

# Usability Testing for the Consumer Expenditure Survey Mobile Diary

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**Brandon Kopp, Erica Yu, Jean Fox,  
and Nhien To**

FedCASIC  
March 20, 2014

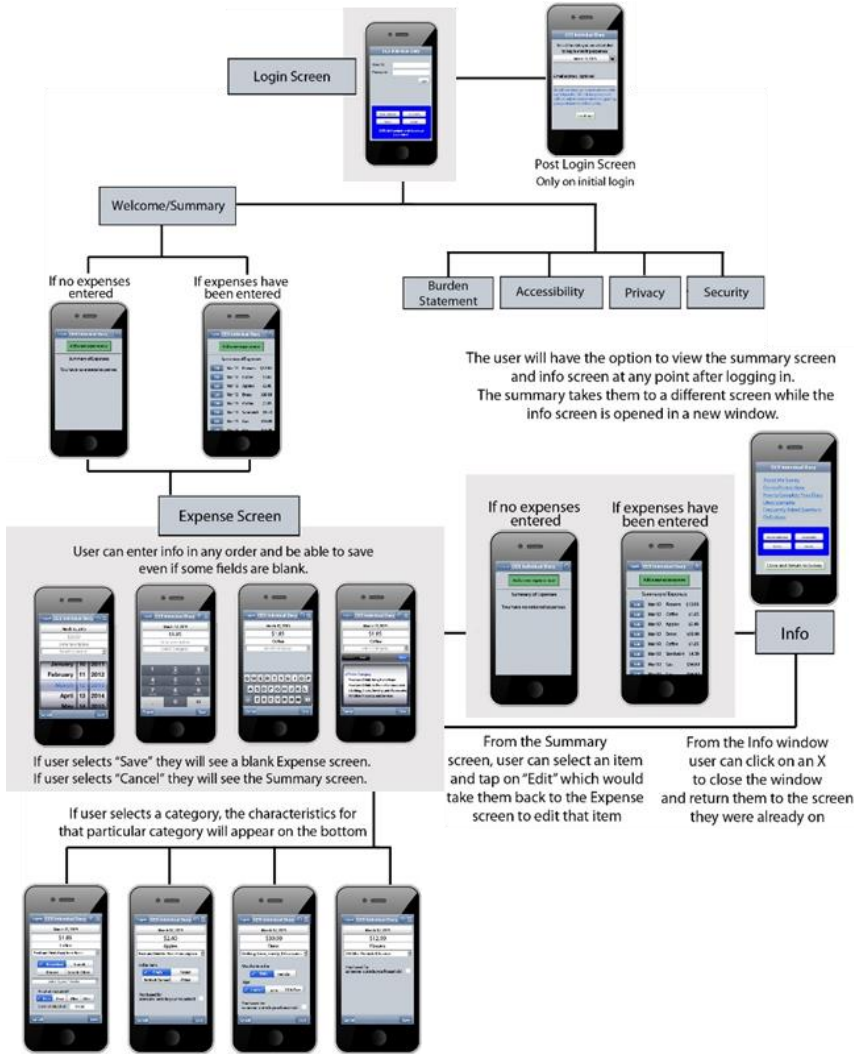


# Timeline

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- Initial Design Concept (May 2013)
  - Usability Test Phase I (June - July 2013)
- Mobile Diary Test Version Released (November 2013)
  - Usability Test Phase II (December 2013 - February 2014)
- Pilot Test for Individual Diaries (March 2014)

# Initial Design Concept



The user will have the option to view the summary screen and info screen at any point after logging in. The summary takes them to a different screen while the info screen is opened in a new window.

From the Summary screen, user can select an item and tap on "Edit" which would take them back to the Expense screen to edit that item

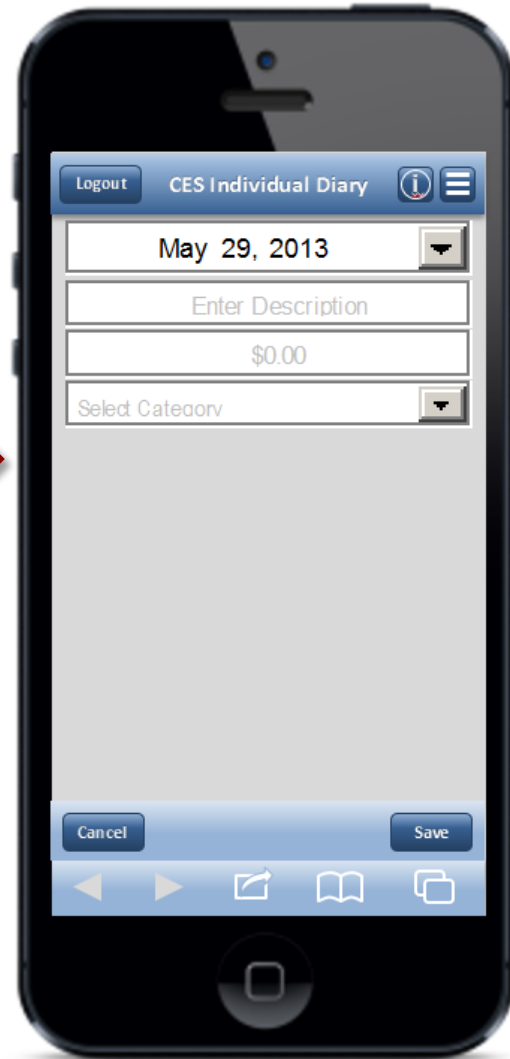
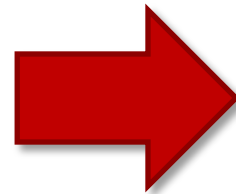
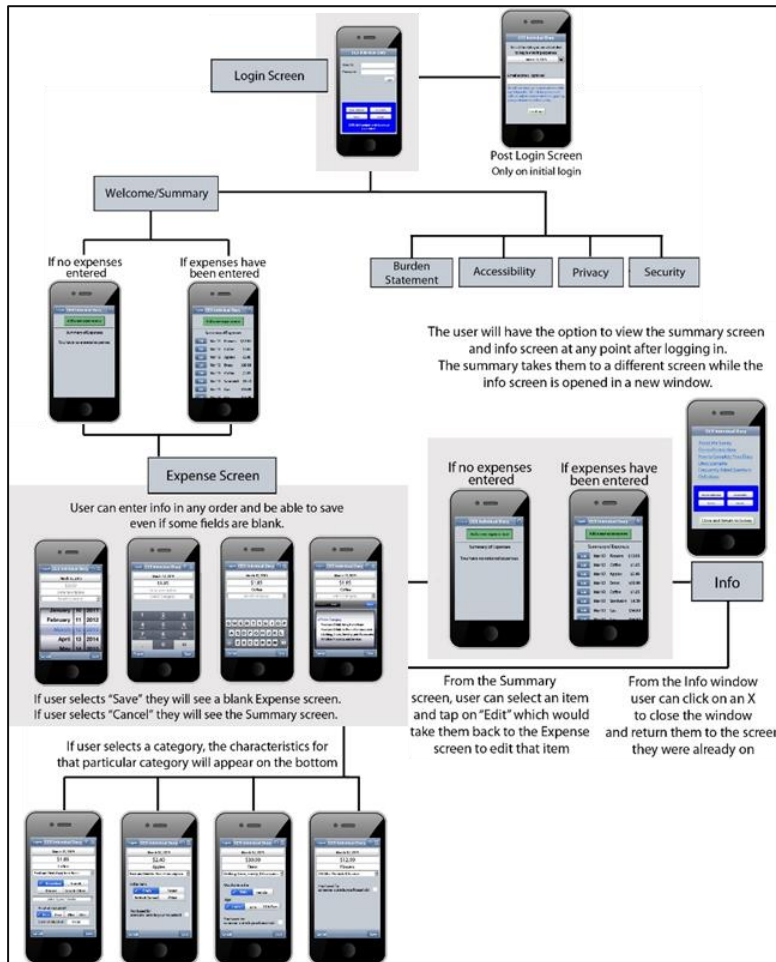
From the Info window user can click on an X to close the window and return them to the screen they were already on

# Phase I

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- Get feedback on initial design
- Test on wireframe instrument

# Wireframe Instrument



# Wireframe Testing Options

On Paper



On Computer



# Visual Basic Tools & Functions

- Text Fields

- Drop-Down Menus

- Toggle Buttons (Select One)

 Option 1  Option 2  Option 3

- Toggle Buttons (Select All That Apply)

 Option A  Option B  Option C

- Macro-Enabled Buttons

# The VB Background

Option 1

Option 2

Option 3

```
Private Sub Option1_Click()  
Option2.BackColor = &H8000000F  
Option2.ForeColor = &H0&  
Option3.BackColor = &H8000000F  
Option3.ForeColor = &H0&
```

Turn Option 2 & 3 "Off"

```
If Option1.BackColor = &H8000000F Then  
Option1.BackColor = &HFF0000  
Option1.ForeColor = &HFFFFFF
```

If Option 1 "Off" Then  
Turn "On"

```
ElseIf Option1.BackColor = &HFF0000 Then  
Option1.BackColor = &H8000000F  
Option1.ForeColor = &H0&
```

If Option 1 "On" Then  
Turn "Off"

```
End If
```

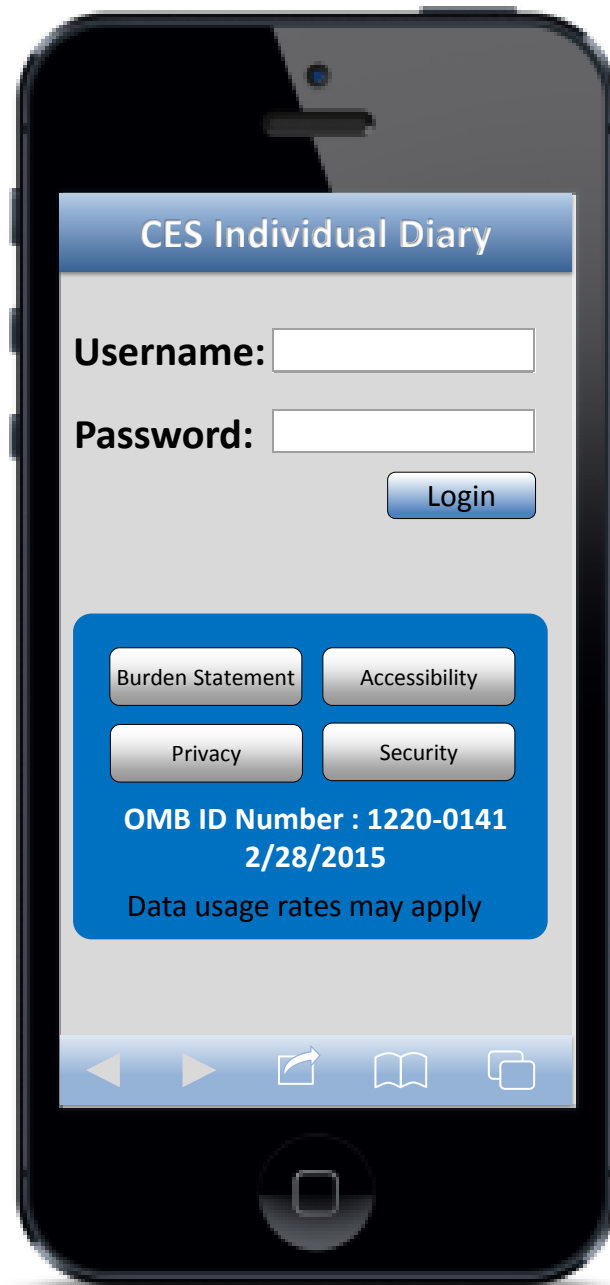
Data Entry  
Display Data



Store Data  
Reformat Numbers/Text  
Password Authentication







# Advantages/Disadvantages

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## Advantages

- More true-to-life than paper
- Simulates actual functions of the Diary
- Better appreciate what developers have to contend with

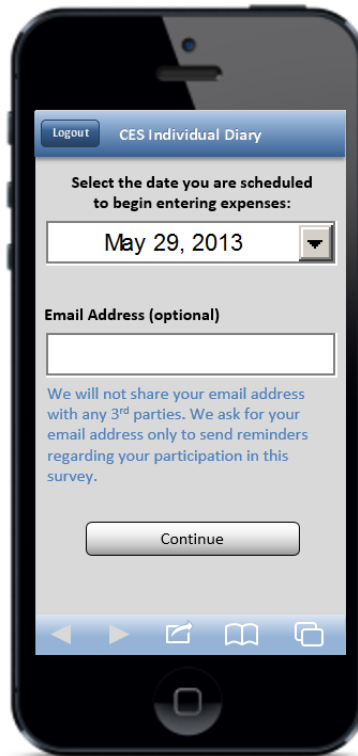
## Disadvantages

- Had to use the keyboard and mouse
- Took about a week's worth of time
- You have to program ways for people to screw up

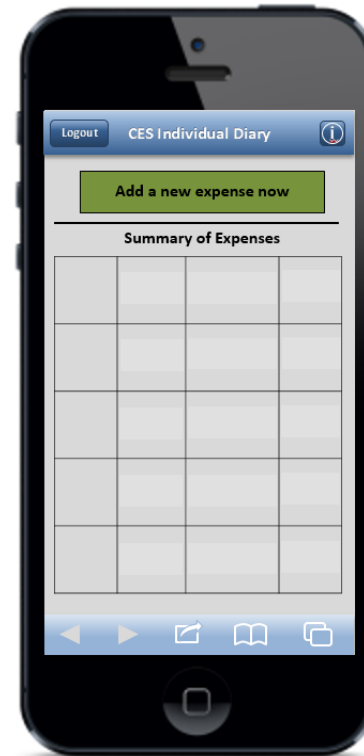
# Other Screens



Login



Initial Setup



Home Screen

# Data Entry Screens

Logout CES Individual Diary ⓘ ☰

May 29, 2013 ▾

Enter Description

\$0.00

Select Category ▾

Cancel Save

General Data Entry

Logout CES Individual Diary ⓘ ☰

May 29, 2013 ▾

Enter Description

\$0.00

Select Category ▾

Breakfast Lunch

Dinner Snack/Other

Select Type of Vendor ▾

Alcohol Included?

None Beer Wine Other

Cost of Alcohol: \$0.00

Cancel Save

Food and Drink  
Away From Home

Logout CES Individual Diary ⓘ ☰

May 29, 2013 ▾

Enter Description

\$0.00

Select Category ▾

Is this item:

Fresh Frozen

Bottled/Canned Other

Purchased for  
Someone outside the household

Cancel Save

Food and Drink For  
Home Consumption

Logout CES Individual Diary ⓘ ☰

May 29, 2013 ▾

Enter Description

\$0.00

Select Category ▾

Was this item for:

Male Female

Age:

Under 2 2-15 16 & Over

Purchased for  
Someone outside the household

Cancel Save

Clothing, Shoes  
Jewelry, &  
Accessories

Logout CES Individual Diary ⓘ ☰

May 29, 2013 ▾

Enter Description

\$0.00

Select Category ▾

Purchased for  
Someone outside the household

Cancel Save

All Other Products &  
Services

# Methods (Phase I)

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- 10 Participants
  - ▶ 3 with "A Moderate Amount" of smartphone experience
  - ▶ 7 with "A Lot" of experience
- 13 tasks that covered the basic operations a respondent would be expected to perform
  - ▶ Logging in and performing setup
  - ▶ Entering expenditure data
  - ▶ Editing/deleting data

# Example Tasks (Phase I)

- Self-Directed Tasks (X 2)
  - ▶ “Think back to the last food purchase you made. Please add that item to the diary as if the purchase was made on [DATE].”
- Scenario-Based Tasks (X 8)
  - ▶ “Now, imagine that today is [DATE]... You’re at the mall shopping and buy a pair of jeans for yourself for \$61.95. Please add that item to the diary.”
- Receipt-Based Tasks (X 3)
  - ▶ “You just went to the grocery store to pick up a few items – enter the items you purchased using this receipt.”





<i>Westover Market</i>	
WHOLE MILK GAL	\$3.49
PAPER TOWELS 6ROLLS	\$8.99
Coupon	- \$2.00
STRAWBERRIES	\$2.99
SUBTOTAL	\$13.47
TAX 5%	\$ 0.67
TOTAL	\$14.14
-----	
TOTAL SAVINGS THIS TRIP	
\$2.00	
-----	
5985 WASHINGTON BLVD - 703-298-5687	

# Results (Phase I)

Task Name	N	Percent Successful
<b>Initial Setup</b>		
Login	10	90%
Start Date	10	100%
Info Screen	10	<b>50%</b>
<b>Data Entry</b>		
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	<b>50%</b>
Other Bill	10	100%
<b>Data Editing</b>		
Edit Price	10	90%
Delete Item	10	90%
Edit Date	10	90%

# Recommendations (Phase I)

- Emphasize placement procedures in Phase II
- Change some of the navigation buttons

	Old	New
Information Screen		
Summary Screen		

- Allow users to set their own password
- Allow users to sort items on Home Screen

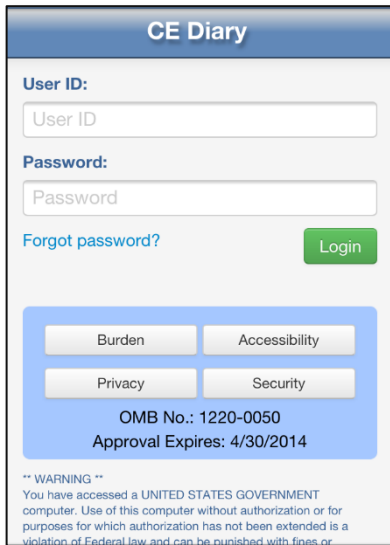


# Phase II

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



# Other Screens



CE Diary

User ID:

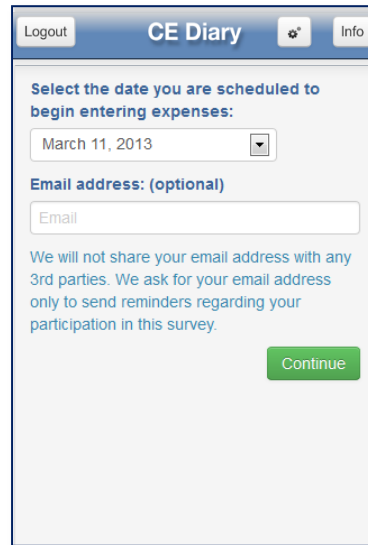
Password:

[Forgot password?](#)

OMB No.: 1220-0050  
Approval Expires: 4/30/2014

\*\* WARNING \*\*  
You have accessed a UNITED STATES GOVERNMENT computer. Use of this computer without authorization or for purposes for which authorization has not been extended is a violation of Federal Law and can be punished with fines or

Login



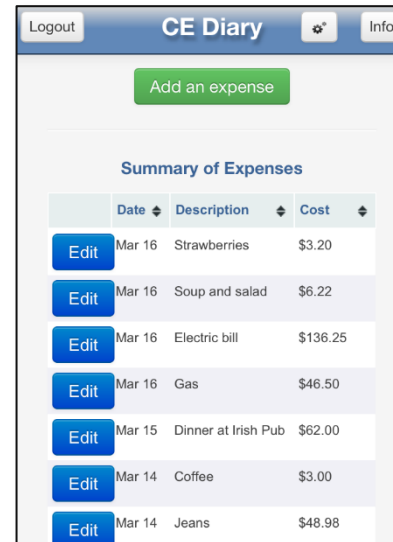
Logout CE Diary Info

Select the date you are scheduled to begin entering expenses:

Email address: (optional)

We will not share your email address with any 3rd parties. We ask for your email address only to send reminders regarding your participation in this survey.

Initial Setup

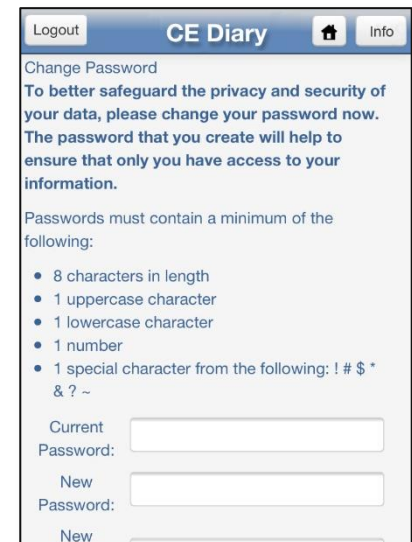


Logout CE Diary Info

Summary of Expenses

	Date	Description	Cost
<input type="button" value="Edit"/>	Mar 16	Strawberries	\$3.20
<input type="button" value="Edit"/>	Mar 16	Soup and salad	\$6.22
<input type="button" value="Edit"/>	Mar 16	Electric bill	\$136.25
<input type="button" value="Edit"/>	Mar 16	Gas	\$46.50
<input type="button" value="Edit"/>	Mar 15	Dinner at Irish Pub	\$62.00
<input type="button" value="Edit"/>	Mar 14	Coffee	\$3.00
<input type="button" value="Edit"/>	Mar 14	Jeans	\$48.98

Home Screen



Logout CE Diary Info

Change Password

To better safeguard the privacy and security of your data, please change your password now. The password that you create will help to ensure that only you have access to your information.

Passwords must contain a minimum of the following:

- 8 characters in length
- 1 uppercase character
- 1 lowercase character
- 1 number
- 1 special character from the following: ! # \$ \* & ? ~

Current Password:

New Password:

New Password:

Change Password Screen

# Data Entry Screens

Logout CE Diary Info

March 16, 2013

Enter Description

\$0.00

Select Category

Cancel Save

General Data Entry

March 14, 2013

Enter Description

\$0.00

Food and Drink Away from Home

Breakfast Lunch

Dinner Snack/Other

Select Type of Vendor

Alcohol Included?

Wine Beer Other

Cost of Alcohol:

\$0.00

Cancel Save

Food and Drink  
Away From Home

Logout CE Diary Info

March 14, 2013

Enter Description

\$0.00

Food and Drink for Home Consump

Is this item:

Fresh Frozen

Bottled/Canned Other

Purchased for someone outside your household

Cancel Save

Food and Drink For  
Home Consumption

Logout CE Diary Info

March 14, 2013

Enter Description

\$0.00

Clothing, Shoes, Jewelry, and Acce:

Was the item for:

Male Female

Age:

Under 2 2-15 16 & Over

Purchased for someone outside your household

Cancel Save

Clothing, Shoes  
Jewelry, &  
Accessories

Logout CE Diary Info

March 14, 2013

Enter Description

\$0.00

All Other Products and Services

Purchased for someone outside your household

Cancel Save

All Other Products &  
Services

# Methods (Phase II)

## ■ 29 Participants

- ▶ Screened by operating system & smartphone experience

		Smartphone Experience		
		A Little	A Moderate Amount	A Lot
Operating System (OS)	iOS/Apple/iPhone	3	2	4
	Android/Google/Galaxy	5	8	5
	Blackberry/RIM			
	Windows			
	Palm	1	0	0
	Other			
Don't Know/Not Sure				

# Methods (Phase II)

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- 13 tasks were similar to Phase I
  - ▶ More emphasis on receipts
- New, change password task
- Emphasized diary placement instructions

# Placement Instructions

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

### Getting Started

Enter the provided User ID and Password

You will be given the option to set a personalized password. Use a password that you can easily remember!

Tap on the **INFO** button to learn more about the CE Survey

Your scheduled start date can be found on the front of this pamphlet

Enter your e-mail address to receive reminders to add your expenses

This is your Home Screen

To add an expense, tap on **Add a new expense now**

After you've added an expense, you will see it listed here. At any point in the diary, you can tap on the **INFO** button to return to this screen to see a summary of your entered expenses.

To view, edit, or delete any of your recorded expenses tap on **EDIT** next to that expense.

Date	Description	Cost
Oct 26	pasta dinner	\$52.76
Oct 26	drinks at bar	\$14.85
Oct 27	bus fare	\$1.25
Oct 27	meal	\$31.99
Oct 27	shirt	\$34.99
Oct 27	Ultimate takeout	\$26.88
Oct 27	electric bill	\$120.89
Oct 28	bus fare	\$1.25
Oct 28	dry cleaning	\$28.95
Oct 28	haircut	\$48.00
Oct 28	coffee	\$2.50

### Food and Drink Away from Home

Select the date of the purchase: March 10, 2013

Enter the cost of the meal including tax: \$0.00

Select the category: Food and Drink Away from Home

Select the type of meal: Breakfast, Lunch, Dinner, Snack/Other

Select the type of vendor: Select Type of Vendor

Indicate if alcohol was included (mark all that apply): none, Wine, Beer, Other

Cost of Alcohol: \$0.00

Describe the meal (e.g. coffee, buffet, drinks from cash bar, sandwich & chips)

Select the gender for whom the item was purchased for: Male, Female

Select the age range for whom the item was purchased for: Under 2, 2-15, 16 & Over

Purchased for someone outside your household [ ]

Check if purchased for someone outside your household

### Clothing, Shoes, Jewelry, and Accessories

Select the date of the purchase: March 10, 2013

Enter the cost of the item without tax: \$0.00

Select the category: Clothing, Shoes, Jewelry, and Accessories

Was the item for: Male, Female

Age: Under 2, 2-15, 16 & Over

Purchased for someone outside your household [ ]

Check if purchased for someone outside your household

### Food and Drink for Home Consumption

Select the date of the purchase: March 10, 2013

Enter the cost of the item without tax: \$0.00

Select the category: Food and Drink for Home Consumption

Select the type of packaging: Fresh, Bottled/Canned, Frozen, Other

Purchased for someone outside your household [ ]

Describe the item (e.g. whole milk, eggs, cereal, bananas, case of beer)

Select the category: Food and Drink for Home Consumption

Check if purchased for someone outside your household

### All Other Products and Services

Select the date of the purchase: March 10, 2013

Enter the cost of the item without tax: \$0.00

Select the category: All Other Products and Services

Purchased for someone outside your household [ ]

Check if purchased for someone outside your household


Describe the item (e.g. electric bill, dry cleaning, auto reg, DVD, car insurance)

Select the category: All Other Products and Services



# Example Tasks (Phase II)

- Self-Directed Tasks (X 2)
  - ▶ “Think back to the last food purchase you made. Please add that item to the diary as if the purchase was made on [DATE].”
- Scenario-Based Tasks (X 5)
  - ▶ “The next day, on [DATE], you decide to return the pants that you had bought. Please go back and delete that item.”
- Receipt-Based Tasks (X 5)
  - ▶ “On [DATE], you go to the Val-U-Mart superstore to buy a few things for your house – enter your expenses from this receipt.”
- Change Password Task

<b>VALU MART</b>		
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
	<b>SUBTOTAL</b>	<b>99.30</b>
	VA TAX 5.0%	4.97
	<b>TOTAL</b>	<b>104.27</b>
SIGN UP FOR A VALUMART CARD AND SAVE 5% ON EVERY PURCHASE!		

# Results (Phase II)

Task Name	N	Percent Successful
<b>Initial Setup</b>		
Navigate & Login	28	<b>46%</b>
Start Date	28	96%
Set Personalized Password	9	<b>33%</b>
<b>Data Entry</b>		
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	<b>35%</b>
Drinks	25	<b>48%</b>
Long Receipt	22	<b>27%</b>
<b>Data Editing</b>		
Delete Pants	21	90%
Change Book Details	18	100%
Edit Price	24	58%



# Recommendations (Phase II)

- Entering a field should bring up the optimal virtual keyboard
- Need to simplify usernames & passwords while maintaining security
- Need to reformat change password screen to emphasize the requirements



# Going Forward

- Need to emphasize itemization of expenditure reports
  - ▶ Through placement and training materials
  - ▶ Through instrument design features
- Respondents should be screened for smartphone experience before being asked to use the Mobile Diary
  - ▶ Eagerness ≠ Skill
- Web and Mobile Diaries should be linked
- See how actual respondents view the Mobile Diary



# Contact Information

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**Brandon Kopp**

Research Psychologist

Office of Survey Methods Research

[\*www.bls.gov/osmr\*](http://www.bls.gov/osmr)

202-691-7514

kopp.brandon@bls.gov

