

Where You Shop or What You Buy: Testing Improvements in the CE Diary Survey

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Outline



- CE Online Diary
 - ▶ Diary Design
 - ▶ Concerns with usability and data entry



- Study design
 - ▶ Autocomplete feature
 - ▶ Transaction diary



- Other findings and next steps

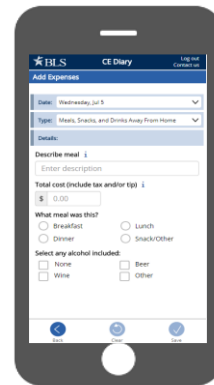
Consumer Expenditure (CE) Diary Survey

- CE Diary Survey collects small frequent expenses over a two-week period using two one-week diaries
- Choice of modes: pencil & paper or online
- Online version was field tested in 2019-2020 prior to implementation in July 2022
- Collects four categories of expenses
- Respondent enters item description, amount, store/outlet, and some category specific fields



Online diary design

- Developed in Centurion (Census)
- Device-optimized based on screen size
 - ▶ Desktop/Laptop/Tablet version
 - ▶ Mobile version
- Web-based (no data stored on device)



Current online diary

Select date of expense:

Business:

Select type of expense:

- Meals, Snacks, and Drinks Away from Home [i](#)
- Food and Drinks for Home Consumption [i](#)
- Clothing, Shoes, Jewelry, and Accessories [i](#)
- All Other Products, Services, and Expenses [i](#)

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Expenses

Week 1

Week 2



1	Sunday, July 2 (3)	▼
2	Monday, July 3 (0)	▼
3	Tuesday, July 4 (0)	▼
4	Wednesday, July 5 (0)	▼
5	Thursday, July 6 (0)	▼
6	Friday, July 7 (0)	▼
7	Saturday, July 8 (0)	▼

Current online diary

Expense entry by item

Expense entry

Select type of expense:

- Meals, Snacks, and Drinks Away from Home *i*
- Food and Drinks for Home Consumption *i***
- Clothing, Shoes, Jewelry, and Accessories *i*
- All Other Products, Services, and Expenses *i*

Describe item or expense *i*

Eggs

Total cost (do not include tax) *i*

\$ 4.99

How was the item packaged?

Fresh Frozen Bottled/Canned
 Other

[< Back](#) [✓ Save](#)



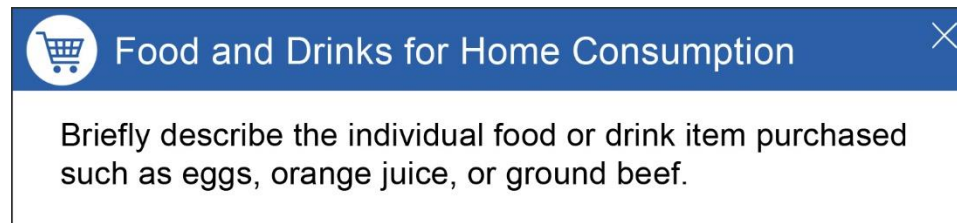
Summary screen

Expenses Week 1 Week 2

Sunday, July 2 (3)	
Monday, July 3 (3)	
Milk	\$3.99
Bread	\$3.99
Eggs	\$4.99
Tuesday, July 4 (0)	
Wednesday, July 5 (0)	
Thursday, July 6 (0)	
Friday, July 7 (0)	
Saturday, July 8 (0)	

Concerns with usability and data entry

- Need to improve ease of data entry when respondent buys many items from one store
- Inadequate descriptions of the purchase, which require a minimum level of detail for coding
- Bundling: respondents enter “food” or “groceries” and do not itemize expenses



Food and Drinks for Home Consumption

Briefly describe the individual food or drink item purchased such as eggs, orange juice, or ground beef.

Study design



Study Objectives

Autocomplete for item description

- Will this feature affect level of detail reported and reduce bundling?
- Will this feature make it easier for respondents to enter expenses?

Transaction- based diary design

- Is it easier for respondents to enter by transaction (or store) rather than item?
- Would this design make it easier to report expenses when people buy many items at one store?

Methods

- 60 participants, each brought 2 receipts to interview
- One-on-one video interviews on Teams
- Participant opened the diary and shared the screen as they filled it out, follow up discussion with interviewer

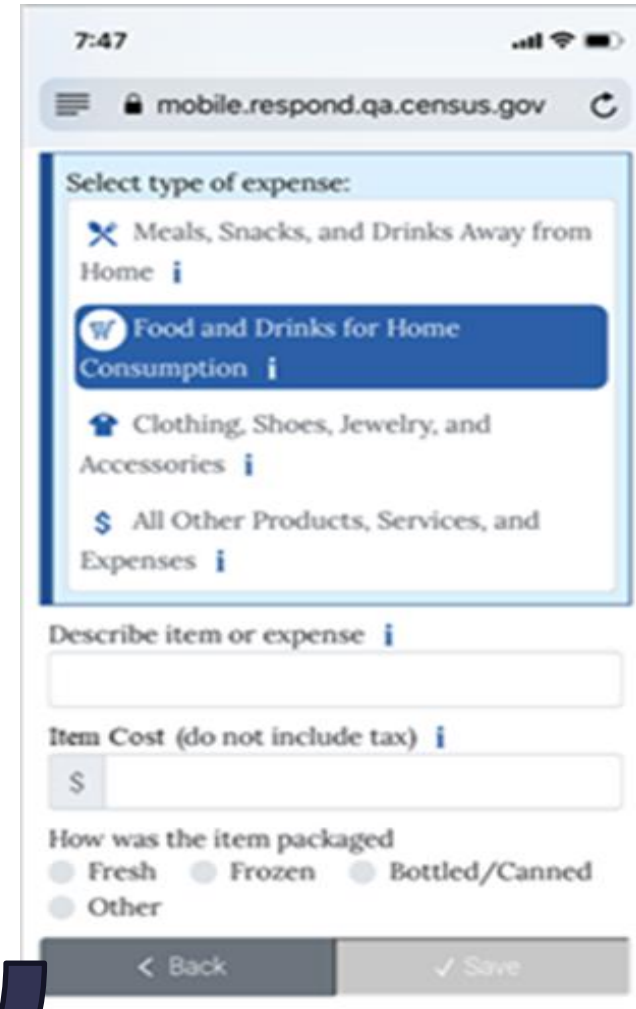
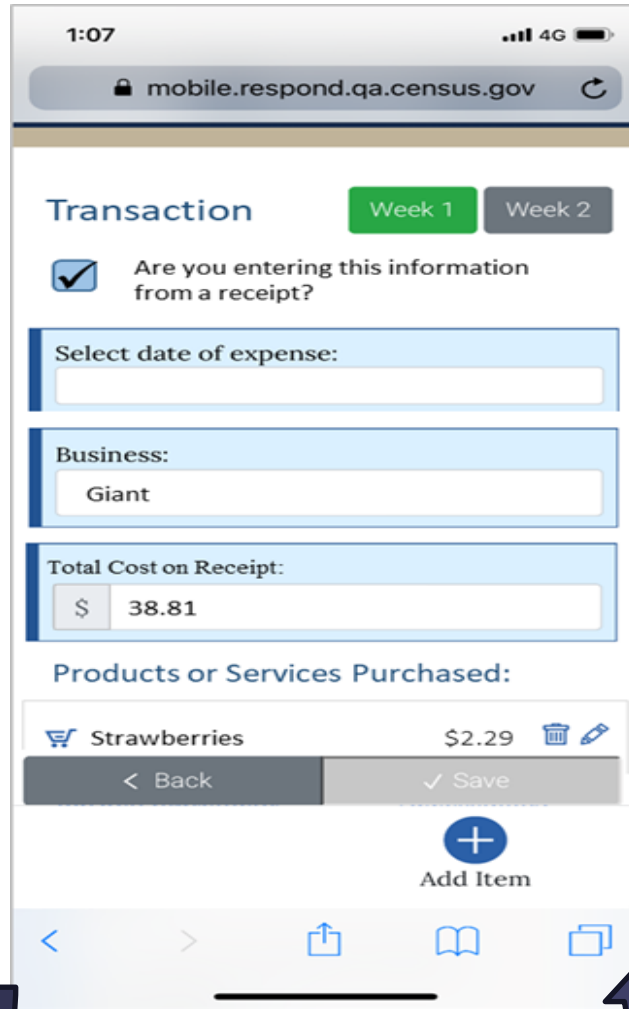
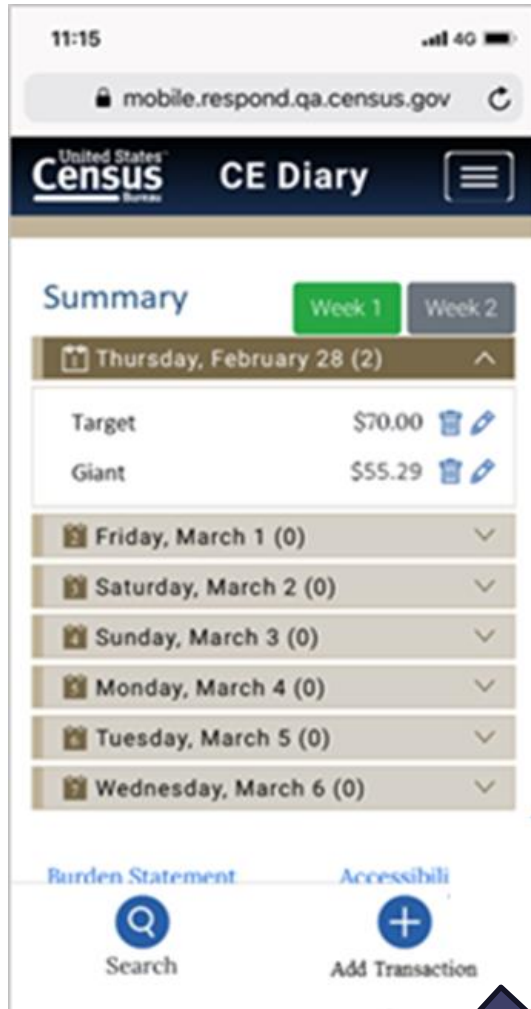
Feature	Diary Order	
	1 st Experiment, 2 nd Control	1 st Control, 2 nd Experiment
Autocomplete Diary	20 participants	10 participants
Transaction based diary	20 participants	10 participants



Transaction-based Diary



Transaction diary



Transaction diary: summary screen

Transaction Diary

Summary

Week 1

Week 2

1 Friday, December 2 (2)

2 Saturday, December 3 (1)

Safeway

\$8.98

3 Sunday, December 4 (0)

4 Monday, December 5 (0)

Control Diary

Week 1

Week 2

Enter search term

1 Sunday, July 2 (3)

2 Monday, July 3 (3)

Milk

\$3.99

Bread

\$3.99

Eggs

\$4.99

3 Tuesday, July 4 (0)



Transaction diary findings

- Most participants preferred the Transaction diary
 - ▶ Nearly all participants preferred to see the summary by transaction
 - “Makes sense. It’s concise, the shorthand version”*
- The rate of bundling did not differ by diary design; instructions had a bigger effect
- Multiple participants had trouble with the workflow for adding items to a transaction
 - “I don’t get it. There are only three things to put in.”*
- A few participants had trouble with the receipt total edit check, which prompts respondents when the items do not add up to the total

Transaction diary takeaways

- Organizing expenses by transaction matches how most respondents think and makes reviewing and editing expenses easier.
- The summary page should present items organized by transaction and show items in the order of entry in any design.
- Improve the workflow from entering transaction-level information to adding items to saving the items clearer to respondents.
- Think about design issues with the use of receipts like edit checks and clearer instructions.







Autocomplete Feature



Autocomplete diary

Autocomplete Diary

Select type of expense:





-  Meals, Snacks, and Drinks Away from Home **i**
-  Food and Drinks for Home Consumption **i**
-  Clothing, Shoes, Jewelry, and Accessories **i**
-  All Other Products, Services, and Expenses **i**

Describe item or expense **i**

- Cheese
- Cream Cheese
- Cottage Cheese
- Shredded Cheese
- Mac and Cheese

Control Diary

Select type of expense:

-  Meals, Snacks, and Drinks Away from Home **i**
-  Food and Drinks for Home Consumption **i**
-  Clothing, Shoes, Jewelry, and Accessories **i**
-  All Other Products, Services, and Expenses **i**

Describe item or expense **i**

Total cost (do not include tax) **i**

\$ 4.99

Was this item for:

- Child under 2
- Boy 2-15
- Girl 2-15
- Man 16 & over
- Woman 16 & over



Autocomplete Diary Findings

- Autocomplete was easy to use for most respondents
 - ▶ Ran into difficulty when they did not select the right category
- Autocomplete generally perceived to be “right”; Control diary perceived to allow more detail and control over data entry
- Some respondents found it *more* burdensome – having to read the options, choose one, including figuring out which suggestion maps best to their item
- Some respondents found it faster to type without using autocomplete
- Little evidence of satisficing or negative impact on data quality
- Some evidence of learning from the autocomplete
 - ▶ Ran into difficulty due to varying levels of detail in the autocomplete database
cookies (oatmeal, chocolate chip, sugar) vs. apples (no variety needed)

Autocomplete Diary Takeaways

- Overall, autocomplete feature neither harmed or improved data quality.
- Most respondents find the autocomplete suggestions helpful and perceive them as increasing their efficiency. Some respondents who type quickly find the suggestions more burdensome than helpful.
- The instrument should make clear to respondents that they do not *have to* select an autocomplete suggestion.
- Respondents who see the autocomplete suggestions will assume that the suggestions are the correct level of detail. Database suggestions should be consistent level of detail.
- Database will require upkeep, is it worth maintaining?

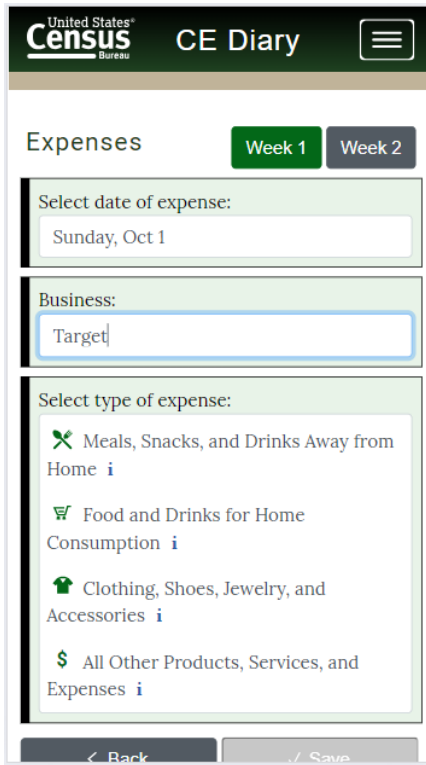


Other Findings and Next Steps



General findings on online diary

- Misidentification of the Expense Type field as about the Business
- Unsure how to handle a single receipt with **both** Meals Away and Food for Home (*e.g., grocery store hot bar*)
- General confusion over definition of Food for Home (*e.g., eating snacks on the go, takeaway eaten at home*)
- Item cost field: “total cost” is confusing, change to “cost” or “item cost”
- Some participants transcribed exactly what was on their receipt even when it was cryptic



The screenshot shows the 'CE Diary' interface from the United States Census Bureau. It features a header with the logo and a hamburger menu. Below the header, there are tabs for 'Expenses', 'Week 1', and 'Week 2'. The main form area includes a date selection field set to 'Sunday, Oct 1', a 'Business:' field containing 'Target', and a 'Select type of expense:' dropdown menu. The dropdown menu is open, showing four options: 'Meals, Snacks, and Drinks Away from Home' (selected with a green 'x'), 'Food and Drinks for Home Consumption', 'Clothing, Shoes, Jewelry, and Accessories', and 'All Other Products, Services, and Expenses'. At the bottom of the form, there are 'Back' and 'Save' buttons.

Next steps

- Autocomplete: work on consistency of database
- Transaction diary: improve workflow and handle transactions that fall across categories, perhaps a hybrid design?
- Bundling: try something else such as a popup that activates when respondent type bundling words like “*groceries*” or “*food*”
- Receipt use: respondents need more guidance in the diary on how to use them
- Investigate potential enhancements like receipt scanning and apps

Contact Information

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EXTRA SLIDES



Description boxes



Food and Drinks for Home Consumption ×

Briefly describe the individual food or drink item purchased such as eggs, orange juice, or ground beef.



Clothing, Shoes, Jewelry, and Accessories ×

Briefly describe the item purchased such as a sweater, soccer cleats, or necklace.



All Other Products, Services, and Expenses ×

Briefly describe the item or expense such as paper towels, textbook, prescription medicine, cigarettes, or electric bill.

Total edit check

1:07 4G

mobile.respond.qa.census.gov

Transaction Week 1 Week 2

Are you entering this information from a receipt?

Select date of expense:
Tuesday, March 5

Business:
Giant

Products or Services Purchased:

🛒 Strawberries	\$2.29	🗑️ ✎️
🛒 Milk	\$3.99	🗑️ ✎️
🛒 Cheese	\$5.40	🗑️ ✎️

< Back ✓ Save

+ Add Item

1:07 4G

mobile.respond.qa.census.gov

Transaction Week 1 Week 2

Are you entering this information from a receipt?

Select date of expense:
Tuesday, March 5

Business:
Giant

Total Cost on Receipt:
\$ 38.81

Products or Services Purchased:

🛒 Strawberries	\$2.29	🗑️ ✎️
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< Back ✓ Save

+ Add Item

1:07 4G

mobile.respond.qa.census.gov

Transaction Week 1 Week 2

Are you entering this information from a receipt?

The total cost you entered and the sum of the cost of the items you entered do not match. You may have forgotten to enter an item or delivery fee.

< Back Save and Continue

Total Cost on Receipt:
\$ 38.81

Products or Services Purchased:

🛒 Strawberries	\$2.29	🗑️ ✎️
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< Back ✓ Save

+ Add Item



Transaction diary: transaction entry

United States Census Bureau
Consumer Expenditure Diary
Log out Contact Us Help

Transaction Week 1 Week 2

Select date of expense:
Saturday, Dec 3

Business:
Safeway

Check this box if you are entering this information from a receipt

Total Cost on Receipt:
\$ 14.50

Products or Services Purchased:
• Milk
• Bread

← Store name

← Receipt

Enter items →