

**Attachment U. Final Analysis Report and
Recommendations for Revisions to the FoodLogger
from the First Round of Usability Testing**

Report on FoodLogger usability evaluation (Round 1)

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Executive Summary

The Round-1 FoodLogger usability evaluation was conducted from May 6 to May 24, 2021. Six primary food shoppers from six households participated in the study, with two being 60+ old and the other four being recipients of food assistance programs. The evaluation design calls for an 8-day study including three major parts: FoodLogger use training, 7-day food acquisition reporting, and lab-based usability testing. FoodLogger of version-2 was the data collection instrument under evaluation. Three use cases (a combination of Food-at-home (FAH) event and a Food-away-from-home (FAFH) event, a FAFH event, and a school-meal event) and 18 critical tasks (a task such that failure to complete it would result in measurement errors) were tested. Qualitative and quantitative methods were applied for data analysis. Usability issues will be classified as high (H), medium (M), and low (L) priority. H issues are those that prevent a task from being completed; M issues prolong task completion; L issues do not impact effectiveness and efficiency of task completion but may affect user's satisfaction.

Participants attained adequate skills through training, carried out 7-day food acquisition reporting in a daily living setting, and completed use cases in the lab-based usability testing. In general, participants expressed positive experiences in using FoodLogger. Four usability issues with high priority, 4 with medium priority, and 5 with low priority were reported. Details were documented in the body of the report.

1. Evaluation Objective

The objective for the present usability evaluation of the FoodLogger native smart phone app (FoodLogger) is to assess how potential respondents enter food acquisition data into the FoodLogger in terms of effectiveness, efficiency, and satisfaction. The effectiveness of the FoodLogger will be measured by the success of data entry and the accuracy of entered data; efficiency will primarily be measured by the time taken to enter data; and satisfaction will be measured by respondent-reported satisfaction which includes a user's perception of difficulty, the extent to which their expectations are met, and a user's emotional response to data entry. It is hypothesized that effective data entry will prevent missing or erroneous data and minimize measurement errors, efficient data entry will reflect lower respondent burden, and satisfaction with the data entry experience will help sustain respondents' participation in the Second National Food Acquisition and Purchase Survey (FoodAPS-2).

2. Evaluation Methods

Participating households

Six households participated in the study. Participants were recruited via advertisement and word-of-mouth. The characteristics of the participating households are listed in Table 1. All participants were given a Disclaimer that states the purpose of the study, data to be collected, rights as a participant, and the statutory authority under which the study was conducted. A written consent to participating the study was obtained from each participant prior to the commence of the study.

Table 1. Participants Demographic Characteristics

	Household 1	Household 2	Household 3	Household 4	Household 5	Household 6
Household Size (person)	2	4	7	2	1	4
School Children < 11- year-old (person)	1	0	1	0	0	1
School Children 11-15- year-old (person)	0	0	0	1	0	2
WIC Recipient	No	No	Yes	No	No	No
SNAP or Other Government Food Assistance	Yes	No	Yes	Yes	Yes	Yes
Residence RUCA code	1	1	8	1	2	2
Primary Shopper Age (year)	47	64	29	42	66	33
Primary Shopper Gender	F	F	F	F	F	F

Primary Shopper Education	Associate's degree	Graduate degree	Some college, no degree	Some college, no degree	Some college, no degree	Some college, no degree
Race	Black or African American	White	American Indian or Alaska Native	Black or African American	White	White
Hispanic Ethnicity	No	No	No	No	No	No
Smartphone Use History (length)	≥ 2 years	≥ 2 years	≥ 2 years	≥ 2 years	≥ 2 years	≥ 2 years
Smartphone Use Frequency	Everyday	Everyday	Everyday	Everyday	Everyday	Everyday
Using Map on Smartphone	Yes	Yes	Yes	Yes	Yes	Yes
Three most frequent uses of smartphone	email, Texting, Call	Call, Messaging, GPS	Call, Texting, email	Call, email, Social media	Texting, Taking photos, Making telemedicine appointment	Call, Texting, email

Product evaluated

The product evaluated was FoodLogger version 2, developed by Westat. FoodLogger is a native mobile application that serves as a data collection instrument for FoodAPS-2.

Evaluation design

The evaluation design calls for an 8-day study including three major parts: FoodLogger use training, 7-day food acquisition reporting, and lab-based usability testing. Table 2 shows the timeline of the study. Due to COVID-19 pandemic, the study was conducted virtually via MS Teams, emails, and telephone calls. Specific methods for each of the three parts will be presented in its dedicated section below.

Table 2. Timeline of major testing activities

Component	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8
Being introduced to the study	x							
Receiving a Disclaimer	x							
Signing a Consent Form	x							

Completing a demographic questionnaire	x							
Installing FoodLogger	x							
Data entry training	x							
Field data entry	x	x	x	x	x	x	x	
Field data entry debriefing								x
Lab-based usability testing				x				
Signing incentive voucher								x

3. FoodLogger Training

Training design

The FoodLogger training consisted of three components in sequence: **Basic concepts** in FoodAPS-2 data entry, FoodLogger **installation**, and data entry **practices**. A training courseware in the form of MS PowerPoint was developed by the study team (*Appendix A*). Only primary shoppers received training. The training started with introducing the basic concepts. Then, under trainer's guidance, the trainee downloaded FoodLogger to his/her smartphone. Lastly, the trainee practiced entering specific food information (e.g., PLU code) into FoodLogger. One debriefing on FoodLogger installation and another on the rest of the training were conducted to assess training effectiveness.

For primary shoppers who have a 11-15-year-old school child, he/she was instructed to train the child on data entry by her/himself using the courseware.

Major findings and recommendations

Basic concepts:

1. Participants could understand most concepts covered in training.
2. Four out of six participants could not clearly distinguish the difference between **"Stop"** and **"Food event."** *Recommendation: Reconcile the two concepts into one. Alternatively, develop effective instructions to help respondents to understand the two concepts.*
3. Two out of six participants were not clear about **"Food acquisition."** *Recommendation: Emphasize the concept in training.*
4. Two out of six participants were less clear about **"Combo meal."** *Recommendation: Emphasize the concept in training.*
5. Average training time on the Basic Concepts part is 12.7±2.6 min.

FoodLogger installation:

1. Participants could successfully install FoodLogger on their smartphone under trainer's guidance.
2. The participants would have encountered difficulties without trainer's guidance, particularly with respect to configuration.

3. Recommendation: A step-by-step written instruction may facilitate installation.

Data entry practice:

1. Participants could generally carry out basic data entry tasks right after learning the basic concepts about FoodLogger. Those basic tasks include text entry, bar code scanning, PLU code entry, taking a picture of and uploading a paper receipt.

Training School children:

1. The primary shopper was asked to train their 11-15-year-old school children on data entry using FoodLogger. Though there is no direct assessment on training quality, observation of data entry performance by the children suggests that the training did not effectively prepare the children to successfully enter food data into FoodLogger. In addition, children had few opportunities to use FoodLogger during the study period.
2. Recommendation: All eligible household members are to be trained by qualified trainers, rather than a household member.

4. Lab-based Usability Testing

Testing design

USE CASES: Three use cases were tested in the lab-based usability testing: (1) A combination of Food-at-home (FAH) event and a Food-away-from-home (FAFH) event (*Appendix B*), (2) a FAFH event (*Appendix C*), and (3) a school-meal event (*Appendix D*). The three use cases are designed such that each critical task (described below) will be performed at least once during testing. All primary-shopper participants were tested on use cases 1 and 2. Primary shoppers with school children younger than 11 years old were also tested on use case 3 as a proxy for a school-age child under 11 years old. School-age participants of 11 years old or older were tested on use case 3.

CRITICAL TASKS: A critical task refers to a task such that failure to complete it would result in measurement errors (e.g., scanning a bar code). Eighteen critical tasks, as listed in Table 3, were identified for successful data entry using FoodLogger, and were tested in the lab-based usability testing.

Table 3. Critical tasks for data entry using FoodLogger

Task #	Task	Sub-task
1	Start a day	
2	Select a food stop from a list of stops identified by FoodLogger	
3	Add a food stop manually	
4	Select a food event	
5	Add a food event manually	
	(FAH food item:)	
6	Enter item name	barcode, PLU, text

7	Enter weight/volume/size	
8	Enter number of items	
9	Enter payment	pay by single item or multiple items; payment methods
	(FAFH combo food item:)	
10	Select "combo meal" button	
11	Enter meal name	
12	Enter payment	payment methods
13	Enter number of items	
14	Enter individual meal items	
	(FAFH individual food item:)	
15	Select "individual item" button	
16	Enter meal name	
17	Enter number of items	
18	Enter payment	payment methods

PERFORMANCE MEASURES: The following metrics were used to assess participants' data entry performance.

- Data entry accuracy – The extent to which the entered data are correct.
- Data entry time – Duration between the start and end of a use case.
- Navigation – The extent to which participant's actual navigation path deviates from the optimal path.

DATA COLLECTION: A protocol was followed to carry out the lab-based usability testing (Appendix E). Methods for data collection include:

- Passive observation
- Thinking aloud
- Retrospective Debriefing – Focused on critical design components, e.g., language comprehension. A debriefing guide was followed to cover critical actions of interest.

DATA ANALYSES: *Quantitative data* were analyzed with descriptive and/or inferential statistics accordingly. *Qualitative data* were summarized to identify common usability issues and their causes. Usability issues will be classified as high (H), medium (M), and low (L) priority. H issues are those that prevent a task from being completed; M issues prolong task completion; L issues do not impact effectiveness and efficiency of task completion but may affect user's satisfaction (e.g., imperfect text formatting).

Summary performance measures

All participants were able to complete assigned use cases. Table 4 shows quantitative measures for food information entry performance. Those quantitative measures are defined as follows:

- *Use-Case-1 completion time (min)*: The time between starting a food event and before submitting a receipt.
- *Use-Case-1 Average time for entering a single food item (min)*: (Use Case 1 completion time)/(Number of food items in Use Case 1).
- *Use-Case-1 paper receipt upload time (min)*: The time between selecting “Yes, I have a paper receipt” and completing uploading the image of the paper receipt.
- *Use-Case-1 Deli reported*: A dichotomous indicator on reporting the deli purchase, with Y indicating the purchase being reported, and N otherwise.
- *Use-Case-2 completion time (min)*: The time between starting a food event and before submitting a receipt.
- *Use-Case-3 completion time (min)*: The time between starting a food event and completing the event.
- *Optimal food name entry rate*: A ratio of the number of food items entered into FoodLogger using optimal name entry method over the number of total food items entered into FoodLogger (e.g., barcode scanning for a barcoded item is an optimal method while text entry not)
- *Optimal packaging selection rate*: A ratio of the number of food items entered into FoodLogger with optimal packaging selection over the number of total food items entered into FoodLogger (e.g., Caton category is optimal for milk)
- *Optimal weight/volume selection rate*: A ratio of the number of food items entered into FoodLogger with optimal weight/volume selection over the number of total food items entered into FoodLogger (e.g., Pound/ounce is optimal category for bulk coffee)

Table 4. Food information entry performance summary

	Household 1	Household 2	Household 3	Household 4	Household 5	Household 6
Use-Case-1 completion time (min)	40	45	18 (data entered directly from receipt)	31	data confounded with tech glitches	34
Use-Case-1 Average time for entering a single food item (min)	2.1	2.4	NA	1.6	NA	1.8
Use-Case-1 paper receipt upload time (min)	1	1	1	1	1	1
Use-Case-1 Deli reported	Y	N	N	N	Y	Y
Use-Case-2 completion time (min)	16	32 (with tech glitches)	7	11	2	17

Use-Case-3 completion time (min)	5	NA	5 (entered a wrong path in first try)	4 (by child)	NA	5 (by child)
Optimal food name entry rate	0.78	1.00	0.17	1.00	0.22	0.94
Optimal packaging selection rate	1.00	0.75	1.00	0.69	1.00	1.00
Optimal weight/volume selection rate	0.76	0.82	0.89	0.72	0.89	0.88

Usability issues with HIGH priority

Select/add a food event

Issues: For one “food event venue” (e.g., a grocery store), there can be only one event. Adding a second food event at the same venue would lead to adding food items into the first event. For example, after reporting a FAH event at a grocery store, one cannot add another FAFH event at the same grocery store. This behavior (1) confused the participant and (2) created difficulties for data entry, e.g., FAH and FAFH could not be appropriately handled at the same time. The current algorithm contradicts the concepts of Stop, which permits multiple food events at the same Stop by definition.

Recommendations: Make all options for FAH and FAFH available for all “food events.” Review the design from stop selection to FAH/FAFH selection.

Enter food item name – Barcode/PLU

Issues: (1) Not all barcodes/PLU had corresponding food item names available in the database. If scanning a barcode returns with no food name, the workflow breaks. The participant was not presented with a graceful and intuitive screen to proceed to the next step. This broken workflow could very likely lead to data entry errors. (2) Error messages were not visually salient enough to grab participant’s attention.

Recommendations: (1) Add a screen with a text field and a clear instruction asking the respondent to type in the food name. (2) Make error message text more visually salient.

Make packaging selection

Issues: It was not unusual for the participant to select a category which is not intended by the designer, resulting in a cascade of undesirable behaviors: wrong measurement and measurement unit. Its root causes appear to be (1) the categories are not exhaustive nor mutually exclusive, and (2) categorization is more or less subjective judgement.

Recommendations: Since this is not essential information of interest and is error-prone, it may be better to be eliminated. Alternatively, make all possible measurement units available for all packaging categories.

Enter weight/volume/piece

Issues: It was frequently observed that the participant was unable to select an appropriate measurement unit. The reasons appear to be one or a combination of the following: (1) the participant didn’t have credible information, and (2) the appropriate unit was not on the list of choices. The

omission of appropriate units could be because (1) the list was not exhaustive or (2) the participant was on a wrong path. Some participants did not know how to report this info for multi-item package.

Recommendations: Make the list more comprehensive and add a free text field to allow the participant to make an ad-hoc addition of measurement unit. Place unit choice list above the quantity text field, enabling the participant to decide whether an appropriate measurement unit exists. Review multi-item entry design.

Usability issues with MEDIUM priority

Select/add a food stop

Issues: (1) One participant experienced difficulty adding a missing stop between detected stops. (2) Food acquisition type was contingent on stop type, which may cause certain food acquisition types to be missing, e.g., selecting a restaurant eliminates the food acquisition type of “online order for home delivery.”

Recommendations: (1) Eliminate the links of adding a missing stop between detected stops. However, add ONE (and only one) link of adding a missing stop at the end of the detected stop list in a prominent font to attract participants’ attention and facilitate tapping the link. (2) Add a free-text field for adding a food delivery type.

Select/add a food event

Issues: Approximately 50% of participants had difficulty comprehending the conceptual difference between “stop” and “food event.”

Recommendations: Replace “stop” and “food event” with one term/concept. Alternatively, develop effective instructions to help respondents to understand the two concepts.

Enter food item name - Barcode

Issues: Participants did not always seem to notice the display of a food item name when the scanning picked up the item and would continue to scan it multiple times before they finally noticed its having been already picked up.

Recommendations: Make the text of food item name more visually salient.

Upload an electronic receipt

Issues: At least 4 out of 6 participants encountered some degree of difficulties with downloading or/and uploading an electronic receipt.

Recommendations: Forgo this task, ask respondents to email the receipts to the survey team.

Usability issues with LOW priority

Enter food item name – Barcode/PLU

Issues: (1) Sometimes, “packaging selection” and “weight/volume/piece” were skipped by FoodLogger after barcode was scanned or PLU was entered, presumably by design to reduce respondents’ burden if the information is already in the database. (2) Typos in the database.

Recommendations: (1) Need further investigation. Was this intentionally designed? If so, it would be helpful to display the information on the screen to assure the respondents that the information is there, and to provide a consistent user experience to the respondents. (2) Correct typos.

Enter number of items

Issues: One participant complained that the plus and minus buttons were too light to see them.

Recommendations: Make the text display more salient.

Enter combo meal

Issues: A few participants entered the name of an item as the combo meal name. This resulted in at least one participant adding sandwich toppings because the app asked her “what was in ‘chicken sandwich’”. That is, instead of adding combo meal items, she thought she had to enter toppings. A few Ps were also unsure if they should enter condiments like BBQ sauce and ketchup.

Recommendations: Make instructions clearer in training. In particular, what is a combo meal? How to name a combo meal? Should condiments be included?

Enter a long list of items

Issues: Some participants expressed the concern over entering a long list of food items (40 or more). It would be time consuming and cause drop-offs, particularly for busy parents.

Recommendations: Two participants suggested that the app pre-populate food names by uploading a receipt before entering food item names.

Response choice design

Issues: Some response choices are not consistent with convention, e.g., “-” instead of circle or square on the screen of packaging choices.

Recommendations: Use conventional response choices design.

5. 7-Day Food Acquisition Reporting

Study design

This component was executed in the participant’s daily living setting on his/her own, without TA’s observation. The participant was instructed (*Appendix E*) to enter information for all their acquired foods into FoodLogger every day, and to log all the problems and difficulties encountered during data entry. A standard log form was provided to the participant. The TA was available to provide assistance over phone if needed, though none of the participants contacted the TA. Upon completion of the 7-Day reporting, a semi-structured debriefing session was carried out to collect participants’ experiences in food acquisition reporting using FoodLogger in a daily living setting.

Summary of findings from debriefing

Table 5 summarizes responses from the participants on debriefing questions. See *Appendix F* for debriefing questions.

Table 5. Participants’ feedback on 7-day food acquisition experiences

	Extremely easy	Easy	Neutral	Difficult	Extremely difficult	NA
Confirming a Stop (person)	6					
Manually adding a Stop (person)	2	3	1			
Adding a Food Event (person)	5		1			
Scanning a barcode (person)	4	2		1		
Entering a PLU (person)	5	1				
Entering a food item name (person)	5	1				
Entering size/weight/volume (person)	1	2	3			
Reporting school meal (person)	3					3
Entering cost for a food item (person)	5	1				
Entering cost for entire food event (person)	6					
Choosing method of payment (person)	6					
	Yes	No				
Use of "Type-ahead" (person)	5	1				
	Not at all	Somewhat	Moderately	Very	Extremely	
Bothered by notifications? (person)	3	2	1			
	Household 1	Household 2	Household 3	Household 4	Household 5	Household 6
Three Greatest challenges	Trivial notification s (e.g., stop lights), measurement unit conversion, remembering not to report non-food items	Combo meal, finding a receipt,	Time consuming, FoodLogger slow in response	None	Getting used to it, not knowing how to correct a mistake initially	Keeping up with logging information, keeping clicking no to get the stops off the log
	Free	\$5 / 15 min	\$5	\$7	\$10	\$20
Adequate amount of incentive (person)	1	1	1	1	1	1

	Completely not	Somewhat not	Neither yes or no	Somewhat yes	Completely yes	
Comfortable with sharing GPS locations during study period (person)		2			4	
Food acquisition in the past 30 days:	Household 1	Household 2	Household 3	Household 4	Household 5	Household 6
Grocery store, in-person	x	x	x	x	x	x
Grocery store, order online				x		
Big Box Store, in-person	x	x	x	x		x
Big Box Store, order online						
Restaurant, eat in		x				x
Restaurant, order online	x	x	x	x		
Friend or family member's house			x		x	x
Food from charity	x		x			
Other					x	

6. Round-2 Usability Evaluation Planning

Based on findings from the Round-1 study, we plan to adopt Round-1 study design for the Round-2 usability evaluation, with the following modification:

1. **The lab-based usability session will be conducted on the second day of the study period**, i.e., the next day following the training session. This modification is based on the rationale that, (1) Round-1 results show that participants generally attain the skills of using FoodLogger after the training session, (2) conducting the lab-based usability session earlier in the 7-day period can better assess participants' data entry performance, and (3) conducting the lab-based usability session on a different day from the training avoids fatigue due to prolonged study time.
2. Two households with the primary shopper of 60 years old or older and **four households with a school child of 11-15 years old having his/her own smartphone will be recruited**. In the Round-1 study, performance of using FoodLogger by school children of 11-15 years old is not satisfactory. Assessment of this age group needs to be enhanced.
3. **Participating school children of 11-15 years old will be required to attend the same training as the primary shopper in person**. This modification is designed to investigate if a full-scale training would improve performance. In Round-1, we were unable to monitor and assess the quality of training conducted by the primary shopper.

7. Limitations

Participant's performance of using FoodLogger is associated with training they received. The training was developed and conducted by the study team as requested and may be different from the training potential respondents will receive in the FoodAPS-2 field test or formal survey. Thus, findings presented in this report may not be generalizable to a population receiving different training and need to be interpreted with caution.

Appendix A: Training Courseware

FoodLogger Training

FoodAPS-2 Study Team of U.S. Census Bureau and NASS



This presentation is released to inform interested parties of research and to encourage discussion.
The views expressed are those of the authors and not necessarily those of the U.S. Census Bureau.

1

1

Basic concepts

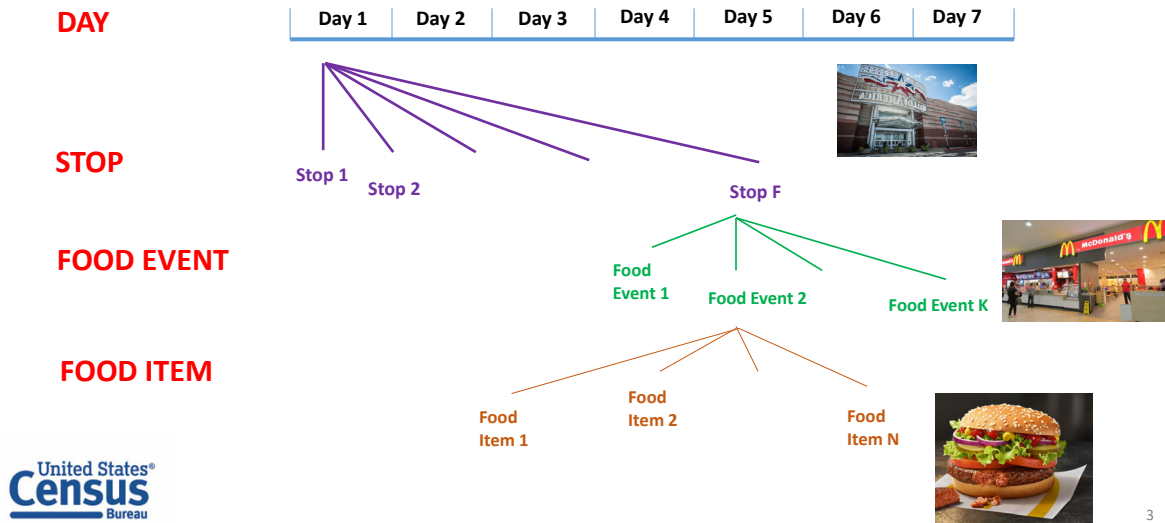
1. What is **FoodLogger**?
 - A mobile app running on a smartphone
 - A survey instrument – You will use it to report all the foods you will acquire over the next 7 days
2. What are **foods**?
 - Anything that you can eat or drink
3. The concept of **food acquisition**
 - Any food items that you get **from outside of your home**
 - Foods can be **purchased or free**
 - You **may or may not eat** those acquired foods while you are participating the study
 - In the next seven days, If you eat **a food item** (e.g., a bagel) **that was acquired before today**, this item **cannot be counted in food acquisition**.



2

2

Basic concepts (con't)



3

Basic concepts (con't)

A **food item** has:

- Name (e.g., Apple)
- Weight/Volume/Size (e.g., 5 lb, 20 fl oz, 1 serving)
- Cost (free item has the cost of \$0)

Multiple same **food items** also have:

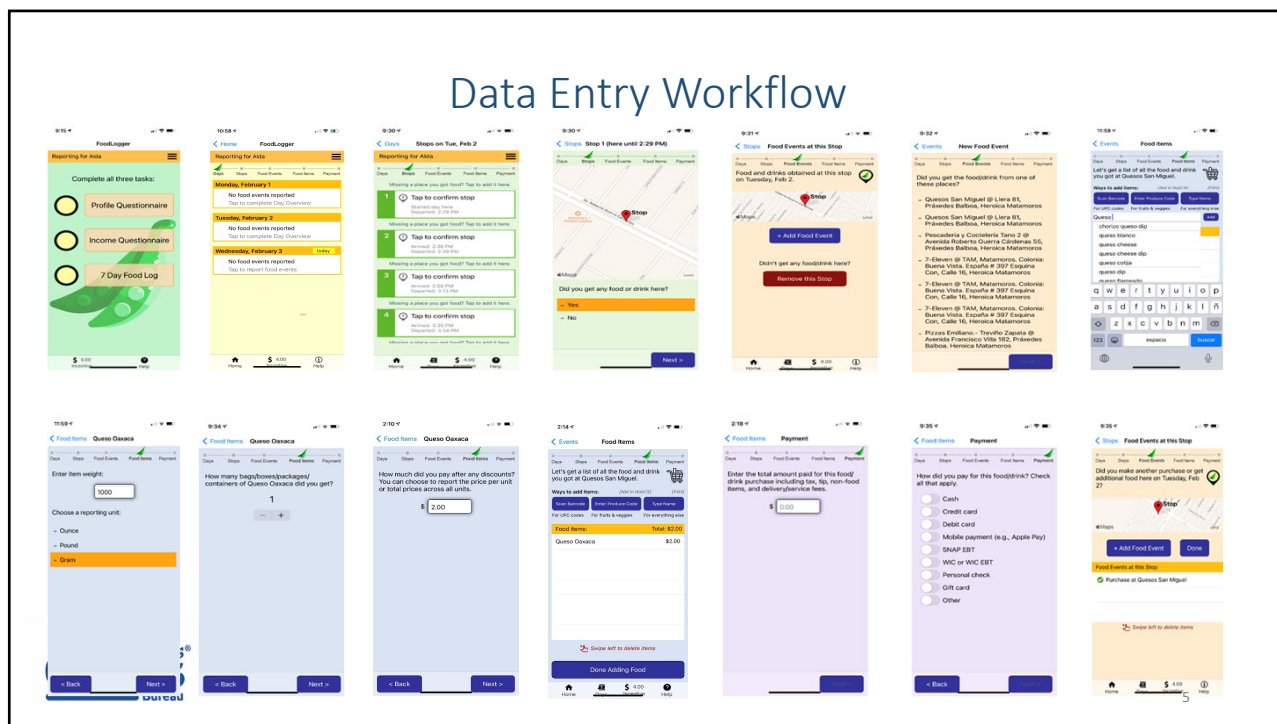
- Count/quantity (e.g., 5 bottles of water)

A **food event** has:

- Payment (free event has a payment of \$0)

4

Data Entry Workflow



5

Installing FoodLogger: iPhone Users

1. Go to the App Store on your phone
2. Search FoodLogger
3. Download the free app
4. Open the FoodLogger app
5. Enter your household's unique PIN to login
6. Review terms and conditions
7. Select your name from the dropdown menu and tap "Continue"
8. When asked, give FoodLogger permission to use your location
9. If asked, allow the FoodLogger to send you notifications

6

Download FoodLogger: iPhone Users (con't)



7

7

Installing FoodLogger: Android Users

1. Go to the Google Play store on your phone
2. Search FoodLogger
3. Download the free app
4. Open the FoodLogger app
5. Enter your household's unique PIN to login
6. Review terms and conditions
7. Select your name from the dropdown menu and tap "Continue"
8. When prompted, give FoodLogger permission to access your device's location
9. If asked, allow the FoodLogger to send you notifications



8

8

The screenshot shows the 'App permissions' interface for the 'FoodLogger' application. A red rectangle highlights the 'Your location' permission, which is currently enabled (indicated by a green toggle switch). Other permissions shown include Camera, Phone, and Storage, all of which are currently disabled (indicated by grey toggle switches).



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Practice (I)

1. Start a day
2. Add a food stop manually
3. Add a food event manually
4. Enter item name
 - Barcode
 - PLU
 - Text
5. Enter weight/volume
6. Enter number of items
7. Enter payment
 - Single item
 - Multiple items
 - Payment modes



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Practice (II)



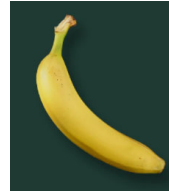
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12

12

Practice (III)

1. Breakfast at Starbucks
 - One Blueberry Scone (\$2.40)
 - One Banana (\$0.90)
 - One Caffé Latte (tall, \$3.50)
2. School lunch (combo, free)
 - Chicken Caesar Wrap
 - Celery Sticks
 - One Fresh Orange
 - 1% White Milk (Half Pint)



Exercise

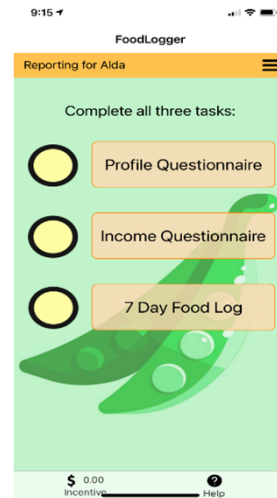
Pick 5 items from your pantry, and enter the food information into the FoodLogger

Profile and Income Information

Complete these two questionnaires by yourself.

Use **FAKE data** to complete these two questionnaires.

Do not enter your actual personal information!



15

15

Assignment

Teach your child participant how to use FoodLogger to enter the foods he/she acquires, for example, school meals.



16

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Appendix B: Use Case 1

Note: Actual food items may vary slightly among participating households depending on store inventory at the time of food purchase. However, the same critical tasks were covered across households.

Use Case 1: Food-at-Home Event plus Food-Away-from-Home Event

Purpose: To test FAH + FAFH

Critical tasks tested:

- Start a day
- Select a food stop from a list of stops identified by the online map
- Select a food event
- Enter food item name:
 - Text
 - Barcode
 - PLU
- Enter weight/volume/etc
- Enter number of items (quantity)
- Enter payment information
 - Pay by single mode
 - Pay by multiple modes

Event Set-up:

- Food came from supermarket (see delivery slip for more information)

Scenario:

Today you went to a supermarket during lunch break to buy groceries for the next few days. You paid for your groceries with your EBT card (or food stamps) and debit card. You have the receipt for the groceries. While you were at the supermarket, you also bought a prepared lunch from the deli that you ate there. You paid for your lunch with cash, but you were in a hurry and forgot to take your receipt from the deli. You remember that you paid about \$6.50 for lunch. Now you have the groceries in front of you. Please enter the information about this stop into the FoodLogger.

Groceries:

- Pre-packaged food (with barcode)
 - Pasta
 - Crackers
 - Blueberries
 - Couscous
- Produce (with PLU)
 - 2 apples
 - 3 limes
 - 1 pepper
 - 1 carrot (no PLU)
- Food from the bakery
 - 1 cookie
 - 1 loaf of bread (made in-store, store brand)
- Bulk food
 - Coffee beans
 - Granola

Appendix C: Use Case 2

Use Case 2: Food-Away-from-Home Event

Critical tasks tested:

- Start a day
- Select a food stop from a list of stops identified by the online map
- Add a food event manually
- FAFH Combo meal:
 - Select "combo meal" button
 - Take a picture
 - Enter meal name
 - Enter meal price
 - Enter number of items (quantity)
 - Enter individual meal items
 - Enter total event cost or price
 - Select payment type
 - Take a picture of a receipt and upload it.
- FAFH Individual food item:
 - Select "individual item" button
 - Enter meal item name
 - Enter number of items (quantity)
 - Enter item price
 - Enter event cost or price
 - Select payment type
 - Upload receipt

Event Set-up

- The food came from McDonald's. See delivery receipts for more information.

Scenario:

This evening you ordered food from McDonald's for your family's evening meal using the restaurant's website. You placed the order at home, and had the food delivered to your home to eat with your family. You paid with your credit card and have an electronic receipt in your email. Please enter the information regarding this meal into the FoodLogger app.

- Food from McDonald's:
 - A Big Mac
 - A milk jug
 - A chicken sandwich combo meal with fries and drink
 - Large fries
 - Medium drink
 - 4 Ketchup packs
 - 10-piece Chicken nuggets with 3 barbeque sauce packs
 - A Happy Meal (hamburger, apples, fries, milk)
 - Baked Apple Pies (3)



Appendix D: Use Case 3

Use Case 3: School Meal

Scenario 1: Not Free – Proxy Report

Critical tasks tested:

- Start a day
- Add a food stop to FoodLogger in the text field
- Add a food event manually
- Combo meal:
 - Select "combo meal" button
 - Enter meal name
 - Enter meal price
 - Enter individual meal items
 - “Other” option (those that do not conform to pre-defined list of combo items)
 - Enter payment type

Event Set-up

- Your child got this food at their school

While your child was at school today, [he/she] was served lunch. School lunches cost \$3.50 and he/she paid for the meal with her pre-loaded lunch card. [He/She] told you that [he/she] had a carton of milk, mashed potatoes, gravy, one slice of beef the size of his/her hand, and a side of corn. Please enter this event and food into the FoodLogger app.

Scenario 2: Free – Proxy Report

Critical tasks tested:

- Start a day
- Add a food stop to FoodLogger in the text field
- Add a food event manually
- Combo meal:
 - Select "combo meal" button
 - Enter meal name
 - Enter meal price
 - Enter number of items (quantity)
 - Enter individual meal items
 - “Other” option (those that do not conform to pre-defined list of combo items)

Event Set-up

- Your child got this food at their school

While your child was at school today, [he/she] had lunch there and didn't pay for it. [He/She] told you that, in the lunch box, there were a carton of milk, mashed potatoes, gravy, one slice of beef the size of his/her hand palm, and a side of corn. Please enter this event and foods into the FoodLogger.

Scenario 3: Not Free – Self Report

Critical tasks tested:

- Start a day
- Add a food stop to FoodLogger in the text field OR add stop from GPS
- Add a food event manually
- Combo meal:
 - Select "combo meal" button
 - Enter meal name
 - Enter meal price
 - Enter number of items (quantity)
 - Enter individual meal items
 - “Other” option (those that do not conform to pre-defined list of combo items)
 - Enter payment type

Event Set-up

- You got this meal at your school

While you were at school today, you were served lunch. School lunches cost \$3.50 and you paid for the meal with you pre-loaded lunch card. The lunch you received had a carton of milk, mashed potatoes, gravy, one slice of beef the size of his/her hand, and a side of corn. Please enter this event and food into the FoodLogger app.

Scenario 4: Free – Self Report

Critical tasks tested:

- Start a day
- Add a food stop to FoodLogger in the text field OR add stop from GPS
- Add a food event manually
- Combo meal:
 - Select "combo meal" button
 - Enter meal name
 - Enter payment type
 - Enter number of items (quantity)
 - Enter individual meal items
 - “Other” option

Event Set-up

- You got this meal at your school

While you were at school today, you had lunch there and didn't pay for it. The lunch box you got had a carton of milk, mashed potatoes, gravy, one slice of beef the size of your hand palm, and a side of corn. Please enter this event and food into the FoodLogger.

Appendix E: Instructions for Field Data Entry

Instructions for Field Data Entry

In order for us to properly evaluate FoodLogger, we ask you to use FoodLogger every day for 7 days, starting from today, to report your household's food acquisition. It is very important that you use FoodLogger to log all of the foods you either purchased or received for free during this 7-day period. You should report your food by the end of each day. Don't skip days or wait until the last day.

The foods that you should report include all the food items you will have either purchased or got for free, regardless whether the foods are eaten or not during the 7-day period. Do not report any food that you acquired before today. For example, if this morning you ate a bagel you bought last week, you should NOT report that food. However, if you went to a friend's house and had a breakfast there, you SHOULD report that food.

If you have any problems or run into difficulties while reporting your food in FoodLogger, please log those problems in the form we provided.

<Show the Log to the participant>

Include the date, time, and short description of the issue. This information will be very helpful for us. If you need help with using FoodLogger, call this number, *<TA's office number>*, between 7:00 am and 10:00 pm Eastern Time for assistance.

Appendix F: Debriefing Questionnaire on 7-Day Field Data Entry

Debriefing guide for field data entry

Please rate your opinion on how easy/difficult it was to enter the following information into the FoodLogger:

Stops:

Confirm a food stop

1: Extremely easy 2 3 4 5: Extremely difficult

Add a stop that was not automatically captured

1: Extremely easy 2 3 4 5: Extremely difficult

Events:

Add a food event

1: Extremely easy 2 3 4 5: Extremely difficult

Food items:

Scan a barcode

1: Extremely easy 2 3 4 5: Extremely difficult

Enter a PLU

1: Extremely easy 2 3 4 5: Extremely difficult

Enter a food item name

1: Extremely easy 2 3 4 5: Extremely difficult

When you typed text, did you notice the “type-ahead” feature? Did you use it? What is your opinion?

Sometimes the app asks you to enter information on the size/weight/volume of your food items. How easy or difficult was it to...

Enter the size/weight/volume for food items

1: Extremely easy 2 3 4 5: Extremely difficult

Enter information for school meals

1: Extremely easy 2 3 4 5: Extremely difficult

Payment: For each food event, the app asks you for the price of the entire purchase, and sometimes it asks for the price of each food item. How easy or difficult was it to....

Enter the price for individual food items (item level)

1: Extremely easy 2 3 4 5: Extremely difficult

Enter the cost of the entire purchase (event level)

1: Extremely easy 2 3 4 5: Extremely difficult

Choose the method of payment

1: Extremely easy 2 3 4 5: Extremely difficult

[Whenever the user does not select “Extremely easy” ask: **Can you please elaborate on why you selected _(rate) for _(activity) (For example, why you selected 5 for entering information for school meals)**]

Did you encounter any problems with reporting a combo meal? If so, what problems?

Up to this point, what has been your overall experience with the FoodLogger?

How do you feel about the length of time it takes you to enter food information?

How do you feel about the amount of effort that is required to report the food acquisition so far?

[If needed] What do you believe could improve this process?

FoodLogger sends notifications to you periodically. Are you bothered by the notifications?

1. Not at all
2. Somewhat
3. Moderately
4. Very
5. Extremely

What are the three greatest challenges you have encountered using FoodLogger in the past seven days?

Compared to the first three days, do you feel more or less comfortable with using FoodLogger in the last three days?

Do you have any other comments or thoughts about your experiences with the FoodLogger over the past seven days?

I have a few more questions:

You are paid \$5 a day for reporting food acquisition information, for seven days. Do you think that's an adequate amount for your effort? [If not: How much money would you think appropriate?]

How comfortable were you in sharing your GPS location during this study?

1. Completely uncomfortable
2. Somewhat uncomfortable

3. Neither uncomfortable or comfortable
4. Somewhat comfortable
5. Completely comfortable

Here is a list of places people can get food, please say Yes to those places where you acquired food for yourself or family members in the past 30 days, to the best of your memory.

1. Grocery store – in-person shopping
2. Grocery store – order online for pickup or delivery
3. Big Box Store or Warehouse Club Stores (e.g., Walmart, Target, Costco) – in-person shopping
4. Big Box Store or Warehouse Club Stores (e.g., Walmart, Target, Costco) – order online for pickup or delivery
5. Restaurant – eat in
6. Restaurant – order online or by phone for carry out or delivery
7. Friend or family member's house
8. Food from a church, a food pantry, a food bank, or eat-in soup kitchen
9. Other

<Questions for the 11-15-year child>

Now, I have a few questions for your child. Can you ask him/her come?

Hello, **<child's name>**! How are you doing? I have a few questions to ask you about using FoodLogger:

1. How do you like using FoodLogger?
2. On a 5-point scale, 1 being most difficult and 5 being easiest, how do you rate your experience using FoodLogger?
3. What is the most difficult thing you encountered when using FoodLogger?
4. Is there anything else about FoodLogger do you want to tell us?