Attachment X. Final Analysis Report and Recommendations for Revisions to the FoodLogger from the Second Round of Usability Testing

Report on FoodLogger usability evaluation (Round 2)

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FoodAPS-2 project team of Census Bureau and NASS

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Executive Summary

The Round-2 FoodLogger usability evaluation was conducted from June 22 to July 30, 2021. Five primary food shoppers from five households participated in the study, with two being 60+ old and the other three 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 3 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 (except for one participant due to technical issues), and completed use cases in the lab-based usability testing. In general, participants reported that it was easy to report food acquisition information using FoodLogger. Six usability issues with high priority, 3 with medium priority, and 3 with low priority were identified. In particular, these three functions need further improvement to reduce potential measurement errors in survey data: barcode scanning, PLU entry, and weight/volume/piece data entry. 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 consequently 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

Seven households were recruited via advertisement and word-of-mouth. Five households participated in the study, while the other two households dropped off the study. 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. Written consent to participating the study was obtained from each participant prior to the commence of the study.

Table 1. Participants Demographic Characteristics

	Household 8	**Household 9**	**Household 10**	**Household 12**	**Household 13**
Household Size (person)	2	4	7	2	1
School Children Participation (11-15-year-old)	No	Yes	Yes	Yes	No
WIC Recipient	No	Yes	Yes	No	No
SNAP or Other Government Food Assistance	No	Yes	Yes	Yes	No
Residence RUCA code*	1	1	1	1	10
Primary Shopper Age (year)	68	34	40	31	64
Primary Shopper Gender	M	F	F	F	M
Primary Shopper Education	Some college, no degree	Some college, no degree	Graduate degree	Some college, no degree	Some college, no degree
Race	Asian	White	White	Black or African American	American Indian or Alaska Native

Hispanic Ethnicity	No	No	Yes	No	No
Smartphone Use Length (year)	≥2	≥2	≥2	≥2	<1
Smartphone Use Frequency	Everyday	Everyday	Everyday	Everyday	Everyday
Using Map on Smartphone	Yes	Yes	Yes	Yes	Yes
Three most frequent uses of smartphone	Phone calls, google, email	text, email, social media	messaging, calls, research online	email, web browsing, phone calls	phone, direction, google, facebook

* Rural-Urban Communicating Area Codes (https://www.ers.usda.gov/data-products/rural-urban-commuting-area-codes/)

Product evaluated

The product evaluated was FoodLogger version 3, 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 (*Appendix A*) was originally developed, and revised for Round 2 testing, by the study team. The revision incorporated additional materials on basic concepts and screen shots provided by Westat. All participants, including primary shoppers and participating school children (11-15 years old), received training. The child participated in the training alongside the parent. 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 data entry training were conducted to assess training effectiveness.

Major findings and recommendations

Debriefing was not conducted on H13 due to technical issues.

Basic concepts:

1. Participants could understand most concepts covered in training.
2. **Three out of four** participants understood the concept of **"Food acquisition."** This is an improvement from Round 1.
3. **Two out of four** participants could NOT clearly distinguish **"Stop"** from **"Food event."** *Recommendation: Instruct respondents to understand and differentiate the two concepts, for example, use some examples.*
4. **Three out of four** participants could adequately distinguish **"Combo meal"** from "single meal item."
5. Average training time on the Basic Concepts part was 21.8±8.6 min. Total training time (including FoodLogger installation) was about 60 min for participants under the age of 60. It took 110 min for H8 (68 years old) to complete the training. Technical proficiency appears a major obstacle for slower learners.

FoodLogger installation:

1. Participants could successfully install FoodLogger on their smartphone under trainer's guidance.
2. **Two out of four participants commented that configuration was not straightforward and sometimes confusing. Participants sometimes got lost in configuring notification and GPS settings because certain smartphones did not behave as predicted.** We recommend that the trainer walk respondents through configuration phase and verify configuration after 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. 11-15-year-old school children attended training sessions, but were not required to install the app nor practice data entry. Some of them volunteered for app installation and data entry practice. They were able to learn the basics at least as good as their parents. We recommend that all eligible household members participate in trainer-conducted training.

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. School-age participants between 11 and 15 years old 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.

a) Data entry accuracy – The extent to which the entered data are correct.
b) Data entry time – Duration between the start and end of a use case.
c) 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:

a) Passive observation
b) Thinking aloud
c) 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 were 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 (sec):* The time between selecting "Yes, I have a paper receipt" and completing uploading the image of the paper receipt.
- *Number of Use-Case-1 food items not reported:* The number of food items that were not reported in Use Case 1.

- *Number of Use-Case-1 non-food items reported:* The number of food items that were not reported in Use Case 1.
- *Use-Case-1 deli lunch reported:* A dichotomous indicator on reporting the deli purchase, with Y indicating the purchase being reported, and N otherwise.
- *Optimal food name entry rate in Use Case 1:* 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 packing selection rate in Use Case 1:* 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., Carton category is optimal for milk)
- *Optimal weight/volume selection rate in Use Case 1:* 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)
- *Use-Case-2 completion time (min):* The time between starting a food event and before submitting a receipt.
- *Use-Case-2 electronic receipt upload time (sec):* The time between selecting an uploading method and completing uploading the receipt.
- *Use-Case-3 completion time (min):* The time between starting a food event and completing the event.

Table 4. Food information entry performance summary

	Household 8	**Household 9**	**Household 10**	**Household 12**	**Household 13**
Use-Case-1 completion time (not including paper receipt uploading and nor deli lunch purchase) (min)	62	33	30	20	33
Average time for entering a single food item in Use Case 1 (min)	3.6	1.9	1.7	1.2	2.8
Use-Case-1 paper receipt upload time (sec)	30	30	70	13	52
Number of Use-Case-1 food items not reported	1	1	0	1	Timed out
Number of Use-Case-1 non-food items reported	1	0	0	2	0
Use-Case-1 deli lunch reported	N	Y	N	N	Timed out
Optimal food name entry rate in Use Case 1	0.94	1.00	0.94	1.00	0.50
Optimal packing selection rate in Use Case 1	0.88	1.00	0.85	1.00	1.00
Optimal weight/volume selection rate in Use Case 1	0.71	1.00	0.81	0.94	0.91

Use-Case-2 completion time (not include e-receipt uploading) (min)	17	8	8	7	13
Use-Case-2 electronic receipt upload time (sec)	Unable to do it	123 (with TA assistance)	206 (with TA assistance)	112 (with TA assistance)	Unable to do it
Use-Case-3 completion time (min)	NA	5	5	3	NA

Usability issues with HIGH priority

Enter food item name – Barcode/PLU

Issues: (1) Two 60+ participants had difficulties in aiming the camera at a barcode for scanning. (2) Not all barcodes/PLU had corresponding food item names available in the database. While the warning message was visible, its language was not clear enough to lead participants to the next steps. (3) The food name display was not visually salient enough to be perceived by the participant.

Recommendations: (1) Enhance training of barcode scanning and PLU entry for respondents of 60+ old. (2) Improve the warning message to include (a) where to type food name, (b) tapping the Next button after entering the food name. (3) Consider adding a beep sound or using a pop-up window when the warning message is displayed. (4) Enlarge and bold food name text.

Enter food item name – Text

Issues: While the type-ahead feature provided some convenience for typing, participants were burdened with trying to find an exact match to the name of the food item to be reported. Participants became frustrated when a food name couldn't be matched.

Recommendations: (1) Improve the database to include generic food names only (e.g., pasta instead of a brand name of a pasta product. (2) Instruct the respondent to enter just generic food names.

Make packaging selection

Issues: Four out of five participants selected some categories which were not intended by the designer, resulting in a cascade of undesirable behaviors: wrong measurement and measurement unit. For example, selection of carton packaging for a pack of sea salt led the participant to volume measures instead of weight measures. Its root causes appear to be (1) the categories are not exhaustive nor mutually exclusive (for example, carton can be a carton of eggs or a carton of milk), and (2) categorization is more or less subjective judgement.

Recommendations: Design a solution in the component of weight/volume/piece to enable the respondent to select adequate measurement. Further discussions are warranted. Here are a few proposed solutions: (1) adding more categories and ensuring that they're mutually exclusive, (2) an open text option.

Enter weight/volume/piece

Issues: (1) inadequate measurement resulted from packaging selection. (2) No measurement could be found for FAFH items entered in FAH branch.

Recommendations: As one possible solution, in addition to default measurement for a particular packaging type, provide an "other" option that lists all other possible measures. Another proposal is to provide all unit options regardless of which packaging the respondent chose in case they choose the wrong one.

Combo meal

Issues: One participant finished reporting a combo meal before individual food items got entered. One possible reason could be that in the order for a regular food item data entry, food cost was the last piece of data to be entered but for a combo meal it occurs before adding the individual items.

Recommendations: Reconcile data entry order for both individual food item and combo meal: Ask the respondent to enter all individual food items in a combo meal, before entering the cost.

Uploading an electronic receipt

Issues: Only one out of five participants completed the task without major issues. Two participants were unable to carry out the task. The other two participants needed assistance. One participant complained about the multiple steps involved in the task. Problems included finding the receipt email, downloading the receipt, find the receipt in the phone, taking a screenshot of the receipt, uploading the receipt or receipt screenshot image, and switching back and forth between FoodLogger and other apps (e.g., email).

Recommendations: Provide detailed training on uploading an electronic receipt if the receipt is highly desired. The training should provide step-by-step instructions on searching for the receipt in email, downloading receipt to the phone, taking a screenshot of the receipt, uploading the receipt image or the receipt document.

Usability issues with MEDIUM priority

No display of weight/volume/piece information

Issues: Sometimes, FoodLogger skipped the steps of packaging and weight/volume/piece data entry after barcode scanning. It was unclear if the information was automatically captured from database by FoodLogger or a defect in FoodLogger.

Recommendations: If the weight/volume/piece information was indeed captured by FoodLogger, display the information and allow the respondent to make correction is the measurement is incorrect. If this is a programming defect, it needs to be fixed.

Combo meal – name vs. content

Issues: Participants, particularly school children, were unclear that in addition to a name of a combo meal, they need to report all the items in a combo meal, and then got confused.

Recommendations: Since combo meal name is not a piece of essential information, suggest that, instead of asking the participant to enter a name, FoodLogger automatically generate a combo meal name and ask the participant to enter individual food items only.

Food type selection for FAFH

Issues: Participants sometimes could not select an appropriate food type. For example, in the use case of school lunch, the participant could not find an appropriate category for “a slice of beef.”

Recommendations: Improve the selection list to cover all possible types of food.

Usability issues with LOW priority

Enter cost or payment

Issues: One participant suggested that FoodLogger automatically calculate the split of cost among different payment modes, to reduce burden. For example, if the participant selected payments of cash and EBT card, after entering total payment and cash amount, EBT amount is automatically populated.

Recommendations: For sponsor's consideration.

Uploading a long paper receipt

Issues: Few participants were cognizant of taking multiple segment images of a long paper receipt.

Recommendations: During training, emphasize the good practice of taking multiple segment images of a long paper receipt and provide a practice to the respondents.

Trivial stop detection

Issues: A few participants complained that too many trivial stops were detected, for example, a stop at a traffic light.

Recommendations: Adjust the threshold for no-move time to reduce the number trivial stops.

Non-usability issues

Underreporting in mixed-type food event

Issues: Three out of five participants forgot to report the lunch meal paid separately in Use Case 2. This observation suggests that respondents may have a tendency to forget smaller food acquisitions in a food event with more than one type of food (i.e., FAH vs FAFH). This could also indicate that reporting multiple food acquisitions at one time can be burdensome and error-prone.

Recommendations: Emphasize such scenarios in training.

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 the 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

Due to technical issues, H13 did not complete this task by the time of this report writing. Data reported below are from the other four participants. Tables 5-11 summarize responses from the participants on debriefing questions. See *Appendix F* for debriefing questions.

Table 5. Self-reported easiness of task performance (count: person)

	Extremely easy	Easy	Neutral	Difficult	Extremely difficult
Confirming a Stop	3	1			
Manually adding a Stop	3	1			
Adding a Food Event	3	1			
Scanning a barcode	1	1	2		
Entering a PLU	4				
Entering a food item name	1	2	1		
Entering size/weight/volume	2		1	1	
Reporting school meal			1		
Entering cost for a food item	2	1		1	
Entering cost for entire food event	3	1			
Choosing method of payment	4				

Table 6. Use of the "type-ahead" feature (count: person)

	Yes	No
Did you use the "type-ahead" feature?	3	1

Table 7. Reaction to notifications (count: person)

	Not at all	Somewhat	Moderately	Very	Extremely
Are you bothered by the notifications?	3	1			

Table 8. Three greatest challenges

	Challenge 1	Challenge 2	Challenge 3
Household 8	Remember doing it	Scanning	Being frustrated when it doesn't work
Household 9	Time	Remembering to do it	Big grocery trips
Household 10	Entering the weight and volume	Identifying location accurately or populate the location	Trouble with address on locations from other cities
Household 12	Remembering to log it		

Table 9. Desired incentive amount (count: person)

	Depends	$5	$7-$8
How much money would you think appropriate?	1	2	1

Table 10. Comfortableness in sharing GPS location (count: person)

	Completely not	Somewhat not	Neither yes nor no	Somewhat yes	Completely yes
How comfortable were you in sharing your GPS location during this study?		1			3

Table 11. Food acquisition in the past 30 days

	Household 8	Household 9	Household 10	Household 12
Grocery store, in-person	x	x	x	x
Grocery store, order online				
Big Box Store, in-person	x	x	x	x
Big Box Store, order online				
Restaurant, eat in	x	x		x
Restaurant, order online	x	x	x	x
Friend or family member's house	x	x	x	x
Food from charity			x	
Other			x	

Table 12 summarizes responses from the school-age participants (11-15 years old). In general, responses were positive. The school-age participants could all enter data successfully.

Table 12. Responses from school-age participants

	Household 9	Household 10	Household 12
Training attendance	Yes	Yes	Yes
Data entry completion in Use Case 2	Yes	Yes	Yes
How do you like using FoodLogger?	Using FoodLogger was fine. Difficult to remember. Took time to enter data.	Very easy.	I like it. It was good.
On a 5-point scale, 1 being most difficult and 5 being easiest, how do you rate your experience using FoodLogger?	1	4, because we went to a carnival in a parking lot, we didn't know which address to choose.	4, wasn't hard.
Challenge in using FoodLogger	Difficult to remember.	Location was really hard.	Having to switch between accounts.
Other comments	GPS did not track movement properly.	NA	NA

6. Summary

The findings from the Round-2 FoodLogger Usability Testing indicate that the following four areas need **modification to improve respondents' performance** of these tasks: (1) **barcode scanning**, (2) **PLU entry**, (3) **weight/volume/piece data entry**, (4) **electronic receipt uploading**. Compromised performance on weight/volume/piece data entry could increase measurement errors, while compromised performance on barcode scanning and PLU entry or electronic receipt uploading could cause respondents' frustration, missing data, and drop-offs. After the aforementioned four issues are addressed, another round of lab-based usability testing focused only on these four tasks is recommended to assess improvement in performance.

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 that 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. Due to small sample size, it is possible that some usability issues were not discovered in this round of testing or that some of the observed usability issues may be associated with certain types of potential respondents.

FoodLogger Training

(Round 2)

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

June 25, 2021

United States Census Bureau

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.
   - You will use it to report food and drink you get (for purchase or free) over 7 days.
   - The app uses GPS to track your smartphone's movement, captures stops, and allows the user to create food events and add food items for each event.
   - You will perform 3 main tasks with the FoodLogger: complete the Income Questionnaire, Profile Questionnaire, and the 7-day Food Log.
2. What are foods?
   - Anything that you can eat or drink.
3. What to be reported in 7 days?
   - Any food or drink you get (for purchase or free) ONLY during your 7-day study week. You may or may not eat those food and drink.
   - Do NOT report food in your home that you got (for purchase or free) before you began participating in this study.

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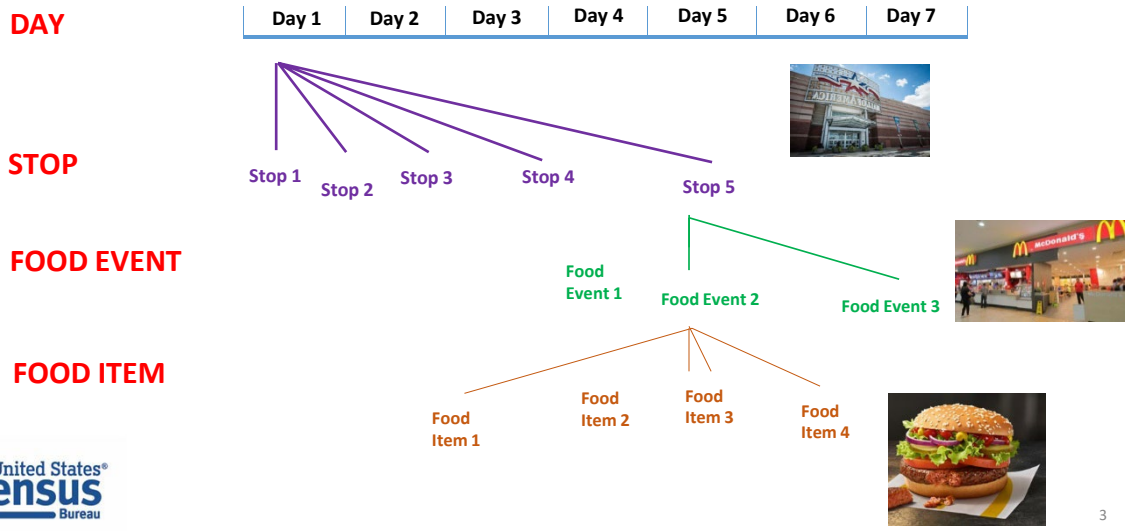
2

Basic concepts (con't)



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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)

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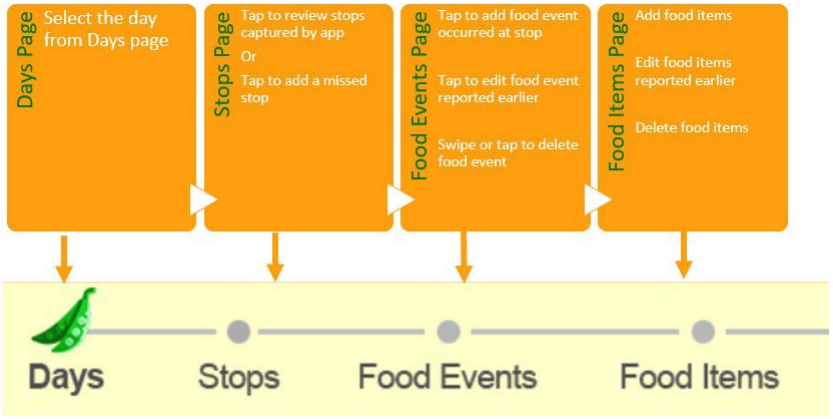
4

How do you report food/drinks you got?



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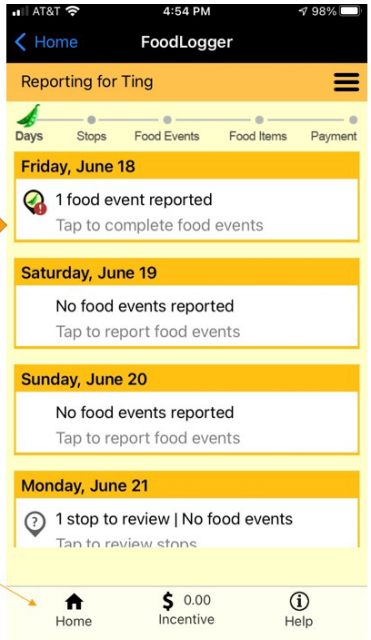
Days Page
Select the day from Days page

Days Page

Actions:

- Tap to select a day to enter/edit foods obtained on that day
  - Future days can **not** be selected
- "**< Home**" button in top left corner takes to home page
- Home button on the bottom also takes one to home page



6

Stops Page

Tap to review stops captured by app

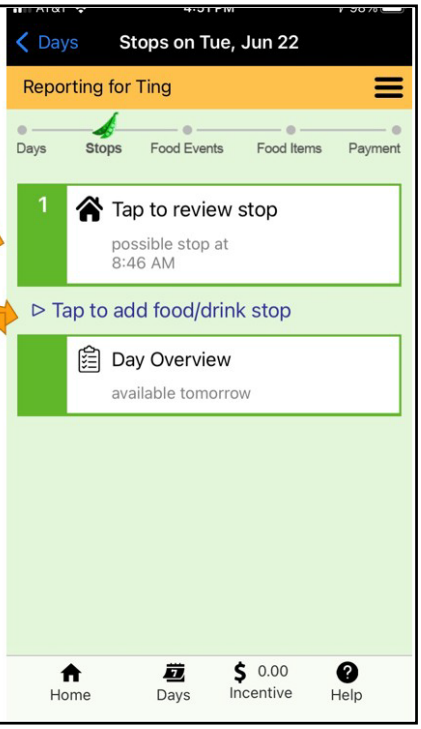
Or

Tap to add a missed stop

Stops Page

Actions:

- Tap stops captured by the app to review if you got food at that location
- Tap to add a missed stop where you got food
- Add stops to your home if you ordered for delivery or someone brought food to you
- Tap **Day Overview** at the end of each day
- "**< Days**" button in top left corner takes you back to Days Page



7

Food Events Page

Tap to add food event occurred at stop

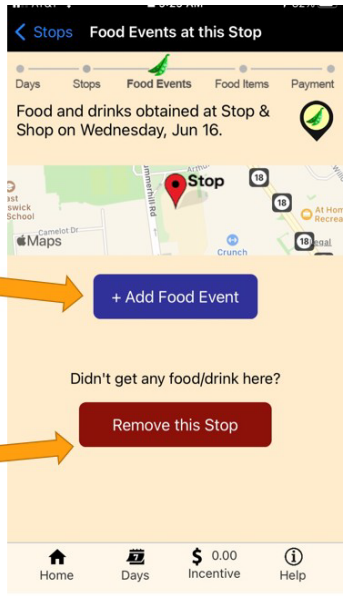
Tap to edit food event reported earlier

Swipe or tap to delete food event

Food Events Page: When *no* food events are reported at this stop

Actions:

- "**+Add Food Event**" to add a new food event
- "**Remove this Stop**" if you didn't get any food at this stop and need to remove it from your stops page.



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Food Events Page

Tap to add food event occurred at stop

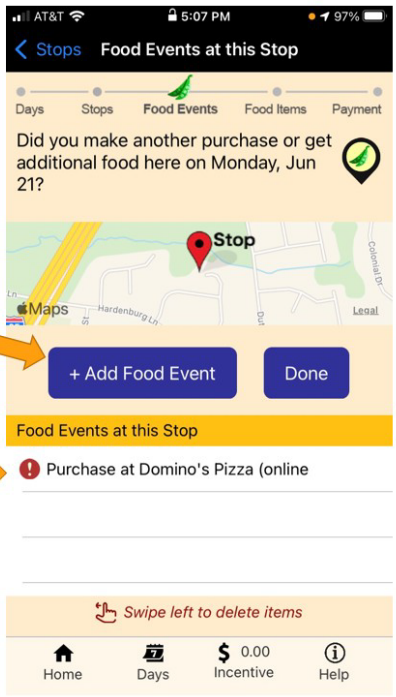
Tap to edit food event reported earlier

Swipe or tap to delete food event

Food Events Page: When *at least one* food event is reported at this stop

Actions:

- Tap "**+Add Food Event**" to add a new food event
- Tap a food event listed below the map to edit the food event or delete the food event



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Food Items Page

Add food items

Edit food items reported earlier

Delete food items

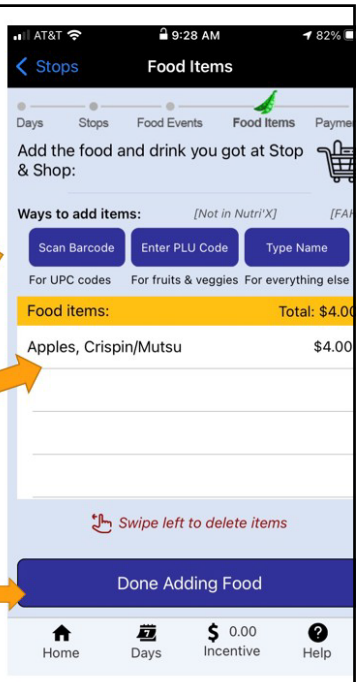
Food Items Page: When you get food from a place like grocery store

Actions:

Add food items

- Scan barcode
- Enter PLU
- Type Name

- Tap existing item to edit information about food items
- Tap "Done Adding Food" when you are done reporting all items acquired at this place



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Food Items Page: When you get food from a place like *restaurant*

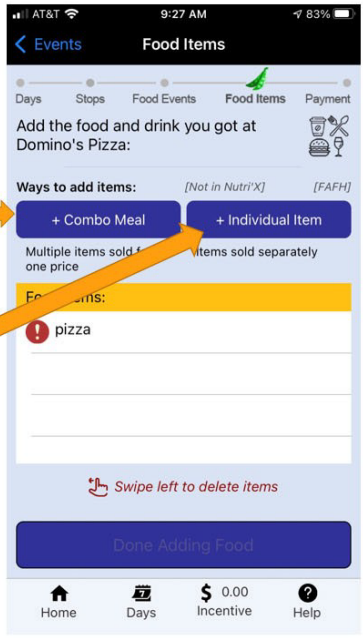
Actions:

- +Combo Meal

  - Multiple food items sold for a single price
  - E.g., School meal with chicken nuggets, salad, mashed potatoes, fruit, roll, and milk for a total of $3.50

- +Individual Item

  - Each food item has a separate price.
  - E.g., personal size bag of chips for $1.



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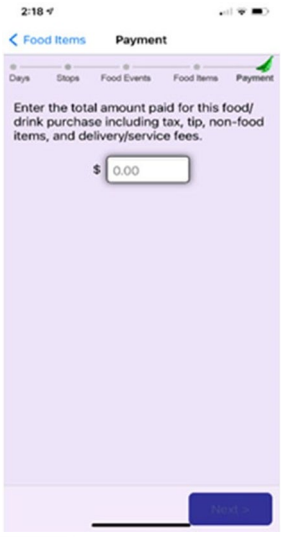

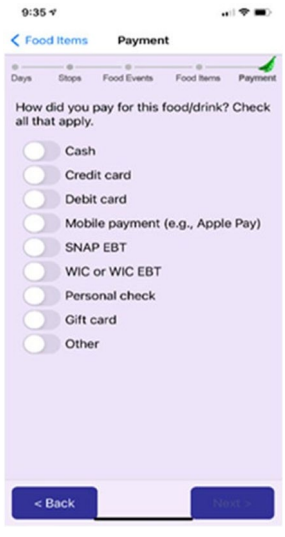

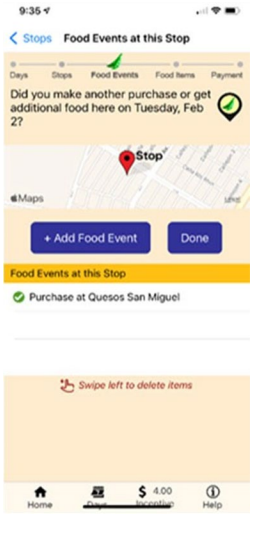

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Installing FoodLogger: iPhone Users

1. Go to the App Store on your phone
2. Search for "**Westat FoodLogger**"
3. Download the free app
4. Open the FoodLogger app
5. Enter your household's unique PIN to login
6. Read through the **tutorial** pages carefully and follow the on-screen prompts. The app will guide you through the set-up process including allowing the app to track your location and enabling push notifications

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Download FoodLogger: iPhone Users (con't)

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Installing FoodLogger: Android Users

1. Go to the Google Play store on your phone
2. Search for "**Westat FoodLogger**"
3. Download the free app
4. Open the FoodLogger app
5. Enter your household's unique PIN to login
6. Read through the **tutorial** pages carefully and follow the on-screen prompts. The app will guide you through the set-up process including allowing the app to track your location and enabling push notifications

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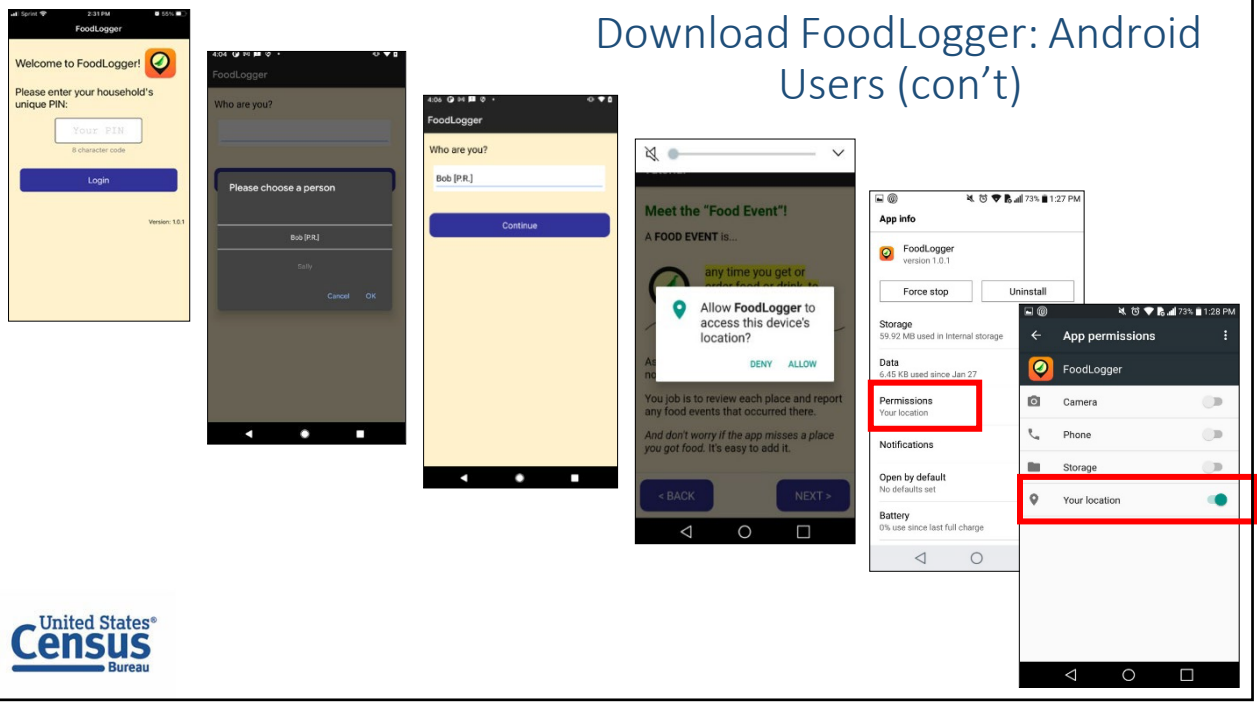

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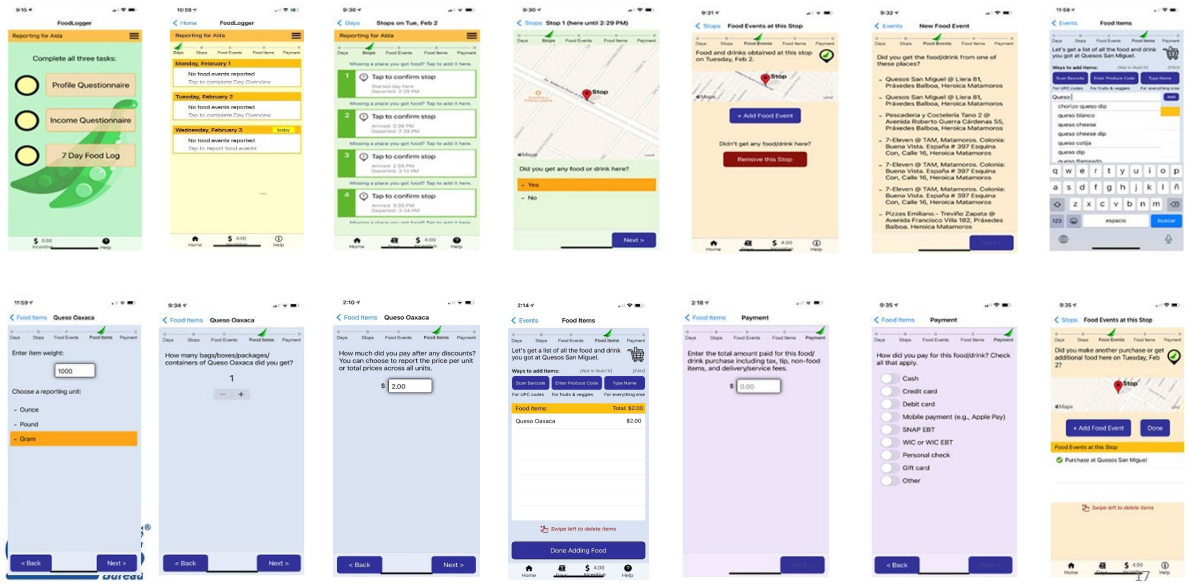
Data Entry Workflow



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Practice (I) – Food Items

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) – Receipt uploading

Walmart
Save money. Live better.

(813) 932-0562
Manager COLLEEN BRICKEY
8885 N FLORIDA AVE
TAMPA FL 33604

ST# 5221 OP# 00001061 TE# 06 TR# 05332
BREAD 007225003712 F 2.88 N
BREAD 007225003712 F 2.88 N
GV PNT BUTTR 007874237003 F 3.84 N
GV PNT BUTTR 007874237003 F 3.84 N
GV PNT BUTTR 007874237003 F 3.84 N
GV PNT BUTTR 007874237003 F 3.84 N
GV PARM 16OZ 007874201510 F 4.98 O
GV CHNK CHKN 007874206784 F 1.98 N
GV CHNK CHKN 007874206784 F 1.98 N
12 CT NITRIL 073191913822 2.78 X
FOLGERS 002550003377 F 10.48 N
SC TWIST UP 007874222682 F 0.84 X
EGGS 060538871459 F 1.88 O
SUBTOTAL 46.04
TAX 1 7.000 % 0.26
TOTAL 46.30
DEBIT TEND 46.30
CHANGE DUE 0.00

EFT DEBIT PAY FROM PRIMARY
ACCOUNT : 5259
46.30 TOTAL PURCHASE
PAYMENT DECLINED DEBIT NOT AVAILABLE
11/06/11 02:21:54

EFT DEBIT PAY FROM PRIMARY
ACCOUNT : 5259
46.30 TOTAL PURCHASE
REF # 131000195280
NETWORK ID. 0071 APPR CODE 297664
11/06/11 02:22:54

ITEMS SOLD 13

TC# 0432 2121 1542 2401 9590

Layaway is back for Electronics, Toys, and Jewelry. 10/17/11-12/16/11
11/06/11 02:22:59

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Practice (III) - Meals

1. Breakfast at Starbucks
   - One Blueberry Scone ($2.40)
   - One Banana ($0.90)
   - One Caffe Latte (tall, $3.50)

2. School lunch (combo, free)
   - Chicken Caesar Wrap
   - Celery Sticks
   - One Fresh Orange
   - 1% White Milk (Half Pint)

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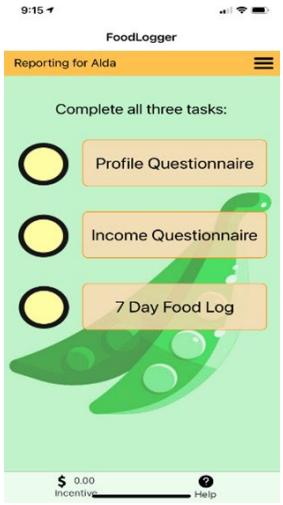
Profile and Income Information

Complete these two questionnaires by yourself.

Use FAKE data to complete these to questionnaires.

Do not enter your actual personal information!



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

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.

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
  - Grape tomatoes
  - Farro
- Produce (with PLU)
  - 2 bell peppers
  - 3 oranges
  - 1 potato
  - 1 corn (no PLU)
- Food from the bakery
  - 1 cookie
  - 1 loaf of bread (made in-store, store brand)
- Bulk food
  - Coffee beans
  - Granola

- Food with store-specific barcodes (e.g., store brand pre-packaged food)
  - Coconut water
  - Salt
  - Oats meal
  - Eggs
- Multiple items packaged together
  - Mineral water (4 bottles)
  - Juice (4 cups)

Non-food items:

- 1 facial tissues box
- 1 soap

Food from the Deli (not present, just described/pictured):

- Caesar salad (small) $2.25
- Bread roll (small) $0.50
- Cup of soup (~8 oz) $2.00
- Bottle of juice (11 fl oz) $1.75

Appendix C: 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)

Big Mac

McCafé
APPLE PIE
McCafé
APPLE PIE
McCafé
APPLE PIE

Glug glug,
MILK
JUG

10 Chicken McNuggets
BBQ
tangy
BBQ
tangy
BBQ
tangy

Aaaah, So Tasty!
Deluxe
Crispy Chicken
Ketchup

HAMBURGER
Ketchup

Appendix D: Use Case 3: 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

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

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?

<u>I have a few more questions:</u>

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?