

MetroBus

Date: 04/14/16

PURCHASE	PRICE
Bus Fare- 1 day	$5.00
Total	$5.00

Prototype 1

- Five participants incorrectly grouped the three purchases on the clothing and jewelry store receipt onto a single line because they were in the same category.
- One participant commented that it was repetitive to enter the date for each item.

Prototype 2

- Three participants incorrectly grouped the three purchases on the clothing and jewelry store receipt onto a single line because they were in the same category. One of these participants entered the store name in the description.
- Four participants encountered issues with the navigation buttons on this task. These issues were encountered at slightly different steps. One participant incorrectly selected "Add a different expense for the same day…" when it should have been for a different day. She entered the information from the clothing and jewelry receipt and again selected "Add a different expense for the same day…" incorrectly. After entering the bus fare she realized the mistake and edited that entry from the expense review page with no problems, but she did not correct the other entries. One of the other participants made a similar mistake by clicking on "Add a different expense for the same day…" Another participant took an inefficient path to entering the items by clicking on "Add expense for a different day" after each expense that was entered. This returned her to the expense date page where she would select the same day each time. Other than taking more time, this strategy seemed to work. Another participant wanted to edit the details for the necklace after it had been entered. He had already advanced to the expense type paged and clicked the back button on the browser from there. This

brought him back to the expense review page, but it was now empty. He was not able to edit successfully after clicking several different icons.

- One participant noted that it was tedious to click "add event" and "finish" all the time.
- One participant entered "shirt" for the dress shirt and ignored the pop-up asking him to be more specific about the type of shirt.

Task 11: Return Shirt

You decide to return the shirt that you bought. Please go back and delete that item.

Prototype 1

- Four participants were not able to do this task because they entered the items from the previous task on the same line. Some of these participants actually removed the shirt by editing and removing the shirt from the description and then subtracting the cost of the shirt from the total. Anyone who itemized correctly in Task 10 was able to easily delete the dress shirt from the list.

Prototype 2

- Four participants were unable to find a list where they could delete the dress shirt. Seven participants located the dropdown list on the expense review pages and deleted the item and three navigated back to the expense date and deleted the item.

Task 12: Own Expense

Enter the first three purchases on the receipt that you brought with you to the interview.

Prototype 1

- One participant entered multiple items under food and drinks for home consumption on one line incorrectly and added the items together to get the cost.
- One participant entered a breakfast sandwich for food and drinks away from home, but did not enter the hash browns on the receipt.
- One participant entered dog treats and food and drinks for home consumption.

Prototype 2

- One participant excluded tax from a food away from home item.
- One participant recorded the correct price for a food and drinks for home consumption item. The participant ignored the discounts at the bottom the receipt.
- One participant switched categories by always returning to the main calendar rather than clicking on "Enter a different type of expense for the same day."

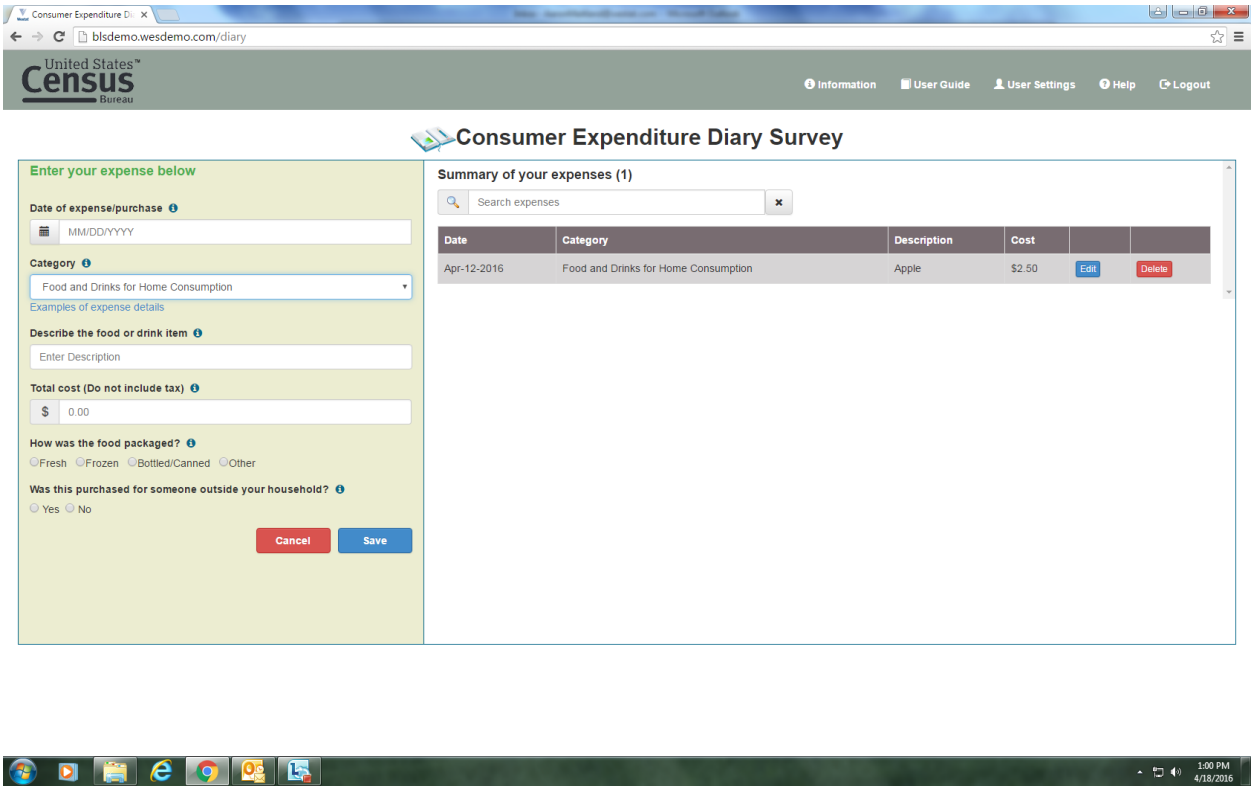
Recommendations 5

In this section, we present recommendations based on the testing of the two prototypes. We discuss the advantages and disadvantages of each prototype in this section. The decision about which prototype to move forward with depends largely on the goals and objectives of the CE program.

Before we discuss our recommendations for which prototype to move forward with, we would like to make a brief comment on the expenditure categories used in this usability test on both prototypes. The prototypes used in this usability test used an extended set of expenditure categories than has been used in the CE. The current CE uses the categories of Food and Drinks Away from Home; Food and Drinks for Home Consumption; Clothing Shoes, Jewelry, and Accessories; and All Other Products, Services, and Expenses. The prototypes in this report used the same first three categories and decomposed the last category a little further. The prototypes in this report included the additional categories of Home Furnishings and Decorative Items; Entertainment and Recreation; Transportation Expenses; Medical Expenses and Supplies; and Education Expenses and Supplies. Although it is difficult to make direct comparisons to the original categories since we did not include original categories in the testing, our experience suggests that the extended set of categories made people think about a higher level of detail than would be expected with the original set of expenditure categories. This was most evident with Task 6 where mouthwash, toothpaste, and shampoo were included on a receipt with medicine. Several participants commented that these products did not quite fit within Medical Expenses and Supplies, but thought that was the best fit given the existing categories. Some specifically mentioned that they would have like to have seen personal care products as an option. The motivation for including a broader set of categories is to stimulate respondents to think about items that may have been forgotten otherwise. This test does seem to indicate that the participants thought about expenditures at a higher level; however, the a better test of the effectiveness of the categories would be in a field test where one can compare the prevalence of the items in the new categories when the original categories are used and when the new categories are used. We recommend this kind of field test in the future.

Looking at the prototype recommendations, Prototype 1 shown in Figure 5-1 is preferred if the desire is to move forward relatively quickly with a straightforward design that is similar to the current paper version and other web versions of the CE diary.

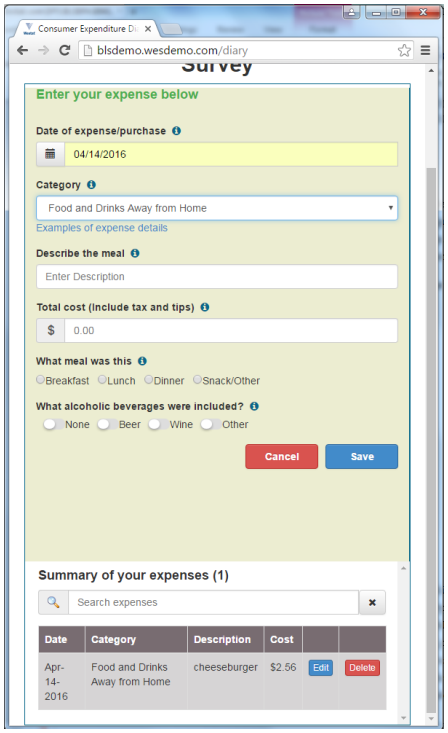
Figure 5-1. Prototype 1



Prototype 1 performed very well in the usability test and has a few main advantages. First, it has the advantage of being easier for respondents to learn and use. The necessary fields that the respondent needs to provide accurate answers in the diary are all contained on one screen. The data entry elements are on the left-hand side of the screen and the summary on the right-hand side of the screen gives the respondent instant feedback when items are entered into the diary. Respondents will also find it very easy to edit and delete items when necessary through the visible summary list.

We also feel that Prototype 1 is the more adaptable of the two prototypes to a mobile platform. The resizing of the web browser in Figure 5-2 gives an idea of how the prototype would render on a smartphone in a responsive design. The user would have access to the data entry fields at the top of the screen with the search and summary list stacked underneath.

Figure 5-2. Resized screen for Prototype 1

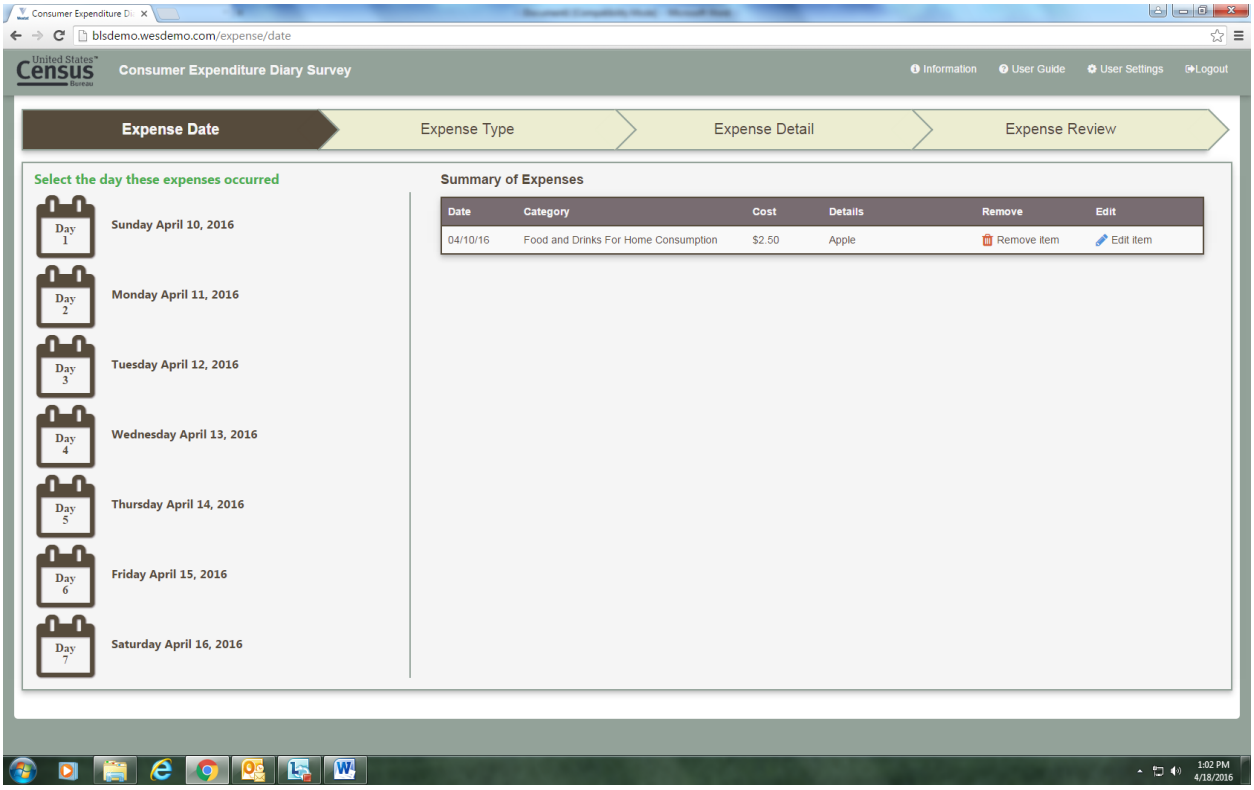


Some minor enhancements could improve the performance of Prototype 1. First, some participants in the usability test preferred to type in the date; however, they did not always enter the date in the correct format. It would be helpful for the date field to capture alternative formats for entering dates if the participant prefers. Second, participants were often confused about when to include or exclude tax. The help text about whether or not to include tax and tips could be made more visible so that the user pays more attention to this on the screen. Similar help text about whether a description is adequate or not could also be made more visible.

Although Prototype 2 (shown in Figure 5-3) did not perform as well as Prototype 1 in the usability testing, we think there are some improvements that could be made to improve the usability of this prototype. It is worth considering future research on similar prototypes since participants often saw this prototype as more visually appealing. Participants also liked certain features such as not having to select the date every time. The action of simply clicking on the day rather than selecting from the

calendar or typing in the date also seemed to work better for participants. Some participants also thought that the icons helped to visualize and remember the categories that are used for data entry. The hardest features of this prototype for participants to adapt to concerned the navigation through multiple screens and the editing and removal of items.

Figure 5-3. Prototype 2



In order to improve Prototype 2 and keep some of its more visually appealing elements, we suggest reducing the number of screens and making it easier to view the list of items already entered. One possible way to achieve these goals is to remove the expense review page. With this approach the user would select a date and select a category. Then the respondent would enter all of the possible items under the category like the current design; however, once finished entering, the respondent would be taken back to the expense date or home page where they would have to start over for the next type of expense. While there would be an extra step for selecting the date, respondents would be returned back to the home page every time where they would see the list of already entered expenses. This would make the editing and removal buttons much more visible and salient for the respondent. A cancel button from the expense date page could also return the respondent to the home page. The "Enter another type of expense for…" and "Enter a different type of expense…" icons would no longer be needed. It would still be harder to adapt Prototype 2 for a mobile device

and this would take some extra effort. Reducing the size the category icons would help to make the design more amenable to a mobile device.

In conclusion, we recommend Prototype 1 if the immediate need is to move forward with a design that is more or less ready to field and compatible with previous and current iterations of the CE web diary. Future research could be focused on creating a more visually appealing and modern design that motivates participants to understand the CE response process. It is possible that a hybrid approach between Prototype 1 and Prototype 2 is preferred. For example, the screen could be subdivided into three panels for entering or selecting different elements of the response task such as the date, categories using a smaller set of icons, and providing the description and other important information for the products. The list of entered expenses would be moved down to the bottom of the page. This type of design would work best on a desktop computer as was the goal for this task. In addition to usability testing, we would also recommend a field test to test the effect of any different designs on a broader set of objectives such as response to the survey.

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Appendix A
Usability Protocol

Thank you for coming in today. Let me tell you a little about Westat and what we're going to do today.

Westat is a company that conducts research on many topics, for different organizations. This particular project is for the Bureau of Labor Statistics. The Bureau of Labor Statistics conducts a study every year that asks people to record all of the purchases that all members of their household make for an entire week. Westat has been asked to test some different procedures to make it easier for people to report what they purchase. For this task today we will be asking you to record some purchases on the computer. Some of the purchases you will be entering will be on receipts that we have created for you and other times you will enter purchases from the receipts that you brought with you today. Your participation today will help us design a better system for people to enter their purchases in this study.

At this stage, we are still developing the study procedures to figure out how to make it as easy as possible for people to record their purchases. So that is what you'll be helping us with here today. Do you have any questions about that?

Before we get started, I want to let you know that everything we cover in the interview will be kept private – only the few people actually working on the project will have access to the information you share with us. If there are any questions you don't want to answer that is perfectly fine – We're really more interested in how the questions we ask and tools were are using work.

If it's OK with you, I would like to video record our conversation, just so that I can review it later when we're analyzing all the interview data. (And finally, some of our colleagues from the Bureau of Labor Statistics are here today – behind the mirror – to observe and see for themselves how the study is going.)

CONSENT FORM: Here is a form I must ask you to look over and sign–it basically covers the points I've just gone over with you and indicates you have agreed to take part. (ONE COPY FOR RESPONDENT, ONE COPY FOR US)

BEGIN INTERVIEW:

We would like people to enter in all kinds of purchases that they make. Here is a sheet of paper that shows different types of purchases that we would want people to report and how we want them to do that.

[REVIEW "TYPE OF PURCHASES" DOCUMENT. STRESS WHEN THE RESPONDENT SHOULD ENTER THE TOTAL RECEIPT (E.G., FOOD AWAY FROM HOME) AND WHEN THEY SHOULD ENTER INDIVIDUAL ITEMS (E.G., ALL OTHER EXPENSES).]

I'm going to be showing you two versions of a diary where you can enter your expenses. Here is what the first version looks like.

[LOG IN AND DEMONSTRATE ENTERING EXPENSES FROM THE FOLLOWING RECEIPTS.]

Super Grocery

1234 Montgomery Blvd.
Rockville, MD 20850
04/11/16

GROCERY	Price
Wheat Bread	$3.50
GROCERY NONEDIBLE	
PaperTwls	$2.85
Total	$6.35

The Sandwich Shop

1234 Main Street
Rockville, MD 20850
04/11/16

QTY	ITEM		Price
1	Turkey Breast Sandwich		$7.15
	1 Med. Coke		
1	Ham Sandwich	$7.25	
	1 Med. Coke		
Subtotal			$14.40
Tax			$0.86
Total			$15.26

Any questions? Let's begin.

I'm going to give you some tasks that I would like to you do on the computer.

Interview Protocol

[NOTE TO INTERVIEWER] After each task ask the following question.
How easy or difficult was it to complete this task?

- Very easy
- Somewhat easy
- Neither easy nor difficult
- Somewhat difficult
- Very difficult

Task	Task Name	Text Read to Respondents
1.	Login 1	First, I'd like you to enter your last name as the user name and enter "password1" for the password to log in to version 1.
2.	Lunch	Next, you will see a screen instructing you to enter an expense below. On [DATE] you go out to eat lunch with your child and order one meal for yourself and one meal for your child. Enter the expense into the diary. **The Burger Place** 1234 Main Street Rockville, MD 20850 06/01/16 QTY ITEM Price 1 Cheeseburger Meal $6.49 1 Med. Coke 1 Chick. Nuggt. kid meal $3.69 1 Apple juice Subtotal $10.18 Tax $0.62 Total $10.80
3.	Groceries	On the way home you stop at the grocery store and purchase some food. Enter these expenses in the diary. **The Food Market** 1234 1st Street Rockville, MD 20850 06/01/16 GROCERY Price Doritos Ncho Chse $3.00 RegPrice $3.99 Savings $0.99- Pepsi 8 pack $3.99 Dannon Yogurt 4 pack $1.99 Baby carrots 1 lb. $1.79 GROCERY NONEDIBLE Kleenex $2.19 Bath tissue $2.99 Total $15.95

4.	Shopping trip 1	On [DATE] you go shopping at a local discount store and purchase a chair, a video game for your child, and a book to read. You also stop to purchase gas and get your car washed on the way home. Enter these expenses in the diary. **Super Discount Store** 1234 West 4th Street Rockville, MD 20850 06/04/16 456487149 Comfort Chair $45.50 656784874 Action Vid. Game $56.23 658948757 Book: US History $12.99 Subtotal $114.72 Tax $6.88 Total $121.60 **SpeedMart** 4584 West 6th Street Rockville, MD 20850 06/04/16 Pump #1 Gallons 10 @1.80/gallon Total $18.00 **SpeedMart** 4584 West 6th Street Rockville, MD 20850 06/04/16 Ultimate Car Wash $8.50 Subtotal $8.50 Tax $0.51 Total $9.01
5.	Return book	You decide to return the book that you bought. Please go back and delete that item.
6.	Medicine	On [DATE] you stop at the pharmacy to purchase some medicine to treat your sore throat. You also pick up some personal care products. Enter these expenses in the diary. **Medical Pharmacy** 1300 1st Street Rockville, MD 20850 06/07/16 ITEM Price Antibiotic Amoxcyllin $20.00 Mouthwash $4.99 Toothpaste $3.19 Shampoo $6.75 Subtotal $34.93 Tax $2.10 Total $37.03
		ADMINISTER PROBES SPECIFIC TO VERSION 1

Debriefing Questions for first prototype

Q1. What do you think about this version of the diary?

Q2. Was the computer diary easy or difficult to use?

- Extremely difficult
- Very difficult
- Somewhat difficult
- Neither easy nor difficult
- Somewhat easy
- Very easy
- Extremely easy

Q3. How confident did you feel in filling out the entries in the diary?

- Not at all confident
- A little confident
- Somewhat confident
- Very confident
- Extremely confident

Q4. How much training do you think the average person would need to get started using the diary?

- None
- A little
- A moderate amount
- A lot

		Now I would like to show you another version of the diary. [DEMONSTRATE BY ENTERING ONE EXPENSE.]
7.	Login 2	Now, I'd like you to enter your last name as the user name and enter "password1" for the password to log in to version 2.
8.	Dinner	Next, you will see a screen instructing you to select the day that some expenses occurred. On [DATE] you and your spouse go out to eat dinner at a restaurant. Enter the expense into the diary. **East Coast Surf and Turf** 54874 Rockville Pike Rockville, MD 20850 06/01/16 QTY ITEM Price 1 Steak Dinner $17.99 1 Beer $6.50 1 Shrimp Diner $16.75 1 Wine: glass $9.00 Subtotal $50.24 Tax $3.01 Total $53.25 **Store Copy** East Coast Surf and Turf Date: 04/12/16 Table 23 Lucy Card Type: American Express Card Number: **********1025 Expiration Date: ##/## Reference Number: 12345678 Amount $53.25 Tip: $10.00 Total: $63.25
9.	Movie	You also go out to a movie that night after dinner. Enter this expense in the diary. **Cinema 16** 60001 Rockville Pike Rockville, MD 20850 06/01/16 QTY SHOW Price 2 Star Wars $15.00 Subtotal $30.00 Tax $1.80 Total $31.80
10.	Shopping trip 2	On [DATE] you take the bus downtown to shop for some jewelry, cosmetics, and clothes. Enter the expenses in the diary. **MetroBus** Date: 06/04/16 PURCHASE PRICE Bus Fare- 1 day $5.00 Total $5.00 **Diamond Clothing and Jewelry** 1234 U Street Washington, DC 20011 06/04/16 456487149 Necklace $98.10 656784874 Make-up:eye liner $12.78 658948757 Dress shirt $29.99 Subtotal $140.87 Tax $8.45 Total $149.32

11.	Return shirt	You decide to return shirt that you bought. Please go back and delete that item.
12.	Own expense	Enter the first three purchases on the receipt that you brought with you to the interview.
		ADMINISTER PROBES SPECIFIC TO VERSION 2

Debriefing Questions second prototype

Q1. What do you think about this version of the diary?

Q2. Was the computer diary easy or difficult to use?

- Extremely difficult
- Very difficult
- Somewhat difficult
- Neither easy nor difficult
- Somewhat easy
- Very easy
- Extremely easy

Q3. How confident did you feel in filling out the entries in the diary?

- Not at all confident
- A little confident
- Somewhat confident
- Very confident
- Extremely confident

Q4. How much training do you think the average person would need to get started using the diary?

- None
- A little
- A moderate amount
- A lot

[ASK Q5-Q8 AFTER BOTH VERSIONS OF THE DIARY HAVE BEEN COMPLETED]

Q5. Which version of the diary do you prefer–the first one or the second one? Why? (remind respondent what each one looked like if needed)

Q6. What was the most difficult when entering these expenses?

Q7. What was the easiest part of entering expenses?

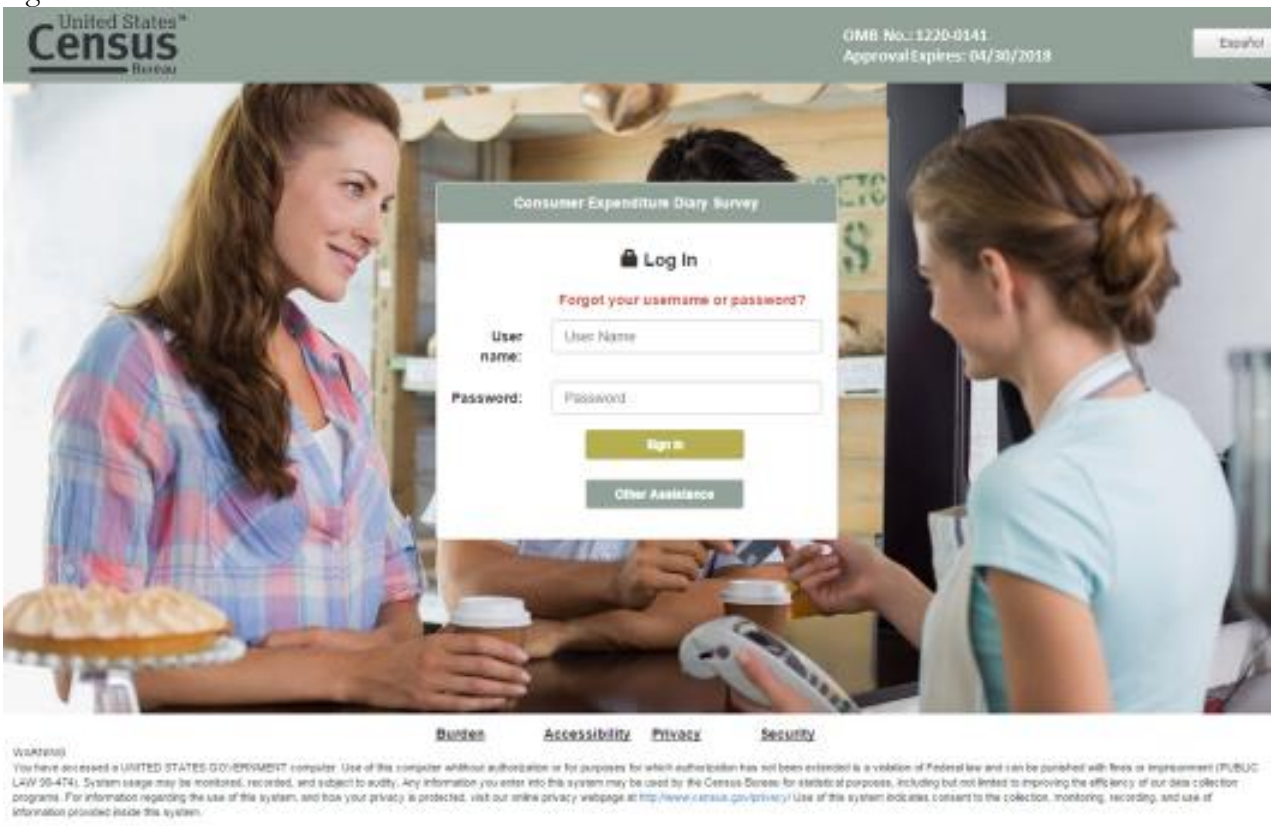
Q8. Do you have any thoughts for how to make this easier? If yes, what are your thoughts?

INTERVIEWERS: If there is any time left, check with observers to see if they have any additional questions for this participant. If not, thank the participant and dismiss (give them their incentive and have them sign the receipt).

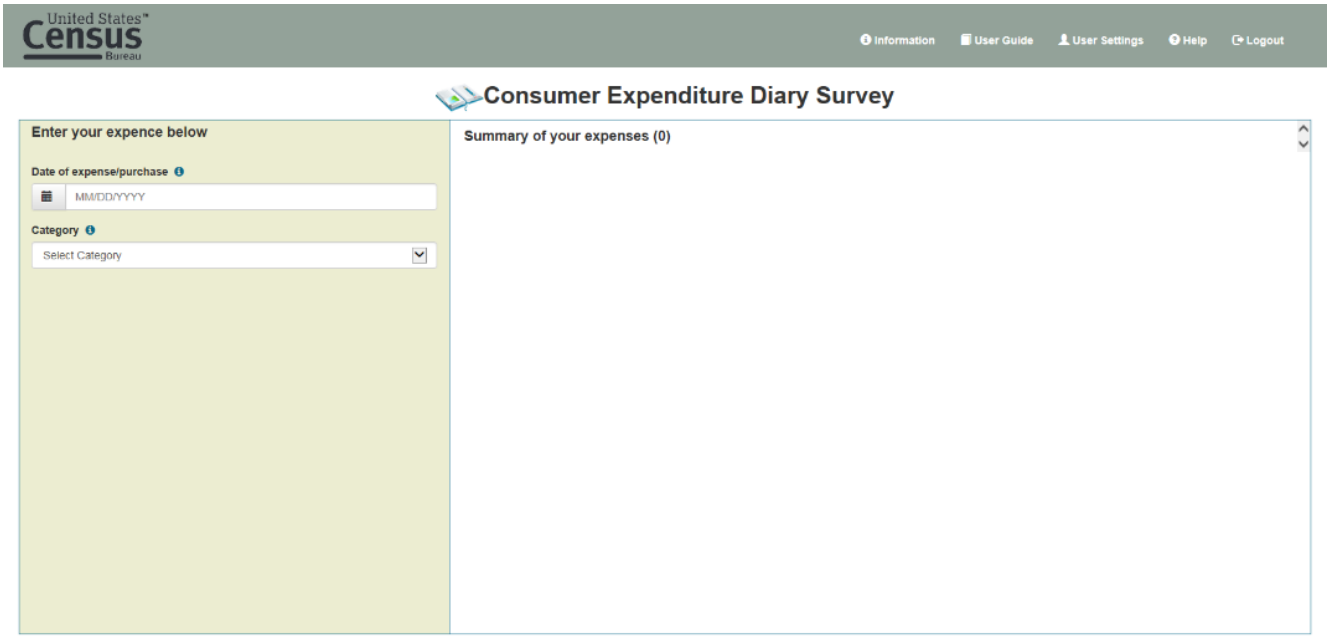
Appendix B
Screenshots of Final Prototypes

PROTOTYPE 1

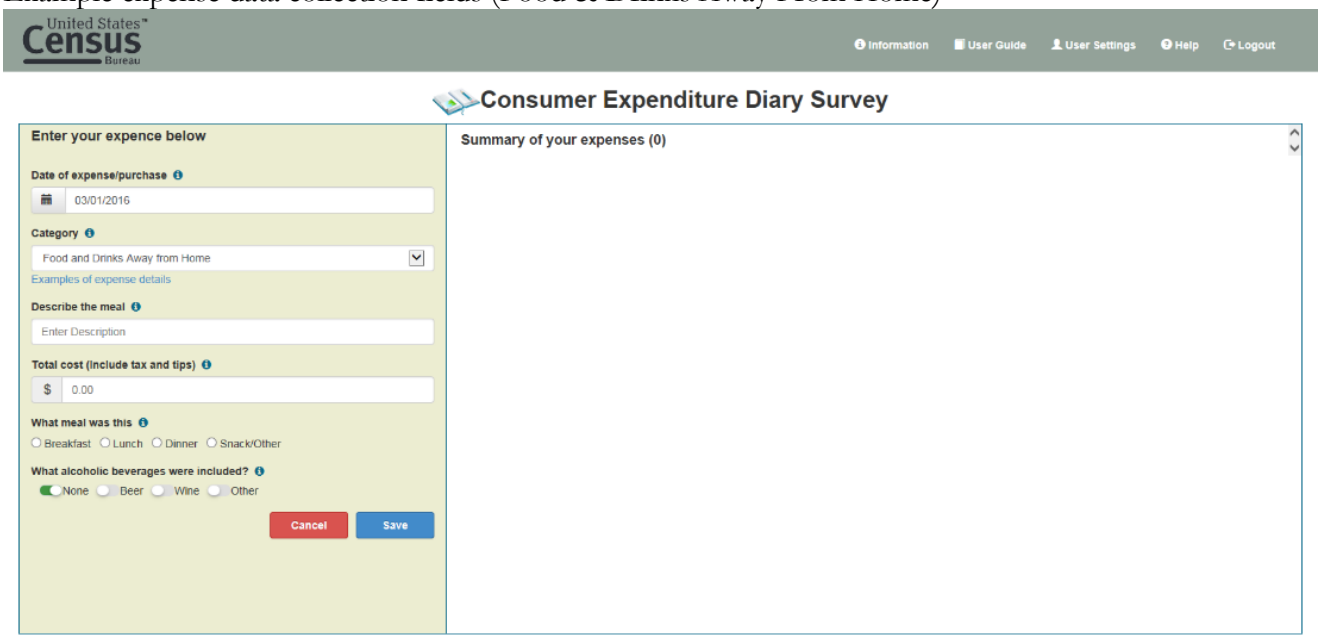
Sign-in screen.



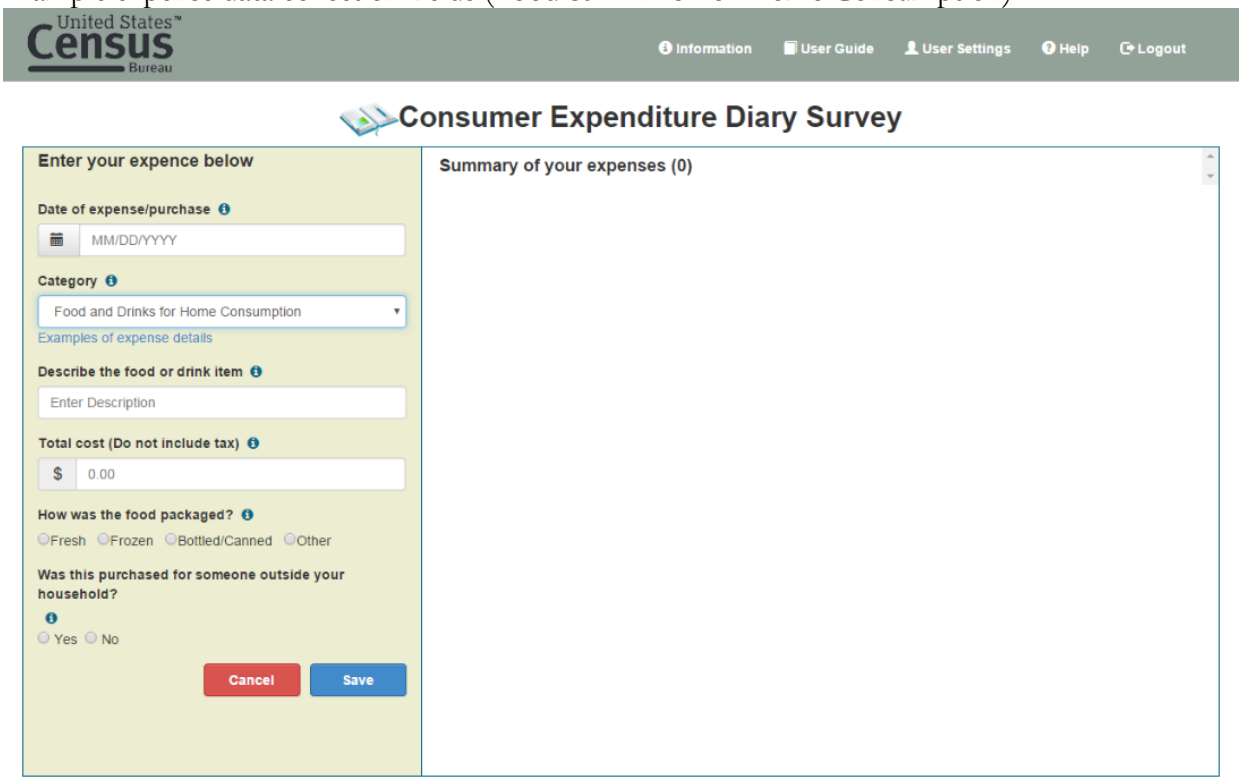
Main data collection screen



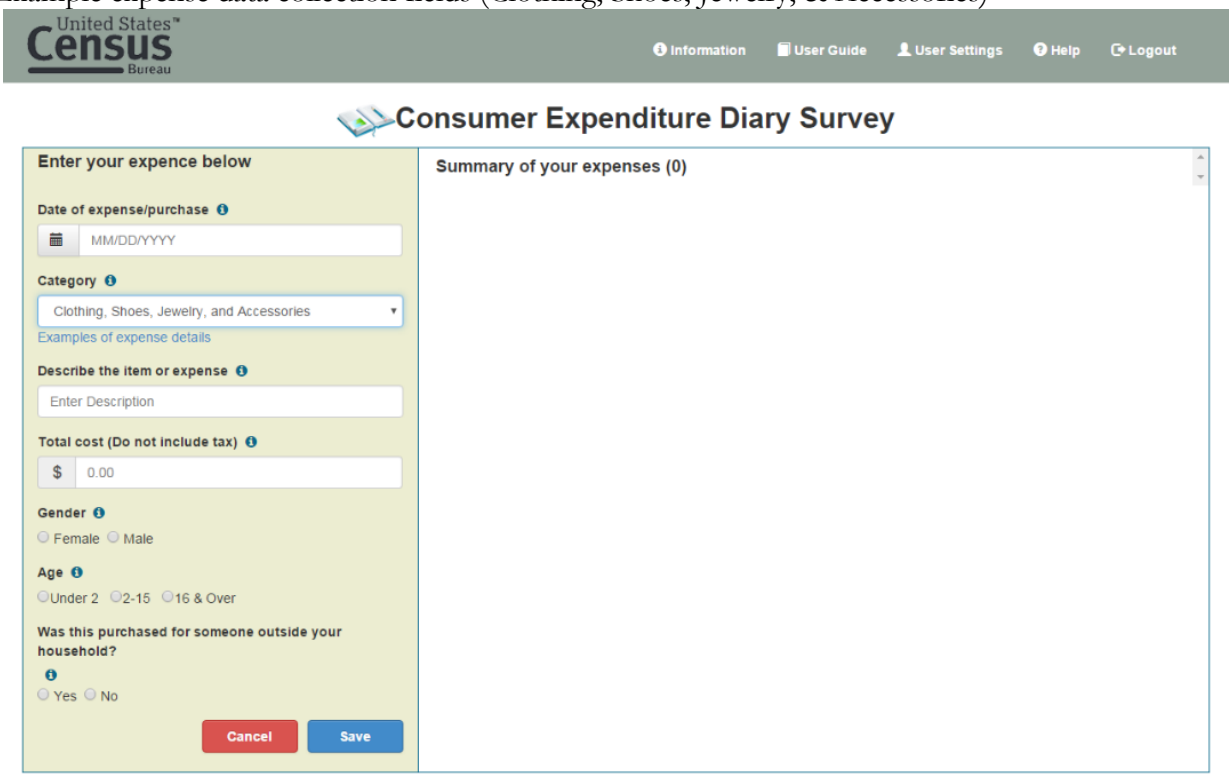
Example expense data collection fields (Food & Drinks Away From Home)



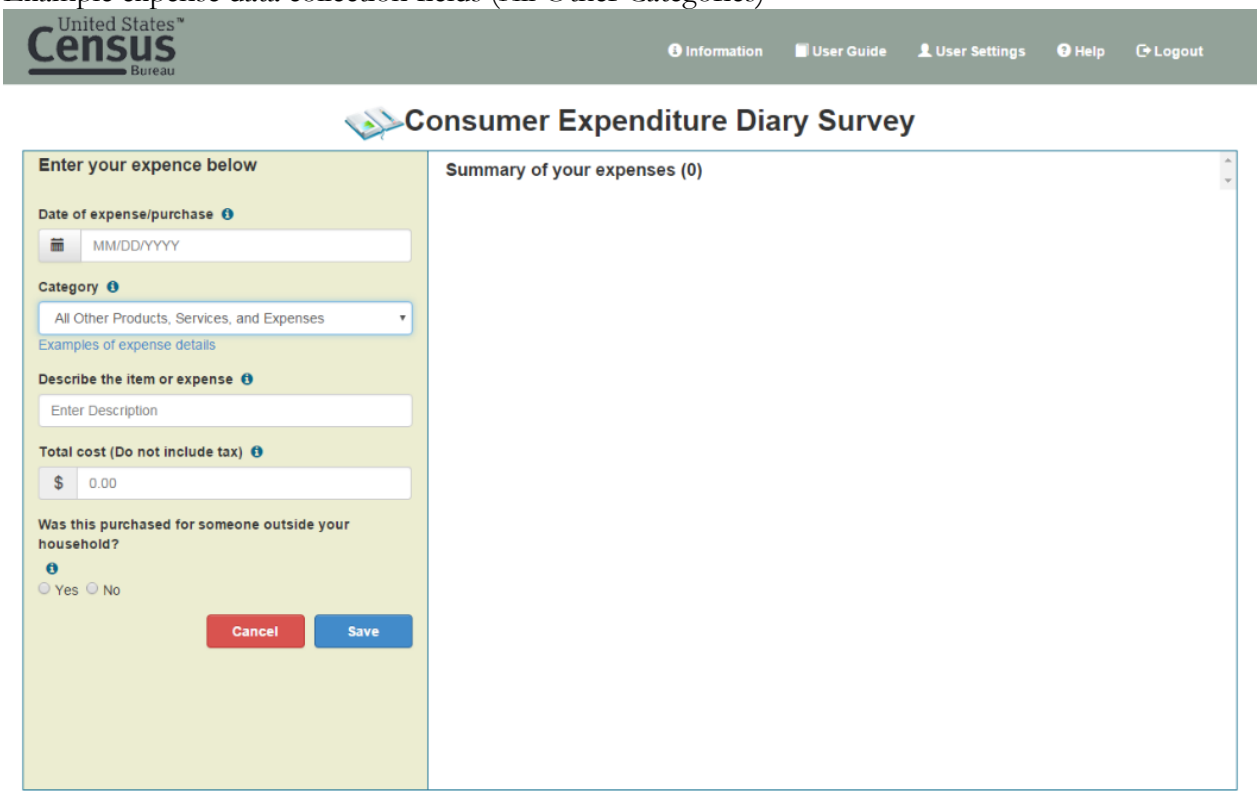
Example expense data collection fields (Food & Drinks For Home Consumption)



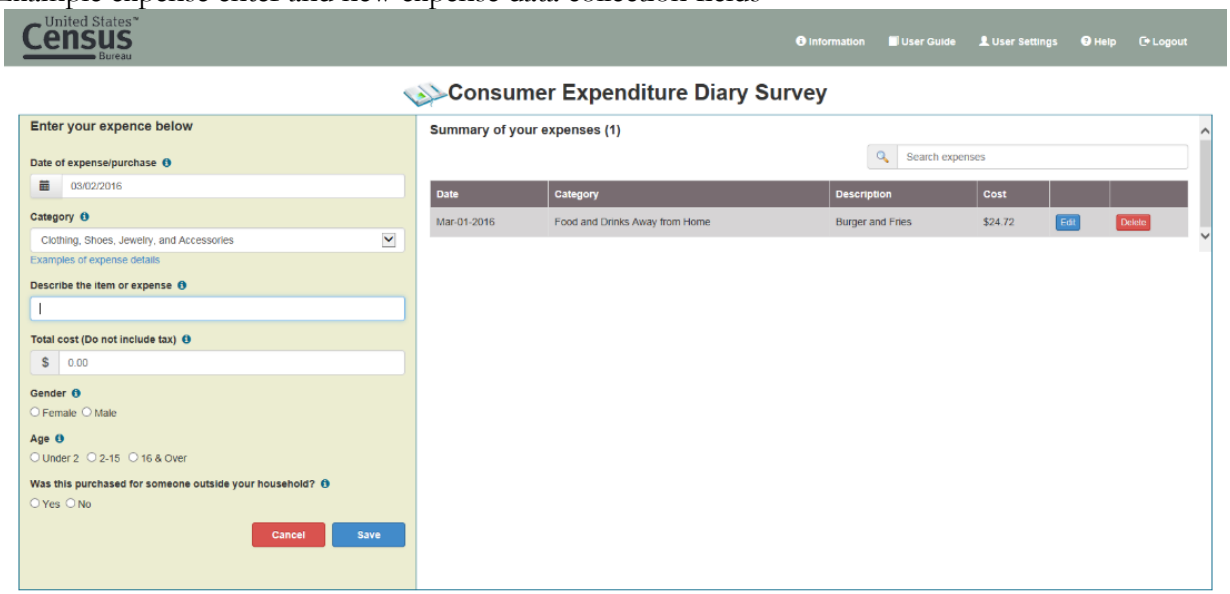
Example expense data collection fields (Clothing, Shoes, Jewelry, & Accessories)



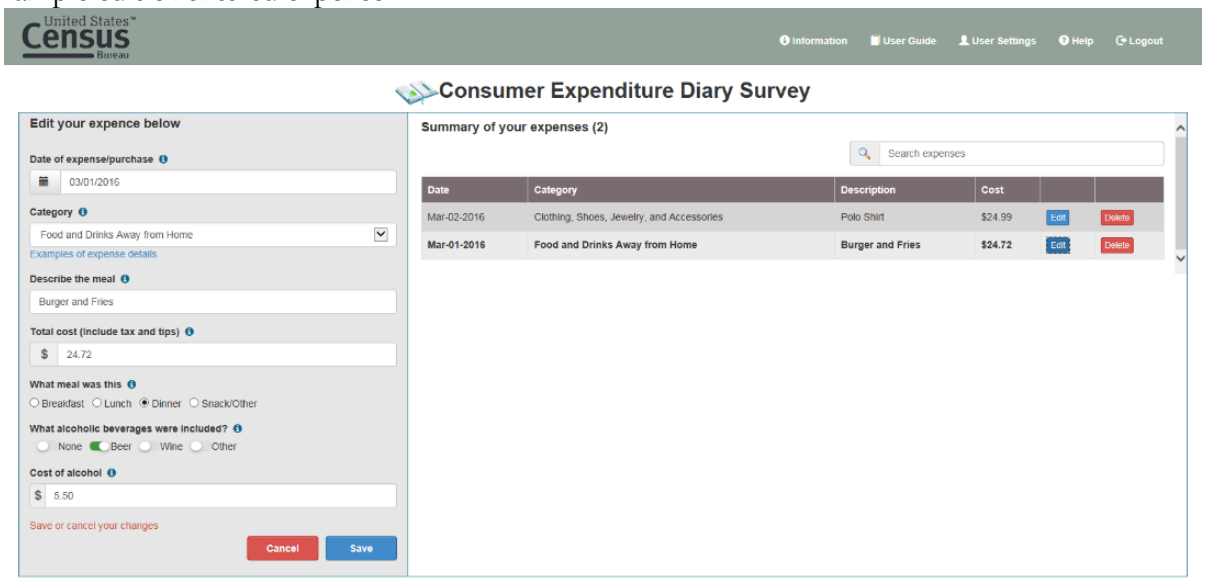
Example expense data collection fields (All Other Categories)



Example expense enter and new expense data collection fields



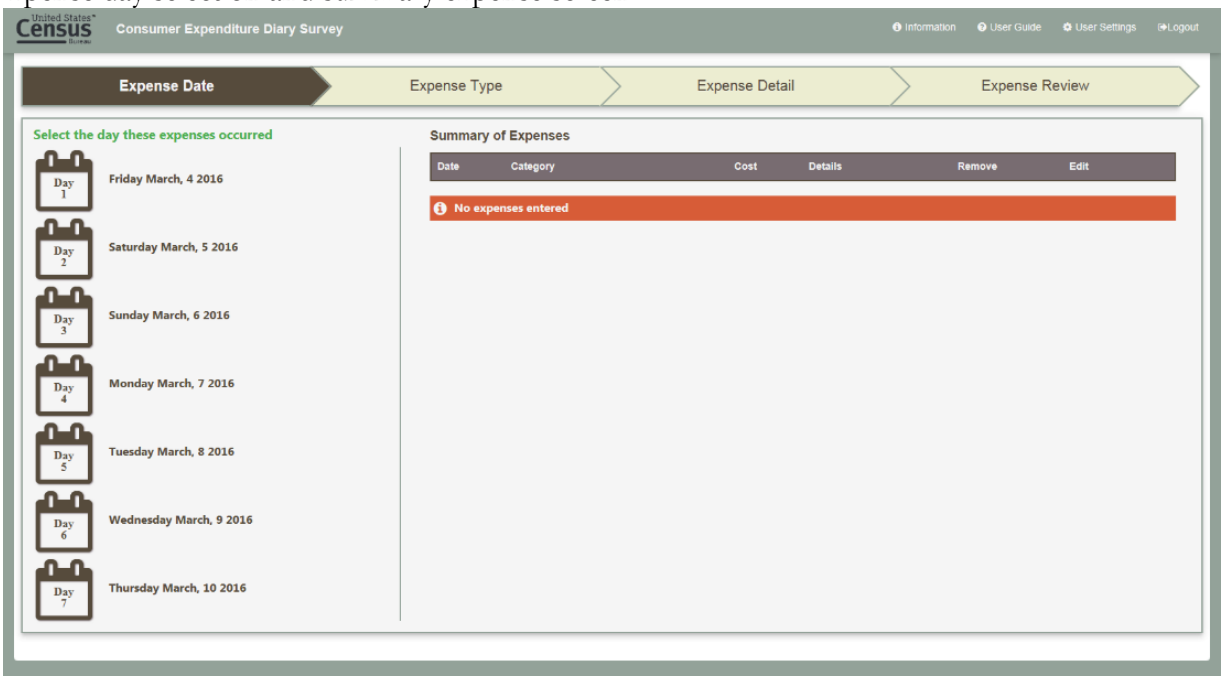
Example edit of entered expense



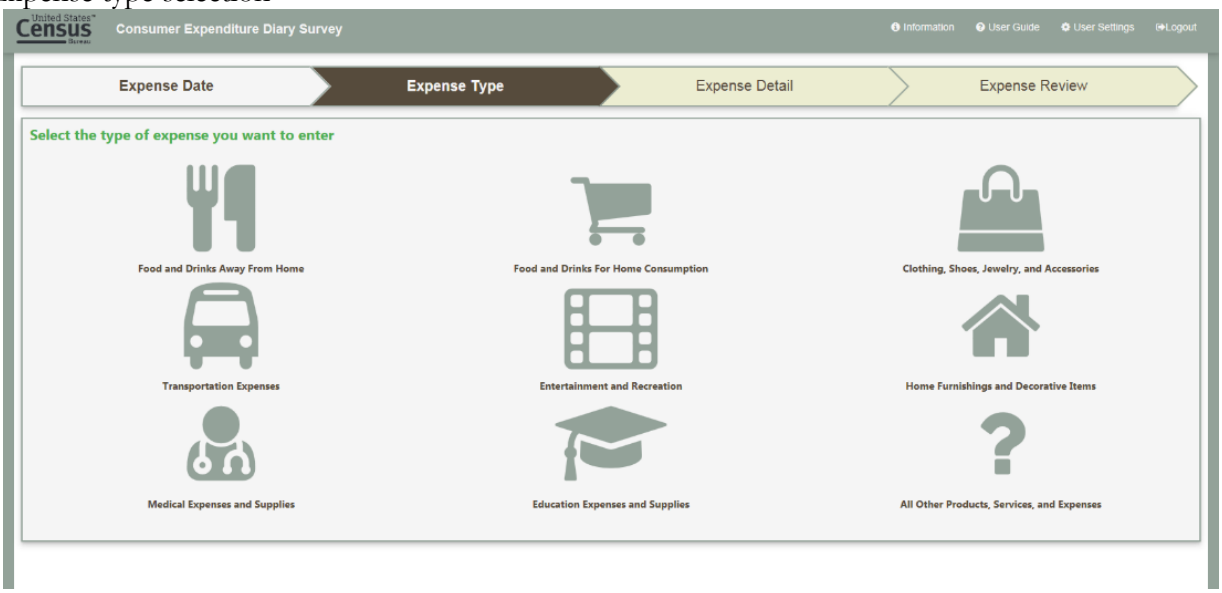
PROTOTYPE 2

Sign in screen

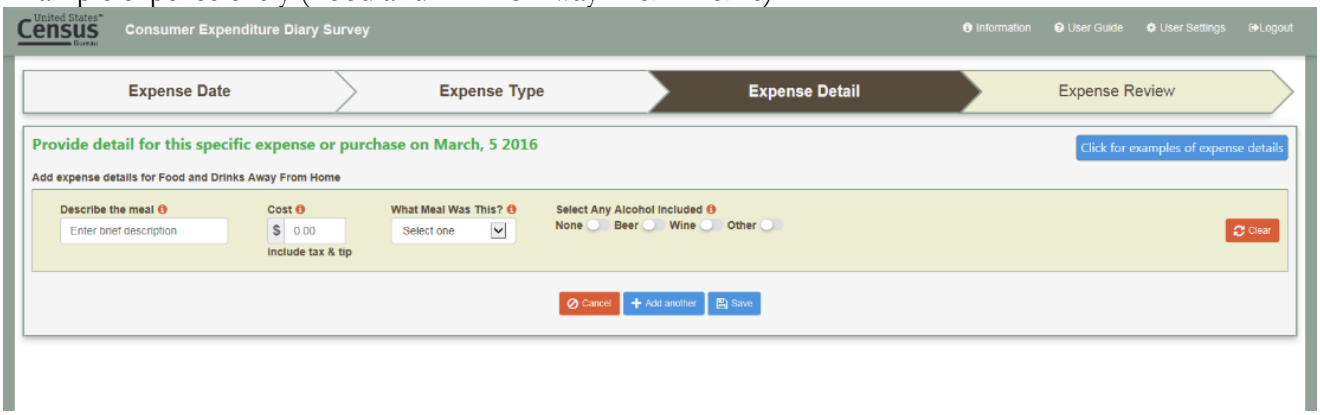
Expense day selection and summary expense screen



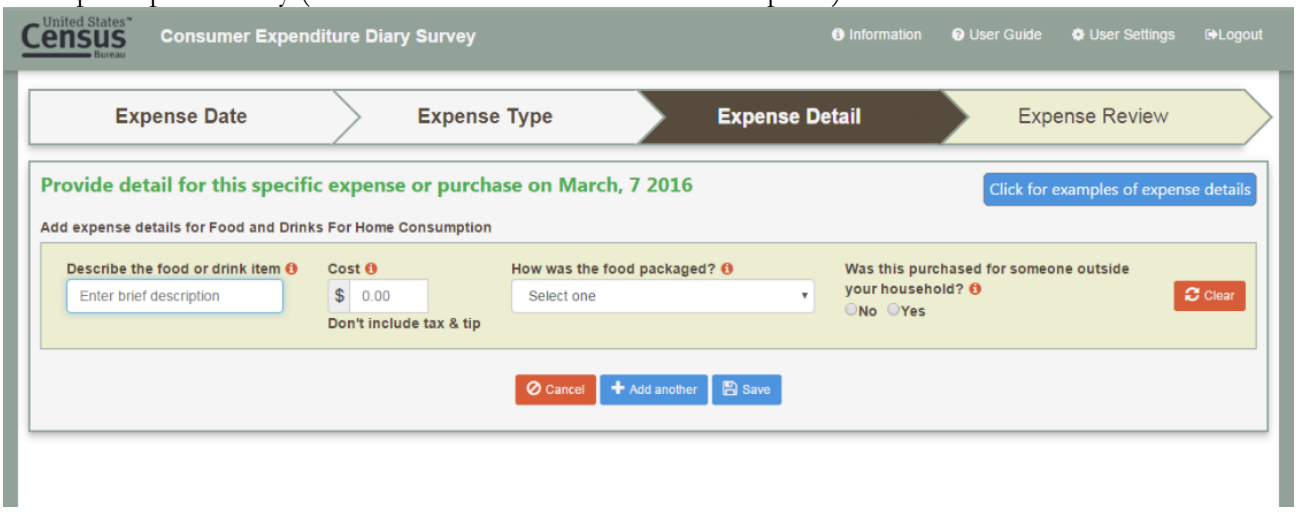
Expense type selection



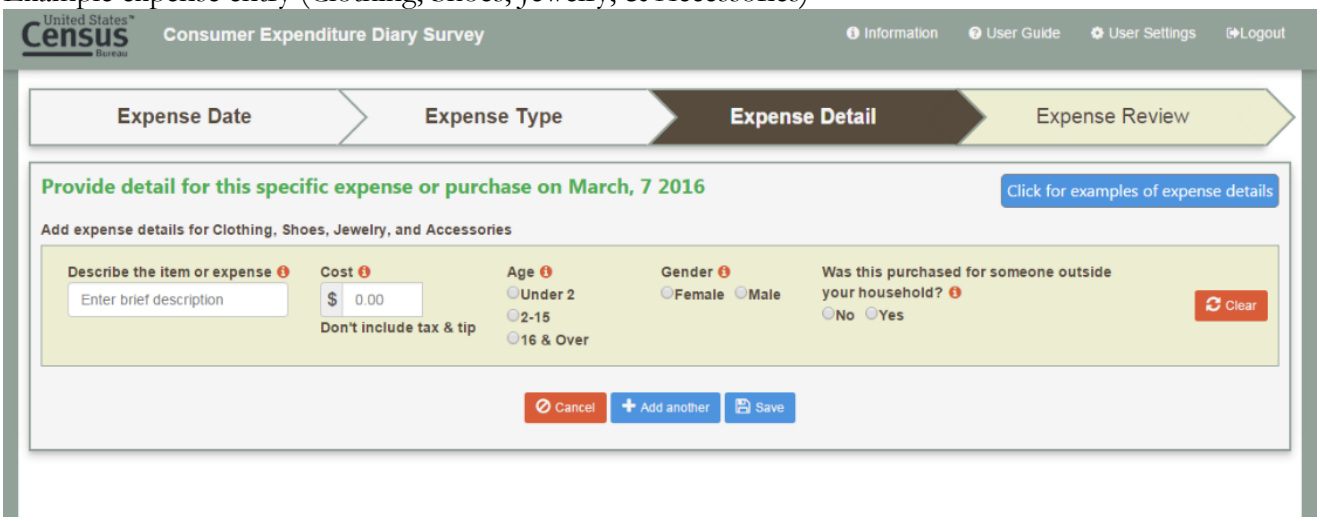
Example expense entry (Food and Drinks Away From Home)



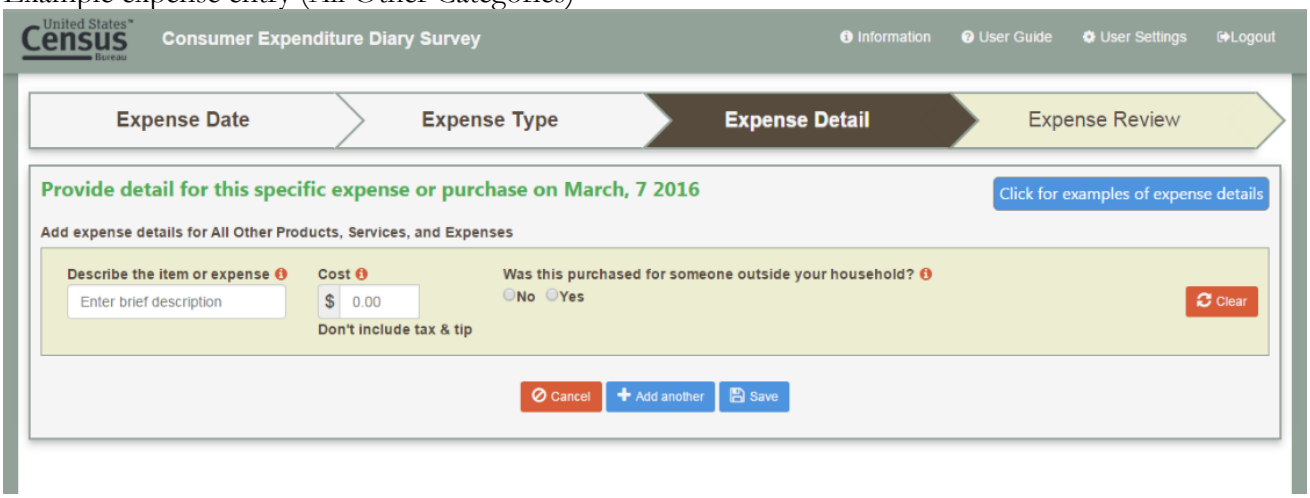
Example expense entry (Food and Drinks for Home Consumption)



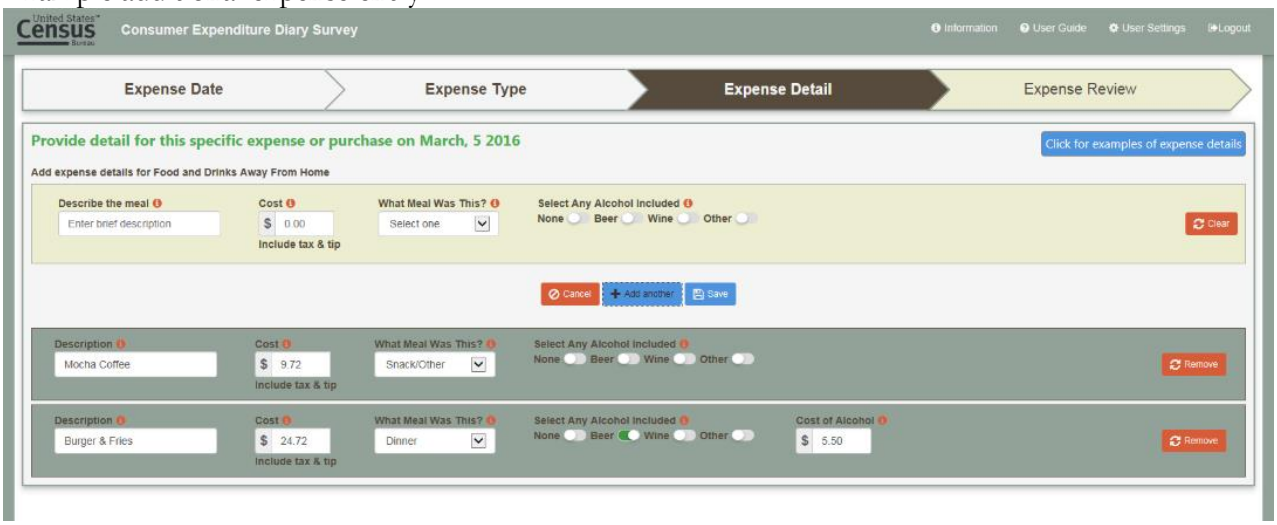
Example expense entry (Clothing, Shoes, Jewelry, & Accessories)



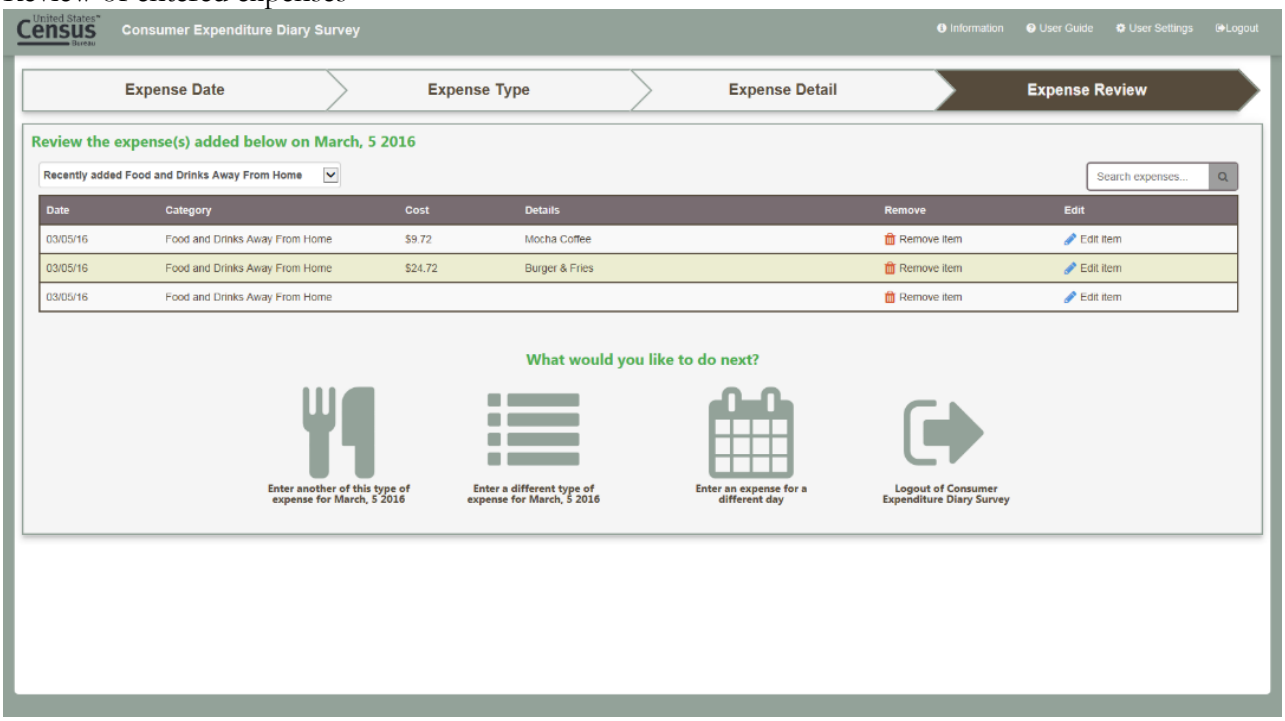
Example expense entry (All Other Categories)



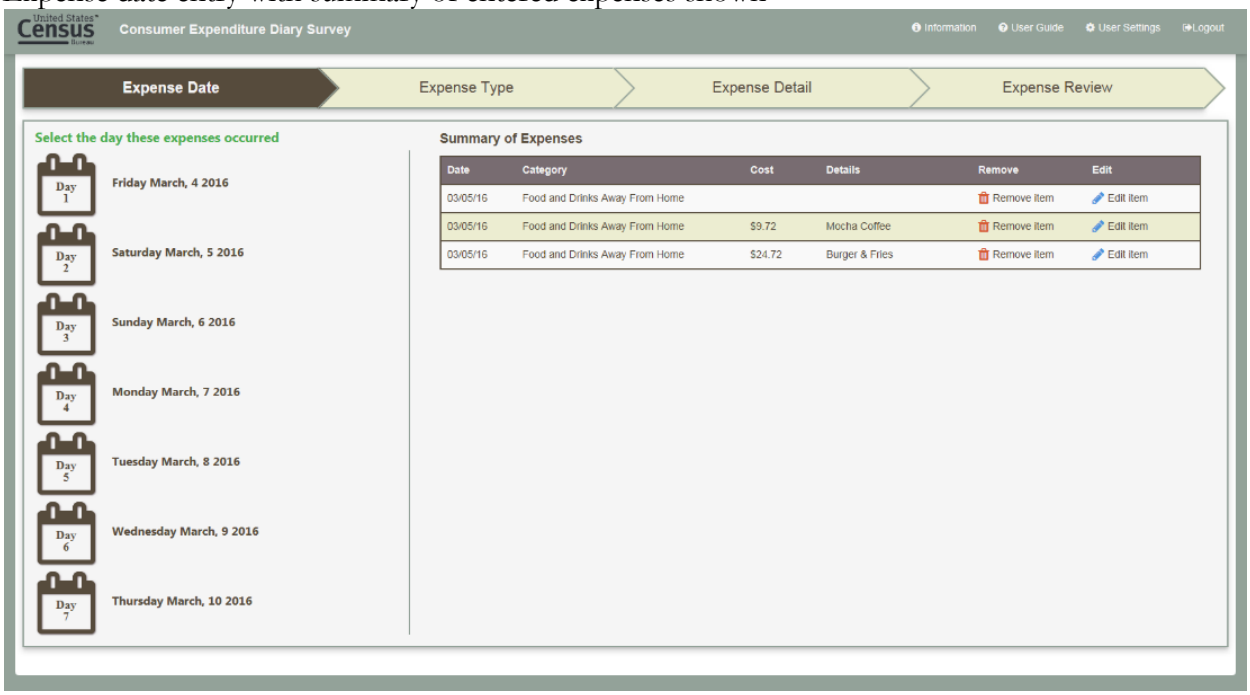
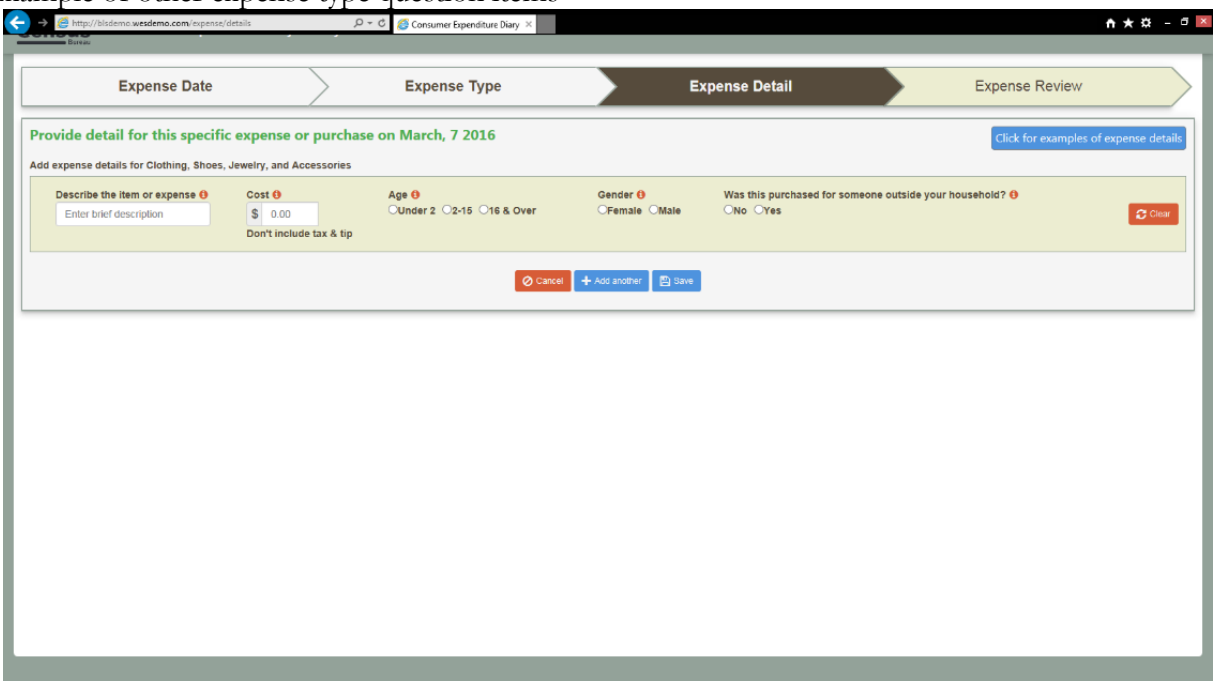
Example additional expense entry



Review of entered expenses



Expense date entry with summary of entered expenses shown



Example of other expense type question items