# Developing an Online Mode for the Consumer Expenditure Diary Survey

Ian Elkin and Nhien To – BLS Doug Williams – Westat

FedCASIC April 11, 2017

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# I. Current Diary Design and Online Diary Objectives

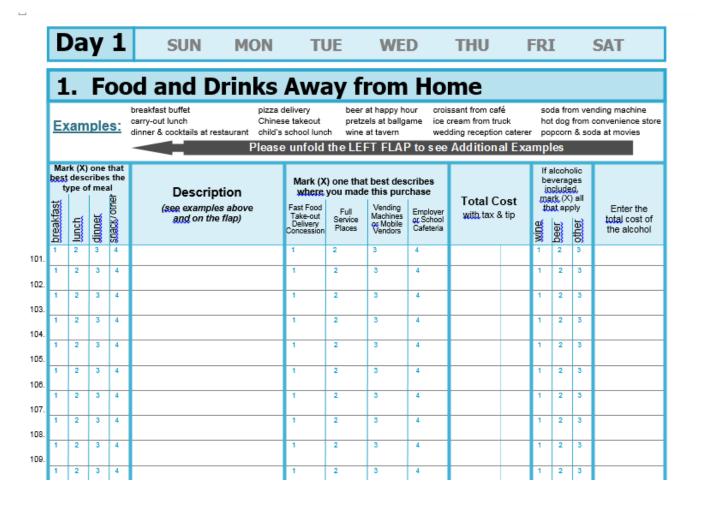


### **Consumer Expenditure Diary Overview**

- The Consumer Expenditure Diary (CED) currently uses a singular paper diary to collect household expenditures for a week (x2)
- Interviewers place the diary in-person and conduct one more visit
- The CED gathers more detailed expenditures than the Consumer Expenditure Interview Survey
- The Diary is divided into four sections:
  - ► Food and Drink Away From Home
  - ► Food and Drink for Home Consumption
  - ► Clothing, Shoes, Jewelry and Accessories
  - ► All Other Products, Services and Expenses



### **Consumer Expenditure Diary Overview**





### Gemini Redesign Initiative – Proposed Diary Design

- One-week online diary with paper diary backup
- Single portal access
- Personal diary for all household members 15 years old and older
- Respondent to use their device functionality to capture data (such as photos or voice messages), which will create a record in the diary for later completion



### **Online Diary Objectives**

- Improve on each past diary design and refine options as part of the Gemini Redesign Initiative
- Present respondents with options for contemporaneous data entry
- Improve unit and item response rates through increased options and a reduction in proxy reporting
- Lower costs compared to a paper-only option due to reduced or eliminated printing, scanning, and data entry expenses
- Reduce measurement error due to proxy reporting through ease of access afforded by both individual and online diaries



### **II. Past Design and Testing Efforts**



### **Previous CE Diary Tests and Projects**

- Web Diary Feasibility Test
- Individual Diaries Feasibility Test
- Proof of Concept Test Diary Portion
- Electronic Diary Desktop Design Improvements Project



### Web Diary Feasibility Test Overview

- Designed to simulate entry methods used by respondents in CED paper diary
- Formatted for desktops and laptops
- Household-level diary
- New materials -
  - ► Interviewer Talking Points
  - ▶ User Guide
- 1,300 starting sample collected January-March of 2013 with 456 total completed diaries



### Web Diary Feasibility Test Diary



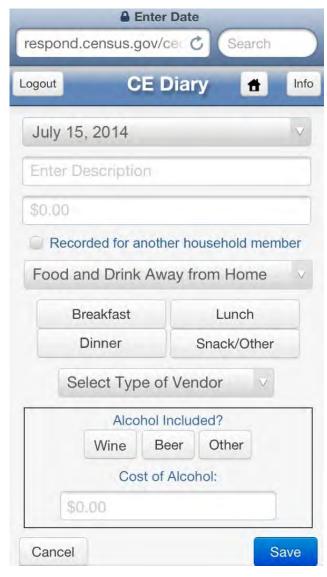


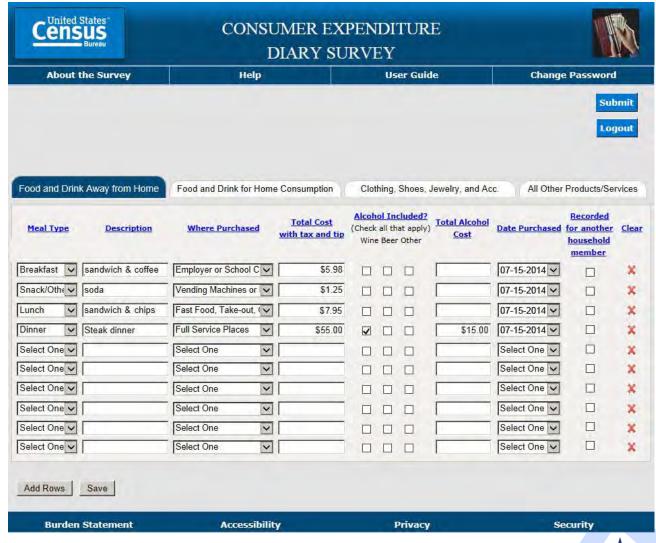
### **Individual Diaries Feasibility Test Overview**

- Two instruments formatted for mobile devices and desktops/laptops
- Person-level diary design
- Targeted sampling on area mobile usage, internet penetration, multi-person households, and English-speaking households
- Assignment Protocol
  - ► If a household is eligible, household members were offered modes sequentially
  - Mobile mode first and, if they did not have a Smartphone, then
  - Desktop mode, including tablet
- 1,200 starting sample collected August-December of 2014 with 241 HHs completing at least one week



### **Individual Diaries Feasibility Test Diaries**





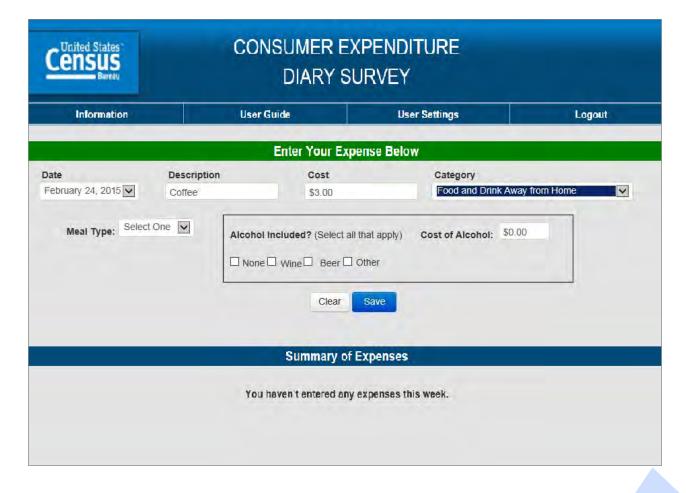
#### **Proof of Concept Test Overview**

- Respondents who were eligible for and selected an online diary were given a single account username and password, and were not restricted to a single online mode (mobile or PC), but instead encouraged to move between the online versions depending on their situation or reporting needs
- During the diary-keeping week, paradata was collected on the logins and entries for the electronic diaries. This information was available to the team during the test to identify and address potential issues
- Person-level diary design
- Incentives offered
- 1,200 starting sample collected July to October of 2015 with 520 HHs completing all phases of the test



### **Proof of Concept Test Diary**







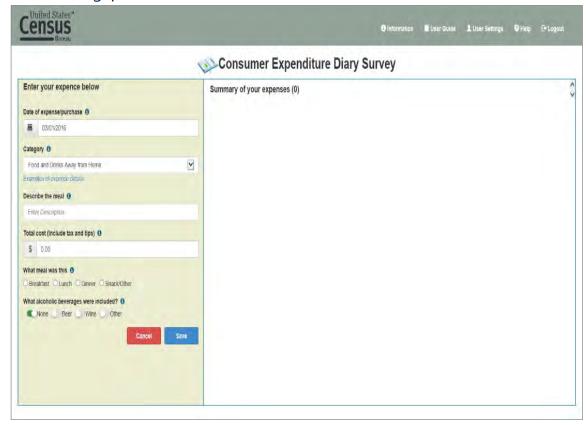
# Electronic Diary Desktop Design Improvements Project Overview

- Designed online diaries focused on the desktop/laptop platforms
- Developed two prototypes incorporating design elements that utilize the increased screen space of desktops/laptops (relative to mobile devices)
  - ► Expanded list of categories to improve recall (more expense type cues)
- Prototype 1 focused on presenting all respondent actions and feedback (e.g., entries) on one screen
- Prototype 2 presented expense entry tasks on progressive screens. This version included many more visual cues for each expense category type
- The prototypes were laboratory tested with 30 respondents using a within-subject design

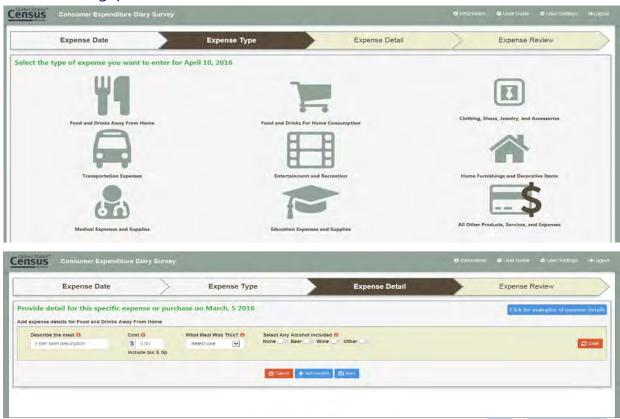


# Electronic Diary Desktop Design Improvements Project Diary Prototypes

Prototype 1:



Prototype 2:





### **III. Current Design and Testing Efforts**



### **Current Test and Design Objectives**

- Applying past experiences and lessons learned from previous online diaries CE is working with Westat to develop an online diary that is...
  - Optimized to the respondent's device and accessible from a single portal
  - Adaptable to future enhancements as technology advances
  - ► Written in a common programming language that is transferable
  - Equipped with robust paradata monitoring



### **Online Diaries Improvement Project Overview**

- Two instruments optimized to the respondent's device (mobile or desktop/laptop) and accessed through a single portal
- Person-level diary design
- Developed based on previous CE online diaries
- Robust paradata output
- Modular design that allows for technological enhancements



# Online Diaries Improvement Project Instrument Design

- Desktop design with focus on minimizing burden and providing feedback:
  - ▶ Default to expense date and category last selected.
  - ► Entered expenses are added to top of summary list and highlighted to provide entry feedback.



## Online Diaries Improvement Project Instrument Design

- Mobile design same focus as desktop:
  - Same look and feel as desktop, but optimized for mobile
  - Instrument appropriately renders for varied device screen sizes
  - Uniform look and feel to promote usage of multiple devices.
- Developed using secure open-source software for scalability and accommodating future technologies



## Online Diaries Improvement Project Diaries - Home Screen

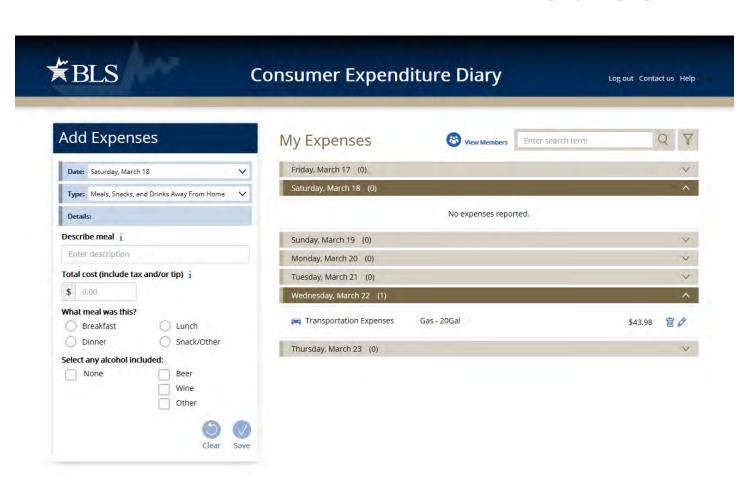


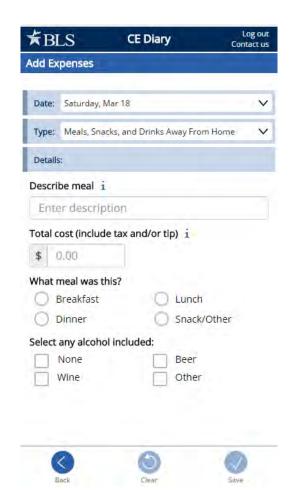






## Online Diaries Improvement Project Diaries – Entry Screen







#### Online Diaries Improvement Project Usability Test

- Three Component Usability Test
  - ► A home component for testing instrument placement and instructions on diary keeping
  - ► A home component for testing participants' ability to log in and interact with the instrument, such as enter expenditures over the course of a week
  - ► A component where the interviewer returns to the home to test pickup of the diary and collect debriefing information



#### Online Diaries Improvement Project Usability Test

- Goal of 60 component interviews (placement/reporting/pick-up). As of March 30<sup>th</sup>:
  - ▶ 18 placement interviews completed; 4 pick-up interviews completed
    - 18 households represent 48 persons (~2.7 persons 15+ per household)
    - 1 nonresponse for pick-up interview (never used web diary)
    - 15 of 18 households have accessed the diary; 24 of 48 persons have accessed the diary.
    - 14 of 17 households have entered at least 1 expense; all persons accessing the diary have entered at least one expense



#### Online Diaries Improvement Project Usability Test

- Of those where user device detected: 41% used a mobile device.
- As expected most expenses are for food...

Expense Type	Count	Percentage
Meals, Snacks, and Drinks Away From Home	71	25.9
Food and Drink for Home Consumption	128	46.7
Clothing, Shoes, Jewelry, and Accessories	9	3.3
<b>Entertainment and Recreation</b>	9	3.3
Home Furnishings and Decorative Items	1	0.4
Education Expenses and Supplies	2	0.7
Transportation Expenses	21	7.7
Medical Expenses and Supplies	8	2.9
Personal Care, or Hygiene Items	10	3.6
All Other Products, Services, and Expenses	15	5.5



### IV. Future Analyses and Design Efforts



#### **Moving Forward...**

- Online Diary Results and Future Plans
  - ▶ Percent of entries where expense and entry occurred on same day
    - For those not same day what was the average difference between entry date and expense date?
  - ► Edits and deletes how well do descriptions match category?
  - Expanded categories were often missed expenses captured?
  - ► Online versus paper comparable data quality?



### **Contact Information**

Ian J. Elkin
Senior Economist
Consumer Expenditure Surveys
www.bls.gov/cex
202-691-6865
elkin.ian@bls.gov

