Usability Testing for the Consumer Expenditure Survey Electronic Diary

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CE Symposium
July 14, 2015

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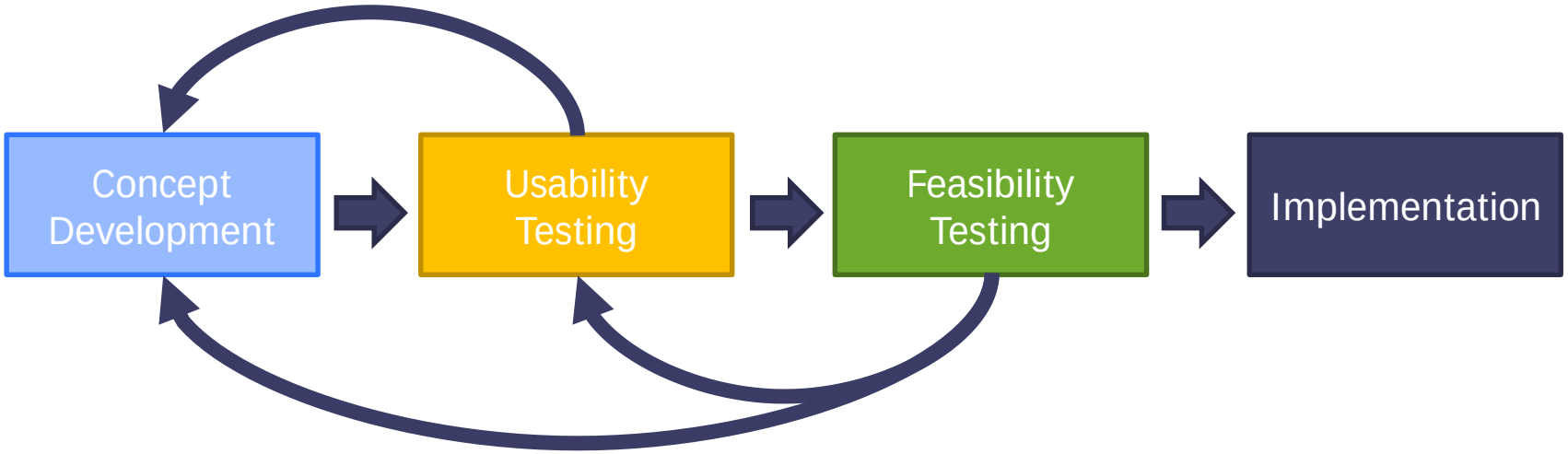
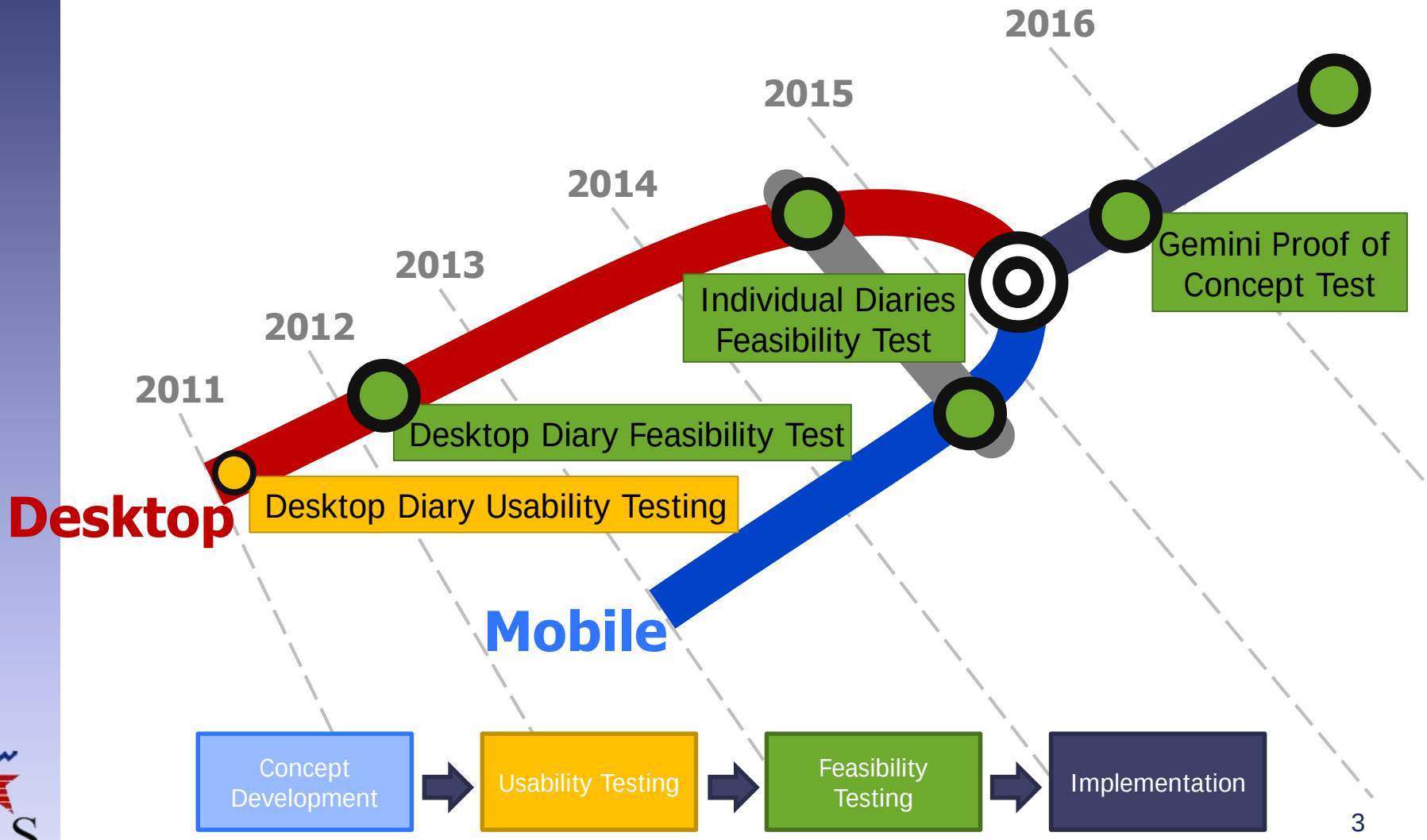
The Design Process



Timeline


2016
2015
2014
2013
2012
2011
Gemini Proof of Concept Test
Individual Diaries Feasibility Test
Desktop Diary Feasibility Test
Desktop Diary Usability Testing
Desktop
Mobile
Concept Development
Usability Testing
Feasibility Testing
Implementation

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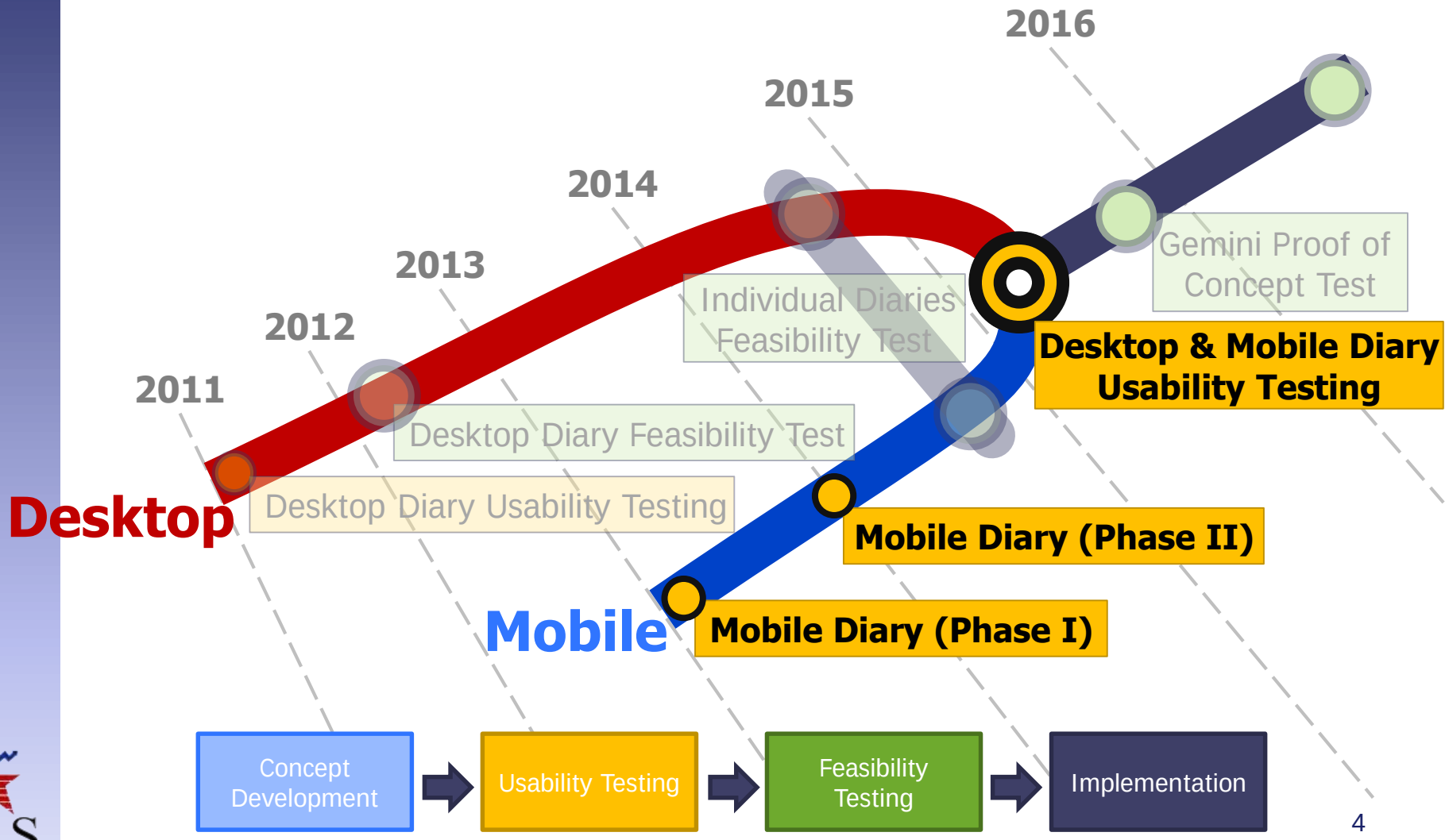
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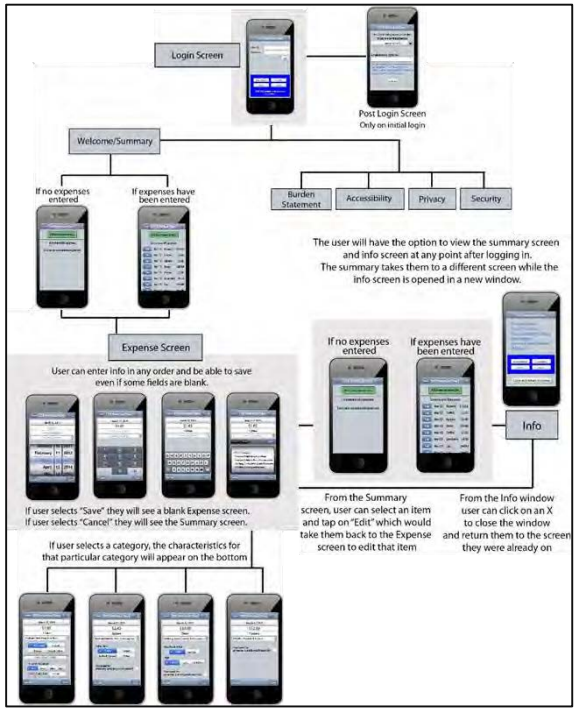
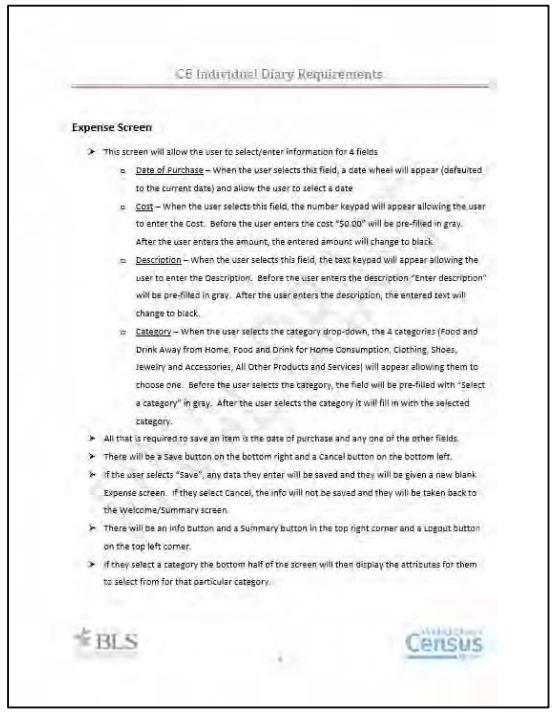
Desktop
Mobile Diary (Phase II)
Mobile
Mobile Diary (Phase I)
Concept Development
Usability Testing
Feasibility Testing
Implementation

Concept Development

Early Ideas *become* Requirements & Specifications




CE Individual Diary Requirements

Expense Screen

- This screen will allow the user to select/enter information for 4 fields
  - Date of Purchase – When the user selects this field, a date wheel will appear (defaulted to the current date) and allow the user to select a date
  - Cost – When the user selects this field, the number keypad will appear allowing the user to enter the Cost. Before the user enters the cost "$0.00" will be pre-filled in gray. After the user enters the amount, the entered amount will change to black.
  - Description – When the user selects this field, the text keypad will appear allowing the user to enter the Description. Before the user enters the description "Enter description" will be pre-filled in gray. After the user enters the description, the entered text will change to black.
  - Category – When the user selects the category drop-down, the 4 categories (Food and Drink Away from Home, Food and Drink for Home Consumption, Clothing, Shoes, Jewelry and Accessories, All Other Products and Services) will appear allowing them to choose one. Before the user selects the category, the field will be pre-filled with "Select a category" in gray. After the user selects the category it will fill in with the selected category.
- All that is required to save an item is the date of purchase and any one of the other fields.
- There will be a Save button on the bottom right and a Cancel button on the bottom left.
- If the user selects "Save", any data they enter will be saved and they will be given a new blank Expense screen. If they select Cancel, the info will not be saved and they will be taken back to the Welcome/Summary screen.
- There will be an Info button and a Summary button in the top right corner and a Logout button on the top left corner.
- If they select a category the bottom half of the screen will then display the attributes for them to select from for that particular category.

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Concept Development → Usability Testing → Feasibility Testing → Implementation

Mobile Diary Phase I

- Get feedback on initial design
- Test on wireframe instrument

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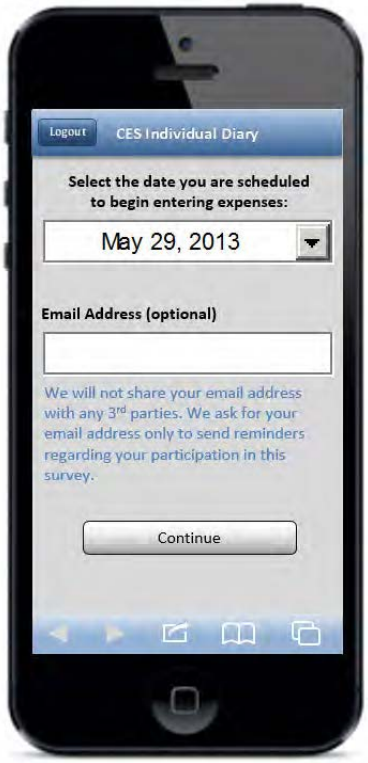
Progress: 10/14
Exit Session
Please follow the experimenter's instructions.
Start Task
Logout
CES Individual Diary
Add a new expense now
Summary of Expenses
You have no entered expenses
GenericMonitor

Mobile Diary (Phase I)
Materials

Login



Initial Setup

Home Screen

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Mobile Diary (Phase I)
Materials

General Data Entry

Food and Drink Away From Home

Food and Drink For Home Consumption

Clothing, Shoes Jewelry, & Accessories

All Other Products & Services

Mobile Diary (Phase I)
Methods

- 10 Participants
  - 3 with "A Moderate Amount" of smartphone experience
  - 7 with "A Lot" of experience
- 14 tasks that covered the basic operations a respondent would be expected to perform
  - Logging in, performing setup, navigation (X 3)
  - Entering expenditure data (X 8)
  - Editing/deleting data (X 3)

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Mobile Diary (Phase I)
Results

Task Name	N	Percent Successful
Initial Setup		
Login	10	90%
Start Date	10	100%
Info Screen	10	**50%**
Data Entry		
Own Non-Food Purchase	10	70%
Clothing	10	70%
Other Cleaners	10	100%
Food Away	10	80%
Other DVD	10	90%
Own Food Purchase	10	70%
Grocery List	10	**50%**
Other Bill	10	100%
Data Editing		
Edit Price	10	90%
Delete Item	10	90%
Edit Date	10	90%

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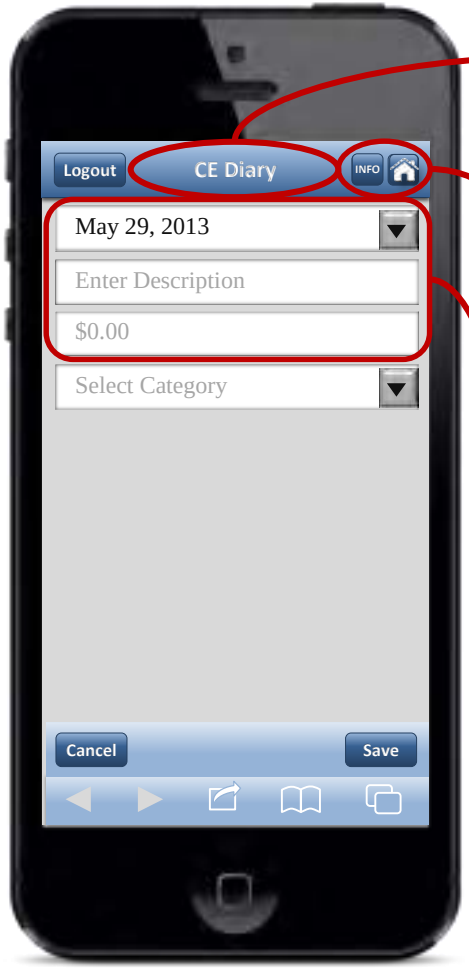
Mobile Diary (Phase I)
Recommendations

- 12 recommendations
- Make minor instrument changes
- Allow users to set their own password
- Emphasize placement procedures in Phase II testing



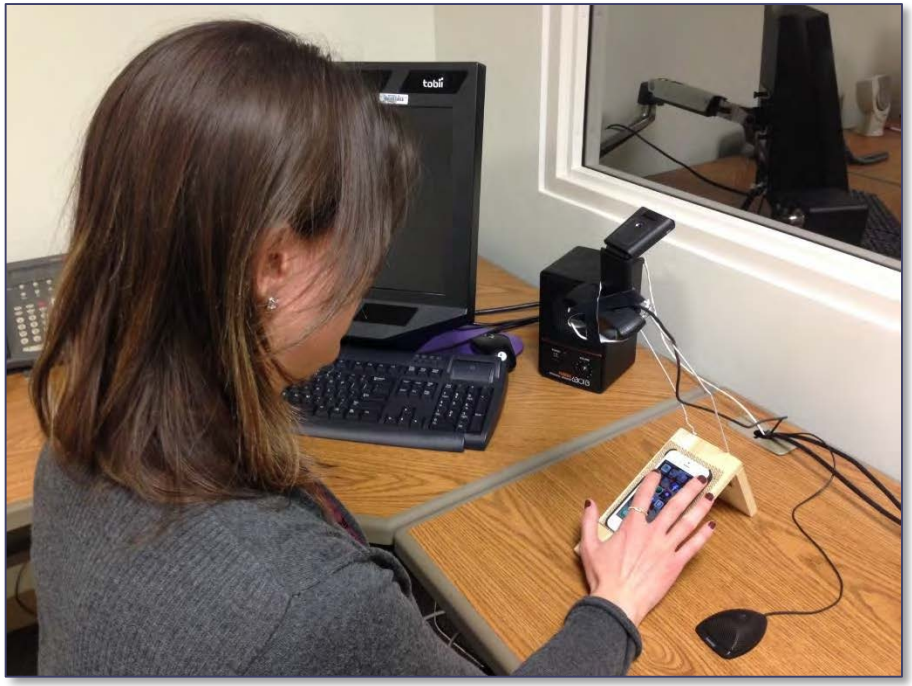
Simplify title

Replace buttons with something more descriptive

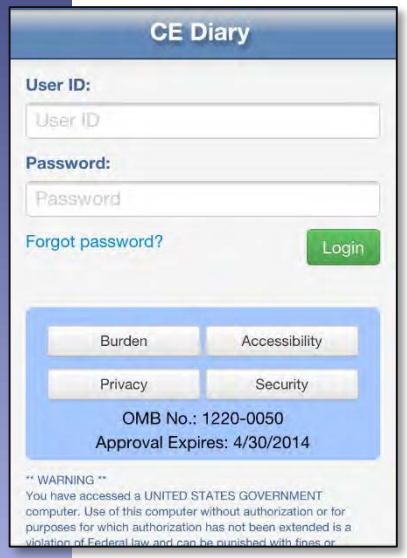
Left-align text boxes for uniform look

Mobile Diary (Phase II)

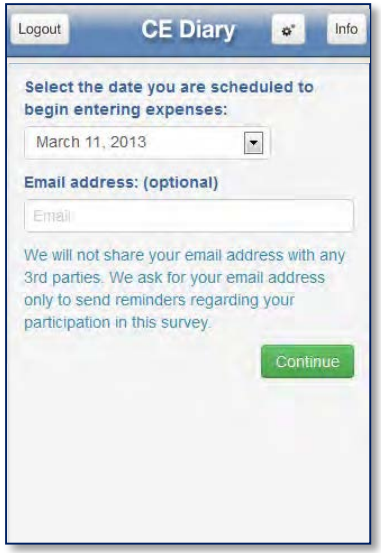
- Took place five months after Phase I
- Used functional prototype instrument
- Participants used their own smartphone



Mobile Diary (Phase II)
Materials



Login



Initial Setup

Home Screen

Change Password Screen

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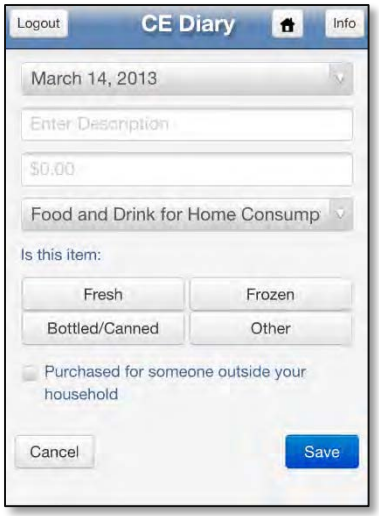
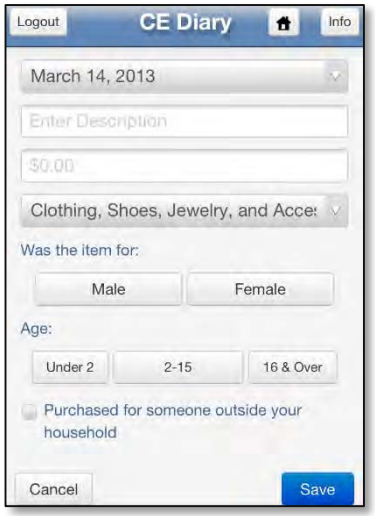
Mobile Diary (Phase II)
Materials

General Data Entry

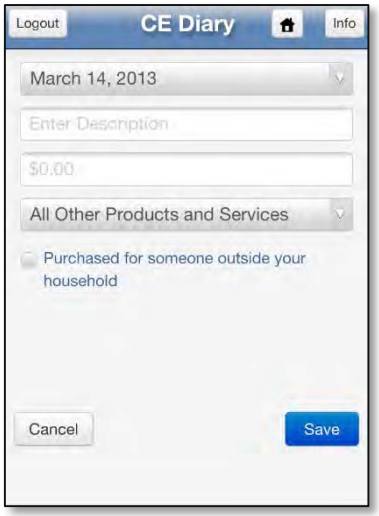
Food and Drink Away From Home



Food and Drink For Home Consumption



Clothing, Shoes Jewelry, & Accessories



All Other Products & Services

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Mobile Diary (Phase II)
Methods

- 29 Participants
  - Screened by operating system & smartphone experience
- 13 tasks were similar to Phase I
- New, change password task
- Emphasized diary placement instructions

VAL MART

FALLS CHURCH, VA 23156 - 703.893-8934
10/25/13 06:09 PM

037121340	SHAMPOO	2.94
037121345	CONDITIONER	2.94
063022838	PAPER TOWELS	11.99
073965782	LAUNDRY DETERGENT	18.99
267198321	VM WHOLE MILK	3.29
267896453	VM EGGS	2.69
298631456	STRAWBERRIES	2.99
225564861	OREOS	3.49
986945631	6-PK SOCKS	7.99
256971531	SZ 3 DIAPERS	41.99
	SUBTOTAL	99.30
	VA TAX 5.0%	4.97
	TOTAL	104.27

SIGN UP FOR A VALUMART CARD
AND SAVE 5% ON EVERY PURCHASE!

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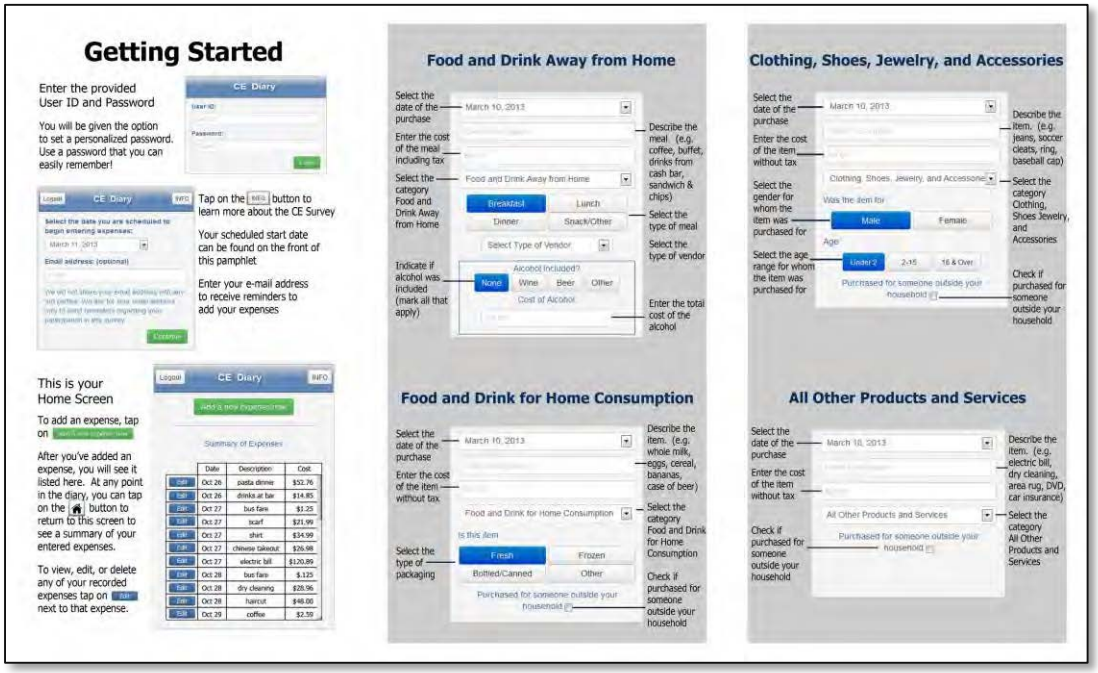
Mobile Diary (Phase II)
Placement Instructions

- Walked through pamphlet with participants
  - Discussed navigation
  - Emphasized itemization of entries
  - Discussed categories and data needs for each



Mobile Diary (Phase II)
Results

Task Name	N	Percent Successful
Initial Setup		
Navigate & Login	28	**46%**
Start Date	28	96%
Set Personalized Password	9	**33%**
Data Entry		
Own Food Purchase	25	80%
Book for Friend, Jeans for Self	24	63%
Enter Car Insurance Bill	22	95%
Own Non-Food Purchase	28	93%
Dinner, Movie	26	**35%**
Drinks	25	**48%**
Long Receipt	22	**27%**
Data Editing		
Delete Pants	21	90%
Change Book Details	18	100%
Edit Price	24	58%

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Mobile Diary (Phase II)
Recommendations

- 22 recommended changes
  - 10 relating to the password change process
- Entering a field should bring up the optimal virtual keyboard
- Reformat change password screen to emphasize the requirements

Desktop & Mobile Diary

- The Desktop & Mobile Diary are now combined and can be accessed at the same URL
- Website formats the screen for the device being used
- Goals:
  - Conduct usability testing for the new Desktop Diary
  - See whether participants have difficulty switching back and forth between modes

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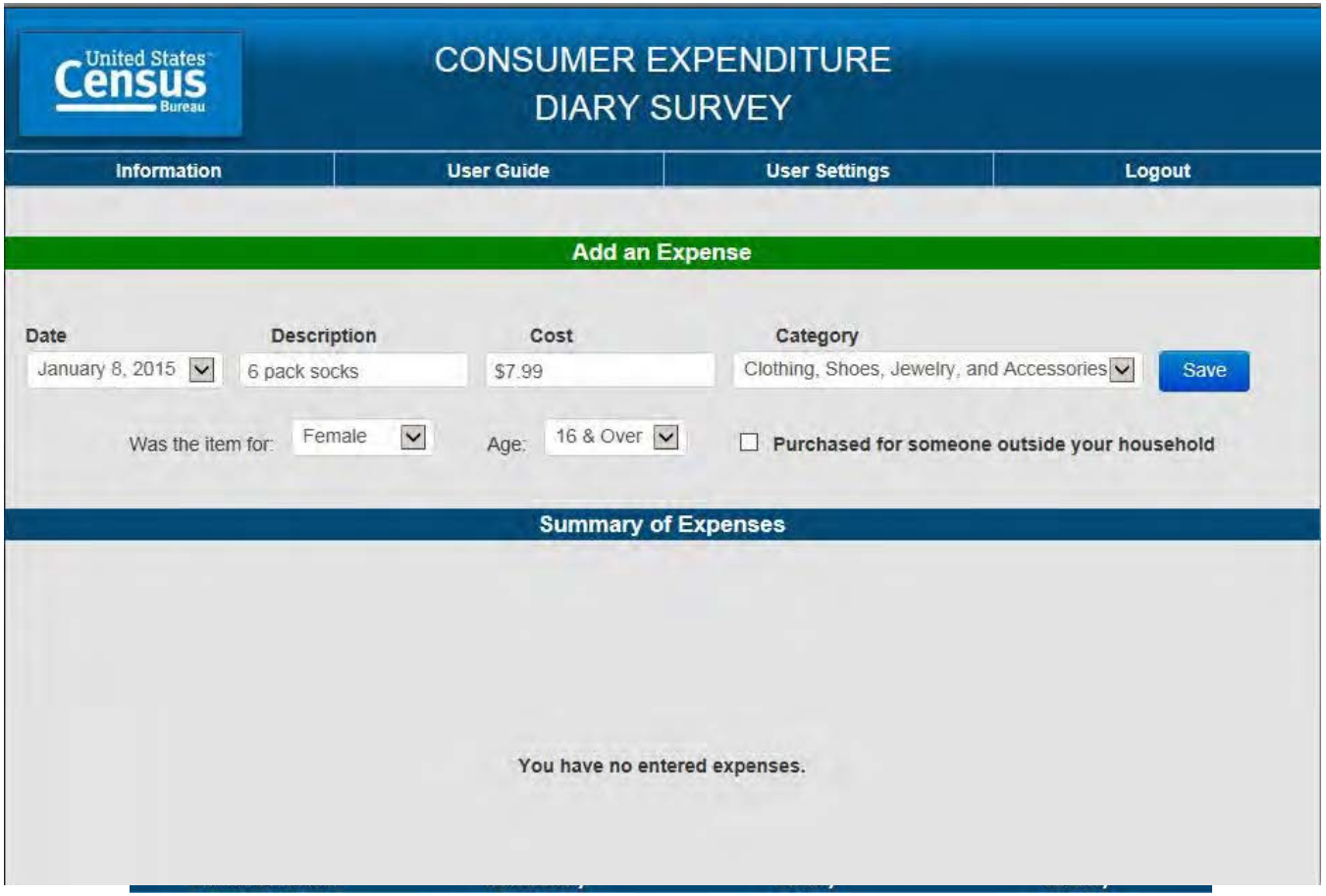
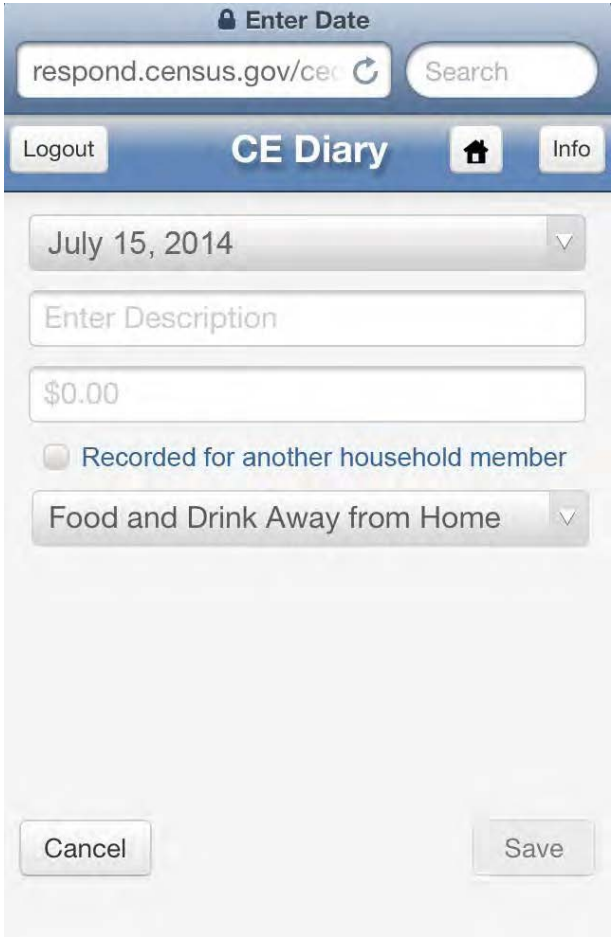
Desktop & Mobile Diary
Desktop Diary Changes

Desktop Diary (2013)



Desktop & Mobile Diary
Mobile Diary Changes

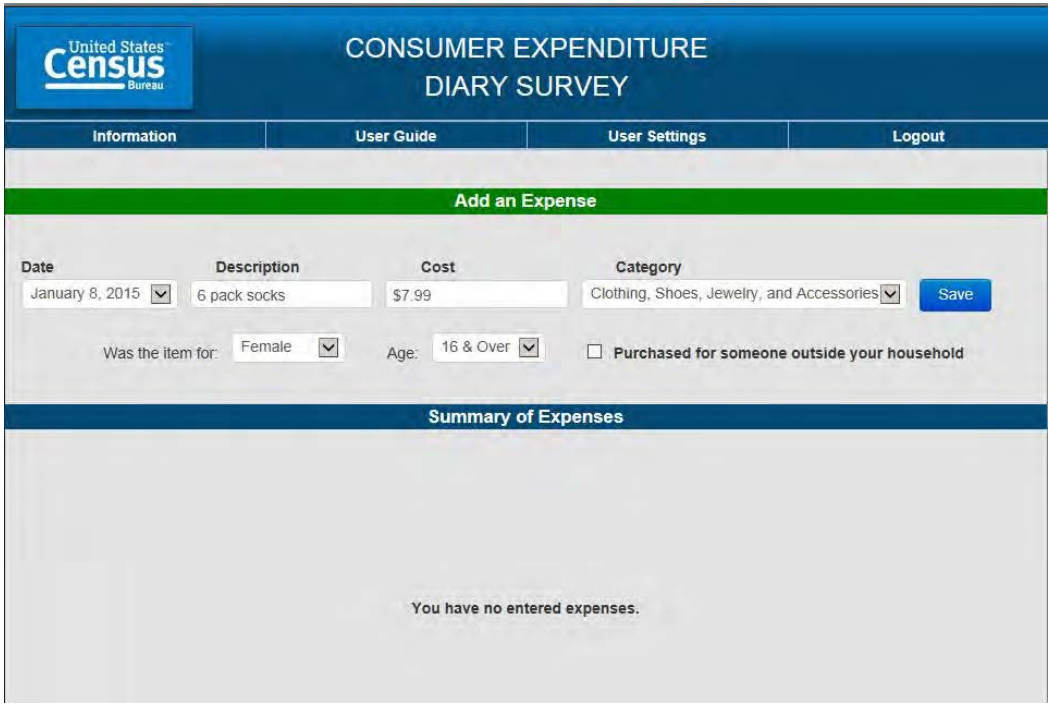
Mobile Diary (2013)



Mobile Diary (2015)

Desktop & Mobile Diary Materials

Desktop



Mobile

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Desktop & Mobile Diary
Methods

- 20 participants
- Screened to have at least some experience with both a smartphone and a computer
- Used their own smartphone for Mobile and lab computer for Desktop

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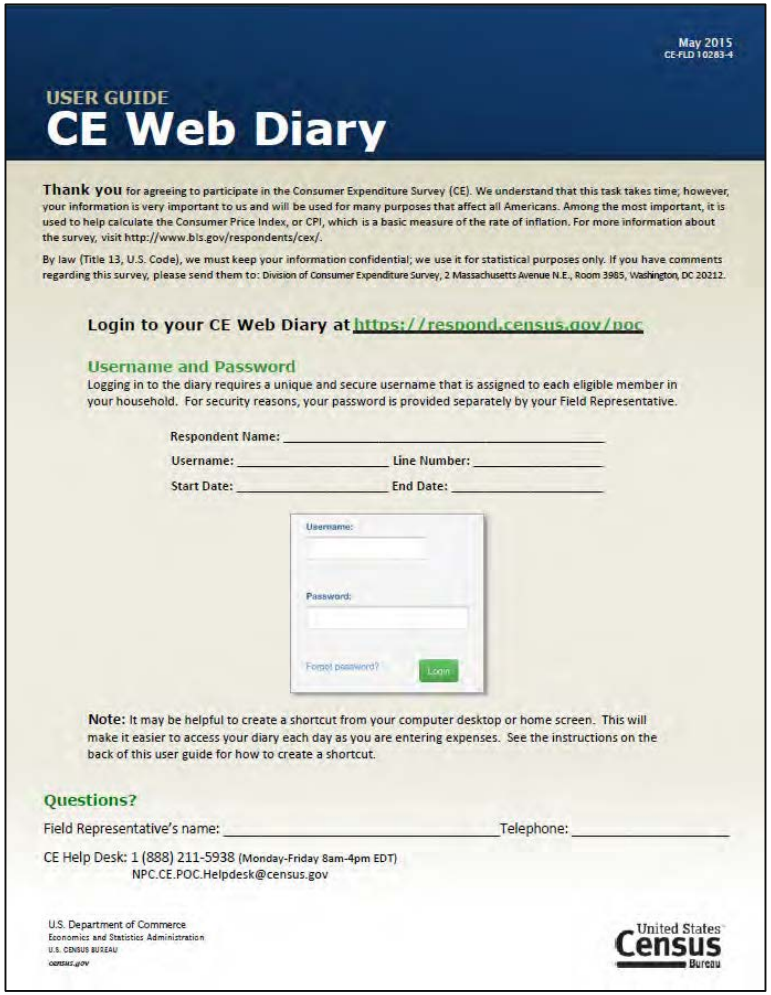
Desktop & Mobile Diary Methods

- Participants received placement instructions emphasizing data requirements for diary
- Used an early version of the User Guide that will be used in the POC test



May 2015
CE-PLD 10283-4

USER GUIDE
CE Web Diary

Thank you for agreeing to participate in the Consumer Expenditure Survey (CE). We understand that this task takes time; however, your information is very important to us and will be used for many purposes that affect all Americans. Among the most important, it is used to help calculate the Consumer Price Index, or CPI, which is a basic measure of the rate of inflation. For more information about the survey, visit http://www.bls.gov/respondents/cex/.

By law (Title 13, U.S. Code), we must keep your information confidential; we use it for statistical purposes only. If you have comments regarding this survey, please send them to: Division of Consumer Expenditure Survey, 2 Massachusetts Avenue N.E., Room 3985, Washington, DC 20212.

Login to your CE Web Diary at https://respond.census.gov/poc

Username and Password

Logging in to the diary requires a unique and secure username that is assigned to each eligible member in your household. For security reasons, your password is provided separately by your Field Representative.

Respondent Name: _____

Username: _____ Line Number: _____

Start Date: _____ End Date: _____

Username:

Password:

Forgot password? Login

Note: It may be helpful to create a shortcut from your computer desktop or home screen. This will make it easier to access your diary each day as you are entering expenses. See the instructions on the back of this user guide for how to create a shortcut.

Questions?

Field Representative's name: _____ Telephone: _____

CE Help Desk: 1 (888) 211-5938 (Monday-Friday 8am-4pm EDT)
NPC.CE.POC.Helpdesk@census.gov

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Desktop & Mobile Diary
Tasks

	Task Name	Task Description	Group 1	Group 2
1.	Navigate to Website and Log In	Setup	Mobile	Desktop
2.	Set Start Date	Setup	Mobile	Desktop
3.	Enter Own Non-Food Purchase	Data Entry	Mobile	Desktop
Device Change				
4.	Navigate to Website and Log In	Setup	Desktop	Mobile
5.	Enter Own Food Purchase	Data Entry	Desktop	Mobile
6.	Enter Book for Friend, Clothes for Self	Data Entry	Desktop	Mobile
7.	Enter Dinner, Movie	Data Entry	Desktop	Mobile
8.	Enter Car Insurance	Data Entry	Desktop	Mobile
9.	Change Book Details	Editing	Desktop	Mobile
Device Change				
10.	Delete Pants	Editing	Mobile	Desktop
11.	Enter Shoes	Data Entry	Mobile	Desktop
12.	Enter Five Items	Data Entry	Mobile	Desktop
13.	Enter Food Away Expense	Data Entry	Mobile	Desktop
Device Change				
14.	Enter Seven Items	Data Entry	Choice	Choice

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Desktop & Mobile Diary
Results

Task Name	N	Mobile % Successful	Desktop % Successful
Initial Setup			
Navigate & Login	20	90%	80%
Start Date	20	90%	100%
Navigate & Login	20	**60%**	100%

- Several participants had trouble navigating to the site
- Only one participant was unable to enter the username and password
  - This participant was not skilled with using a smartphone

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Desktop & Mobile Diary
Results

Task Name	N	Mobile % Successful	Desktop % Successful
Data Entry			
Own Non-Food Purchase	20	73%	100%
Own Food Purchase	20	75%	83%
Book For Friend, Clothes For Self	20	**63%**	**58%**
Dinner, Movie	20	**38%**	**67%**
Car Insurance Bill	20	88%	100%
Shoes	19	100%	78%
5-Item Receipt	19	**70%**	**67%**
Coffee Shop	19	**60%**	**56%**
7-Item Receipt	18	100%*	**59%**

- 42 of the 51 issues were with data requirements and not with data entry
- The remaining issues were due to design

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Desktop & Mobile Diary
Results

Task Name	N	Mobile % Successful	Desktop % Successful
Data Editing			
Change Book Details	18	88%	73%
Delete Pants	19	90%	**67%**

- One person was unable to find the delete button in the Desktop Diary
  - Several others took an extended time to find it

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Desktop & Mobile Diary
Recommendations

- Total of 33 recommendations
  - Most for the Desktop Diary
  - Almost all have been made leading up to POC
- Use an easy to type URL (e.g., cediary.gov) to redirect people to the CE Diary

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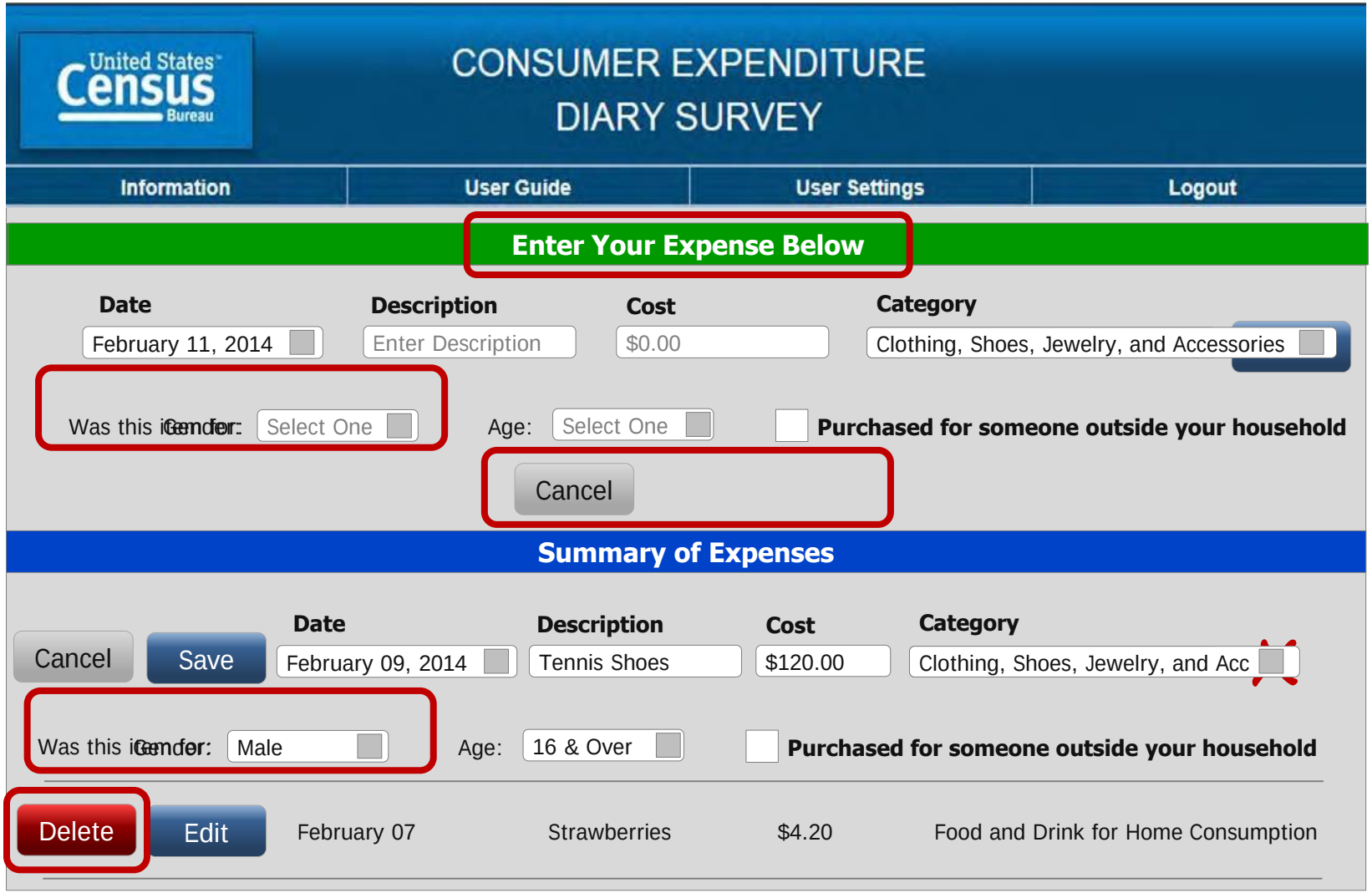
Desktop & Mobile Diary Recommendations



Going Forward

- Contract with Westat to conduct the Electronic Desktop Diary Design Improvements (ED3I)
  - Propose alternative designs
  - Usability test two of those designs
  - Provide recommendations for future
- Work with Census to review and usability test alternative login requirements
  - 7-Digit PIN as Password
  - Other feasible alternatives

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Contact Information

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