

Hold the Phone: Examining the Factors Driving Individual and Household Nonresponse in a Mobile App Diary Survey

Lauren Miller*, Joe Rodhouse
USDA Economic Research Service

FCSM Conference
Oct. 23, 2024

"The findings and conclusions in this presentation are those of the authors and should not be construed to represent any official USDA or U.S. Government determination or policy."



The National Household Food Acquisition and Purchase Survey (FoodAPS)

- FoodAPS-1 was conducted in 2012-2013
 - Paper/pencil with barcode scanning (+ CATI/CAPI)
- Development since FoodAPS-1
 - Alternate Data Collection Methods (ADCM) Pilot (2016)
 - Piloted a web collection (plus CAPI, Paper screener)
 - Field Test for FoodAPS-2 (2022)
 - Piloted a native smartphone application (+CAPI, Paper screener)
 - Upcoming Pilot with the Census Bureau (2025)



What FoodAPS Collects

- What foods Americans get and how do they get them?
- What is the impact of SNAP program participation on food acquisitions?

Individual Data

- Age
- Income/employment
- Health status
- Education level
- Behaviors

Household-Level Data

- SNAP/WIC participation
- Household income
- Vehicle ownership
- Variables for SNAP estimation
- Food security

Event & Item Data

- Groceries/restaurant
- Location type
- Payment information
- Item details
- Item nutrition
- Free event information



How the information is collected

- **Household** surveys (completed by primary respondent)
 - Screener
 - Initial (household roster, SNAP/WIC participation, training)
 - Debrief (survey experience, benefit receipt)
- **Individual** surveys
 - 7 days of food log (food at home and food away from home)
 - Profile (health status, height/weight, behaviors, etc.)
 - Income (individual-level income information)



Reasons for complex design



Response level

Household-level—SNAP participation, vehicles, household income

Individual-level—health status, behaviors, food events



Diary vs. recall

The amount of detail required (item information, prices, etc.) would likely not be possible in a recall survey



Reporting period

7-day period chosen to capture grocery trips, “fill” events, restaurant visits, free food events, etc. requires multiple days.

Also, goal of capturing some households’ behaviors after benefit receipt.

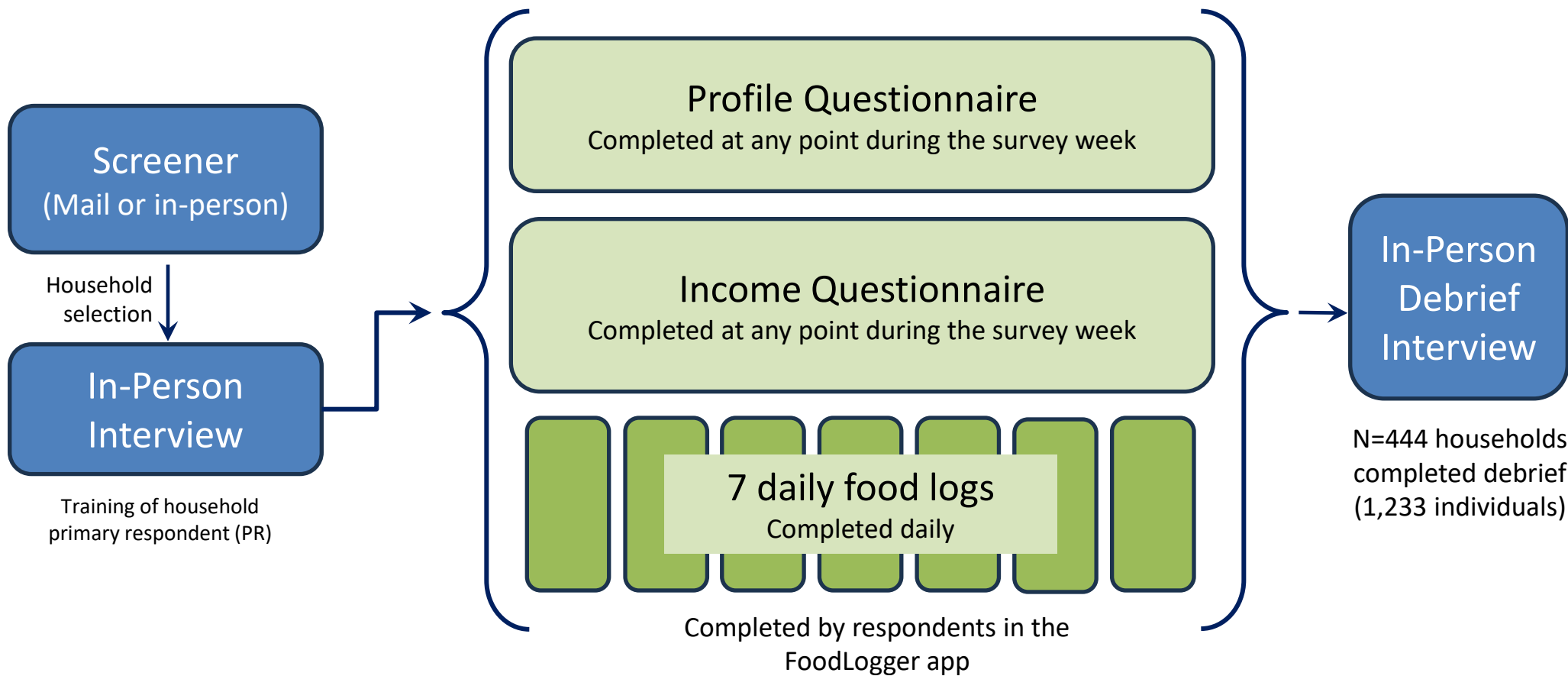


About the Field Test for FoodAPS-2

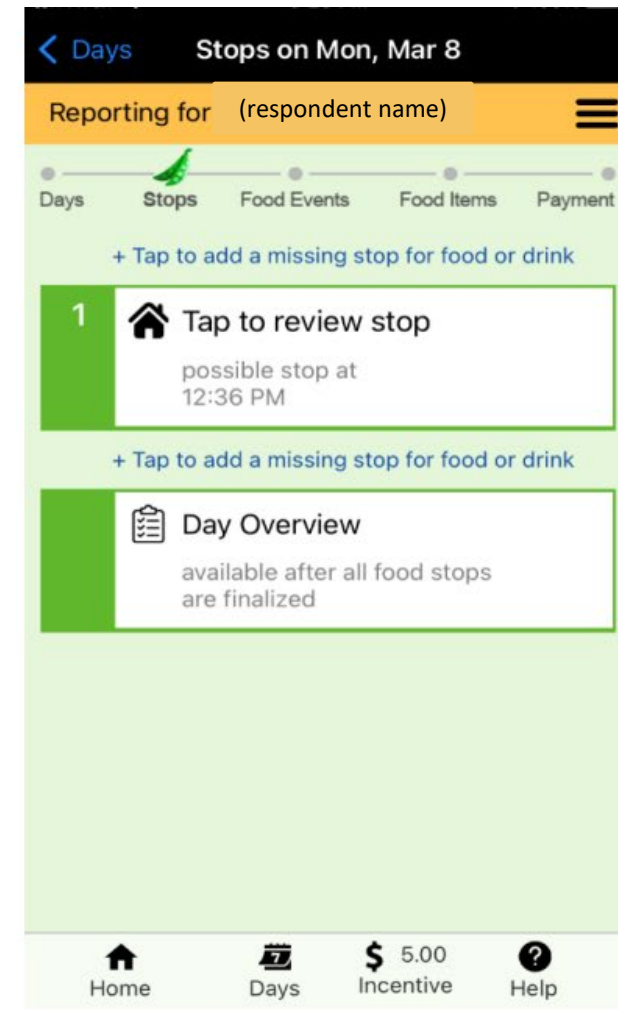
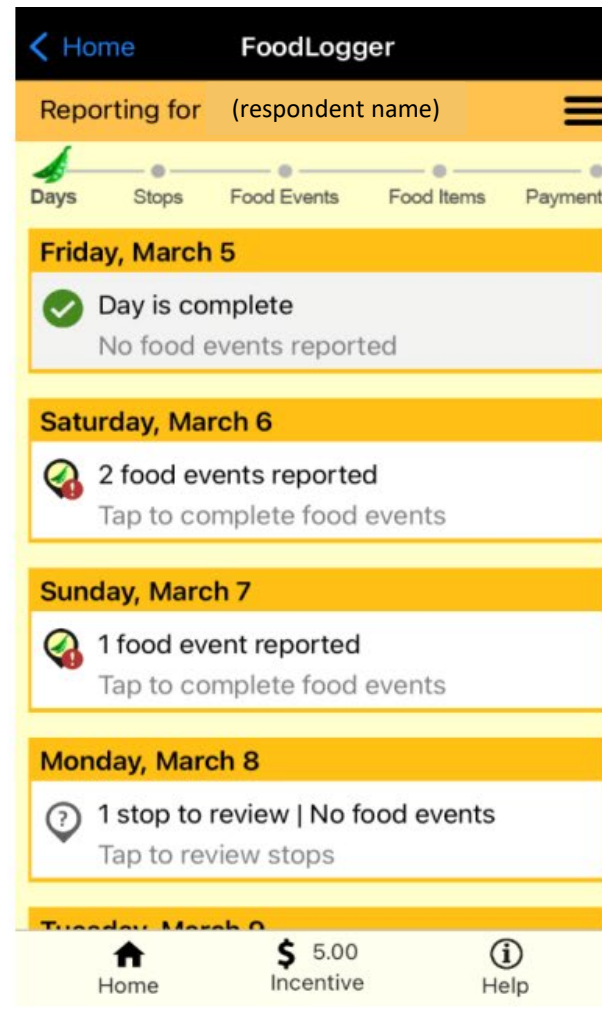
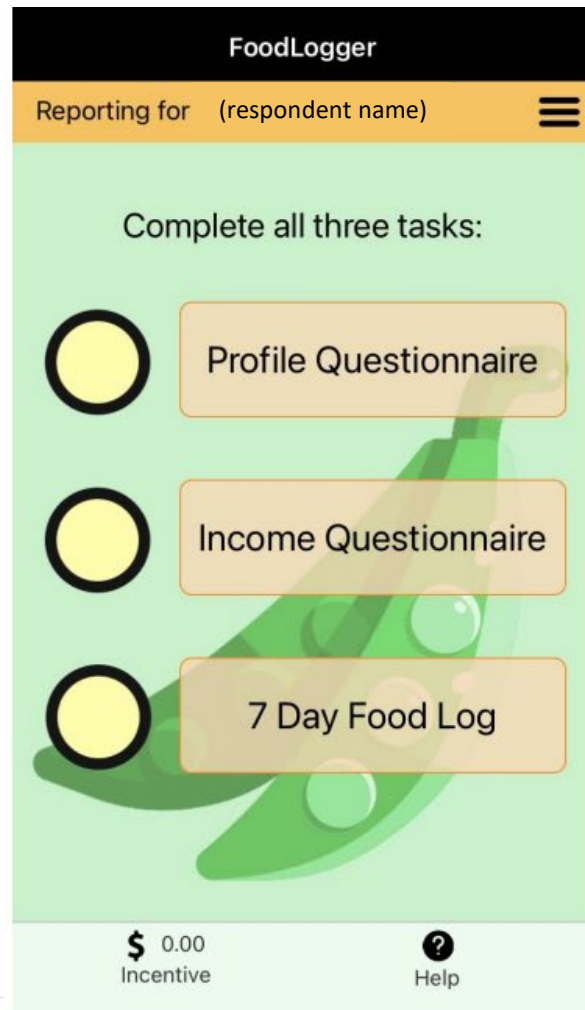
- Fielded July-Nov 2022 (conducted by Westat)
- Paper, CAPI, web, and mobile app
- Overall response rate: 15%
- Native smartphone application
 - GPS
 - Reporting prompts
 - Identifying food stores (Google API)
 - Camera
 - Receipt uploading
 - Food picture experiment



FoodAPS Field Test Survey Components

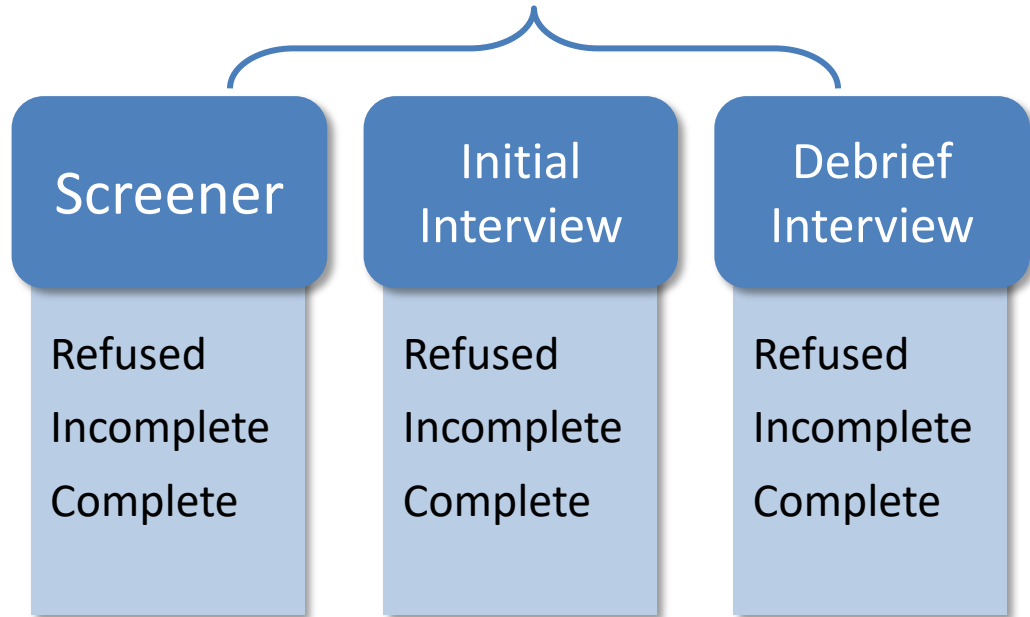


FoodLogger App Interface

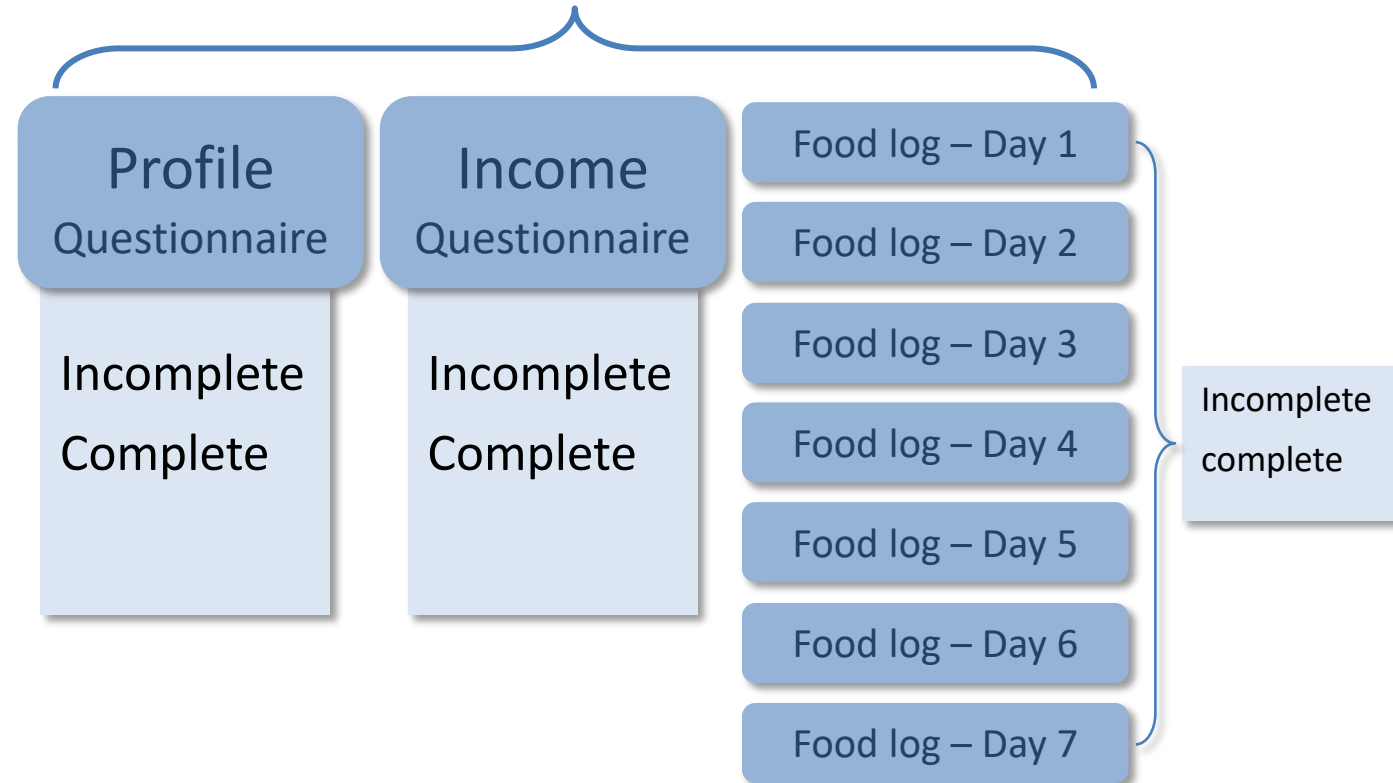


Possible survey response outcomes

Household surveys



Individual surveys



Applying response outcomes in practice

- *Hypothetical example*: household of two adults, two children (17 and 15 years old)
- Total survey components: **39**
 - Household
 - Screener (1)
 - Initial interview (1)
 - Debriefing (1)
 - Individual
 - Profile questionnaire (4)
 - Income questionnaire (4)
 - Food log (28)
 - 7 daily surveys per individual



Responses in the field test

- 444 households completed the debrief interview, with 1,233 total individuals in the households
 - Households were considered complete if all household surveys complete
 - There may be individual nonresponse within households
- Since the PR accepts on behalf of the household, we don't know the type of nonresponse
 - Individual was never informed by PR
 - Individual was informed but chose to not participate (uncaptured refusals)

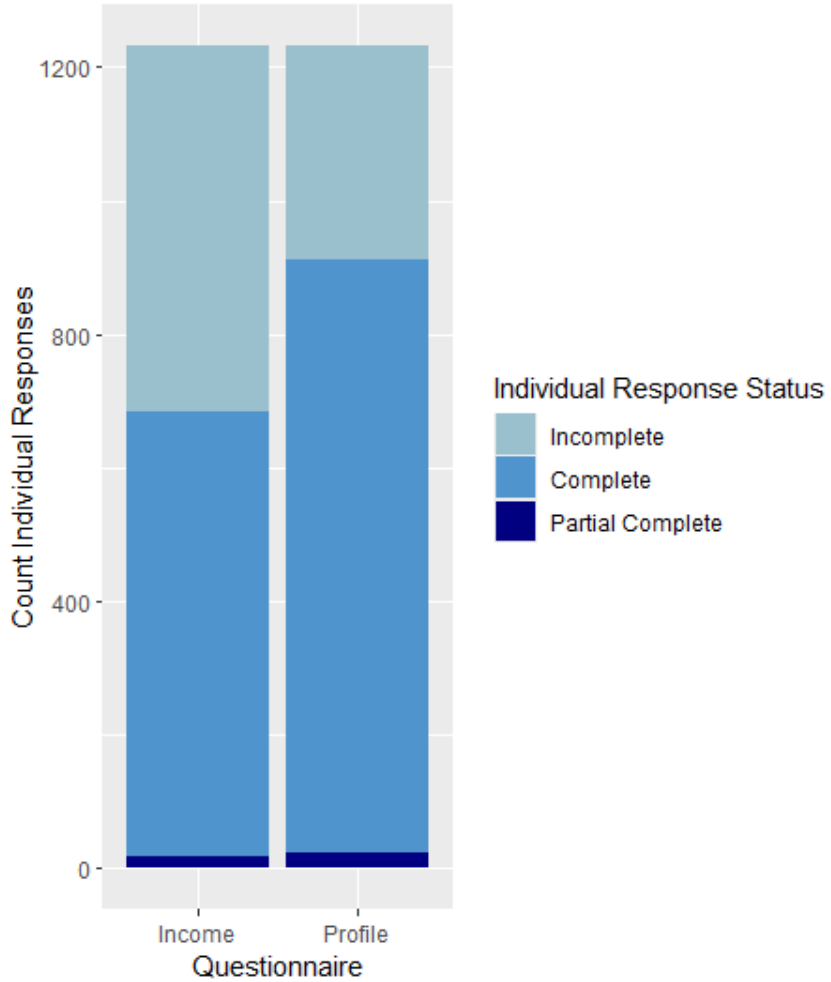


Defining an individual complete

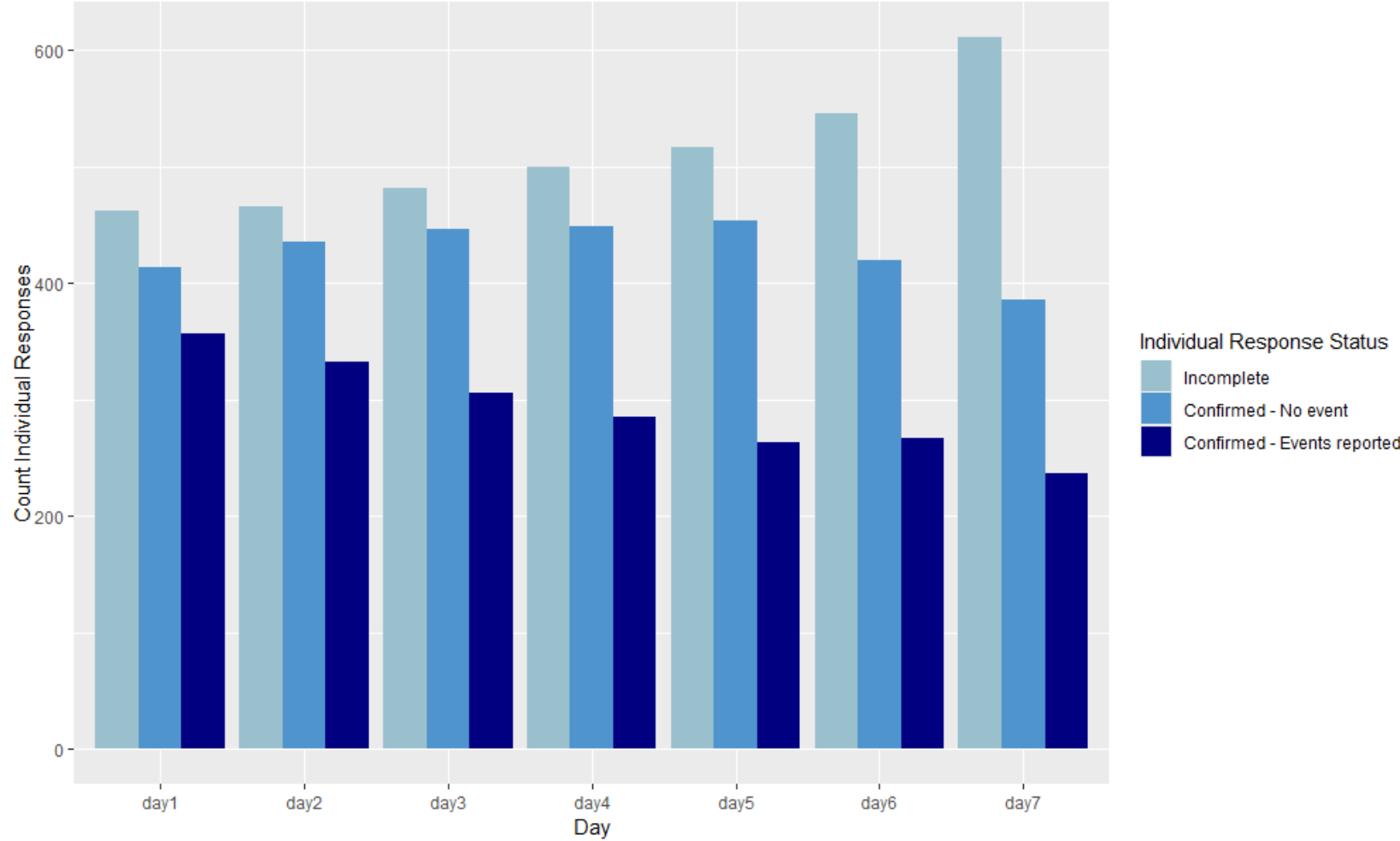
- A complete will be defined as:
 - Profile/income questionnaires: questionnaire submitted
 - Food log: day overview completed
- A partial complete will be defined as:
 - At least one survey module is completed or partially completed
- An incomplete will be defined as:
 - No survey modules were started



Questionnaire Response



Food Log Response by Day



Modeling response outcomes

- Multinomial logistic regression
 - Outcomes: Incomplete, Partial complete, Complete
- Looking at categorical variables
 - Age group (child, elderly)
 - Training attendance
 - Primary respondent (PR) relationship (spouse, other member)
 - Household income category (low- and middle-income)
 - SNAP receipt
 - Proxy status



	<i>Dependent variable:</i>	
	partial (1)	complete (2)
age_child	0.178 (0.369)	0.441 (0.278)
age_elderly	0.233 (0.269)	-0.213 (0.229)
missed_training	-1.190*** (0.261)	-0.850*** (0.199)
spouse	-0.517* (0.294)	-0.459** (0.226)
otherrelation	-1.470*** (0.338)	-1.110*** (0.215)
lowincome	0.352 (0.253)	0.025 (0.199)
mediumincome	0.008 (0.261)	-0.281 (0.200)
snap_ind	0.087 (0.261)	0.391* (0.203)
is_proxy	-0.366 (0.415)	-0.326 (0.290)
Constant	0.478** (0.206)	1.603*** (0.169)
Akaike Inf. Crit.	2,133.696	2,133.696

Note: * p<0.1; ** p<0.05; *** p<0.01



Key findings from the model

- Missing training less likely to report
 - Could mean PR is not training other household members
- Household members who are not the PR are less likely to report
 - Could be related to incentive information being given to the PR
- SNAP more likely to report
 - Could be a good indicator that our incentives were motivating



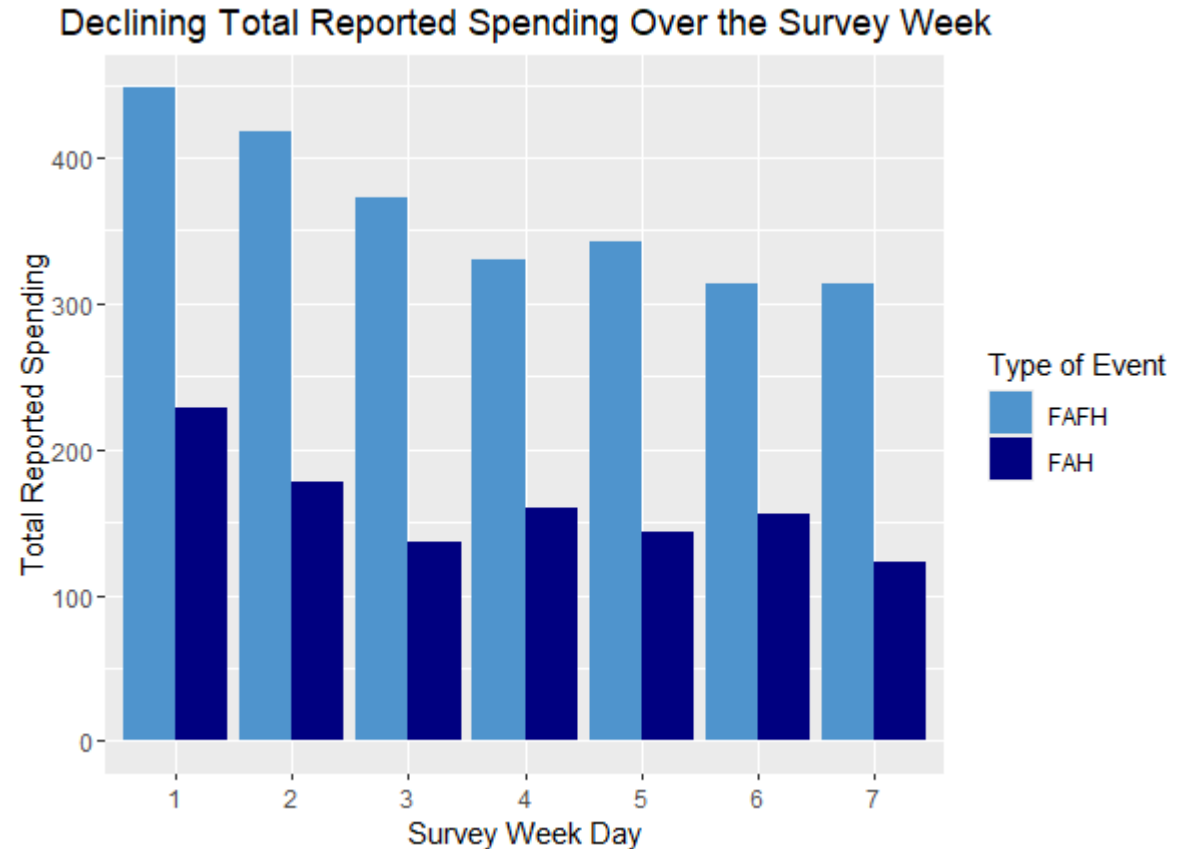
Limitations with the model results

- We must rely on variables completed at the household-level
 - Missingness of race/ethnicity and income variables
- Additional factors that may impact response & survey experience
 - Smartphone access, phone type, and app crashes
 - Data privacy concerns, especially around children's data
 - Varying comfort and familiarity with technology
 - Differing levels of information relayed by the primary respondent



Further considerations: underreporting

- Reporting declined over the survey week
 - Consistent with past FoodAPS effort
 - Likely indicative of underreporting
- Similar patterns for number of reported items and events



Conclusions on the Field Test Response

- Income questionnaire and food log provided the most challenges
- Considering “hidden” refusals in responding households
- Reporting experience in the debrief is only reported by the PR but non-PR members more likely to be nonresponders
- Future considerations:
 - Lowering burden, particularly for the food log
 - Offering a phone or paper alternative
 - Further research on underreporting



Lauren Miller
USDA Economic Research Service
Agricultural Economist

lauren.miller2@usda.gov



Additional tables: overall individual completes

	Complete	Partial	Incomplete
Profile Questionnaire	890	23	320
Income Questionnaire	667	18	548*
Food log (4+ days completed)	735	66	432
	Complete (all 3 tasks complete)*	Partial (some tasks complete or partial)	Incomplete (all tasks incomplete)
Overall	714	216	303

*Rs <16 did not complete income questionnaire

























































Additional tables: overall response rates



Survey instrument	Number of responding households	Expected response rate	Response
Mail screener	1,860	10%	24.80%
In-person screener	842	36.2%	27.70%
Initial interview	494	70.9%	60.40%
Training	475	—	95.00%
FoodLogger	233	—	48.00%
Debrief interview	444	92.0%	88.90%
Overall	—	23.6%	14.90%

(Westat, FoodAPS Field Test Final Evaluation Report)



Additional tables: common response patterns

	Questionnaires		FoodLog Diary Days						
	Profile	Income	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Count									
424 (34%)									
303 (25%)									
155 (13%)									
83 (7%)									
51 (4%)									
27 (2%)									

Legend	
Complete task	
Incomplete task	



Further considerations: delayed reporting

When was an Event Reported - Split By Diary Day

