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Insights from Field Testing a Multi-Day Diary Survey Using a Native Smart Phone Application

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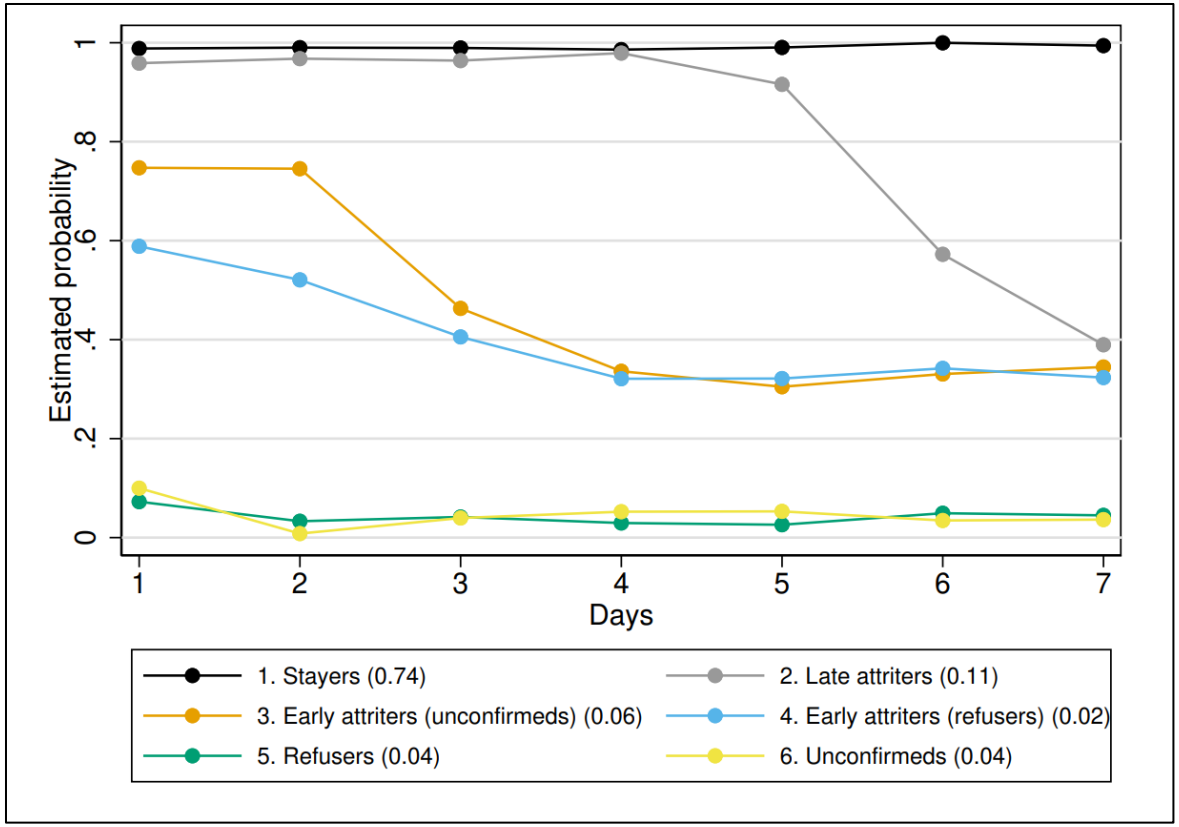
What FoodAPS Collects

Food event information	Store location, type of retailer
Food item information	Price (including free foods), quantity, size
Food item nutrition	Comprehensive nutrition information
Personal information	Age, race, ethnicity, BMI, food security status
Income / program participation	Income, program eligibility, SNAP and WIC participation
Habits & behaviors	Gardening/hunting, farmers markets, MyPlate knowledge

Why Explore New Technologies?

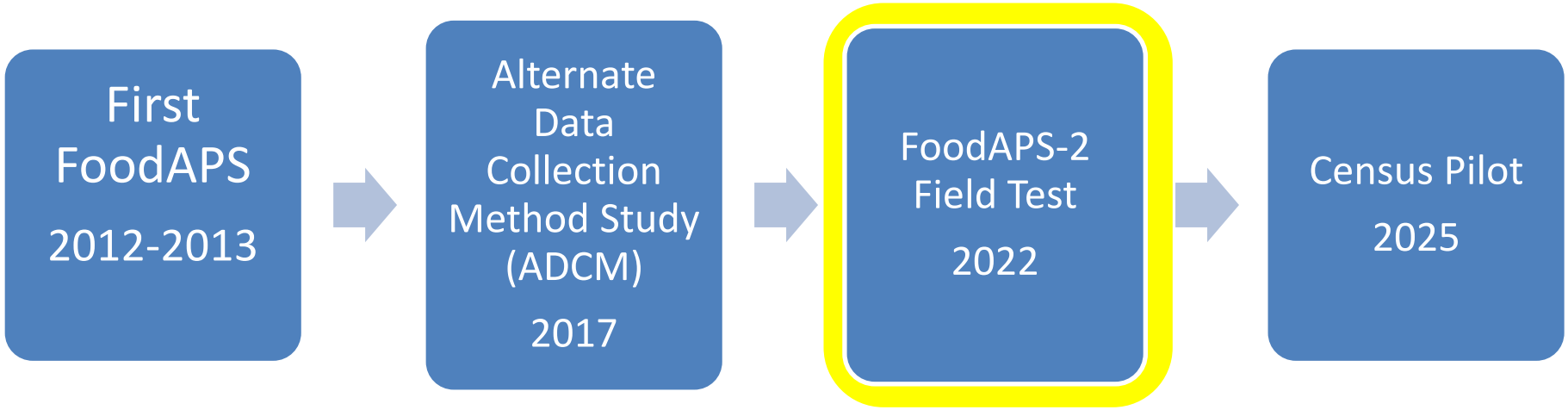
- Food acquisitions surveys are high burden
- Nonresponse over the week and possible underreporting are big challenges
- How do we deal with this?
  - Reducing respondent burden
  - Tradeoff between respondent burden and data quality



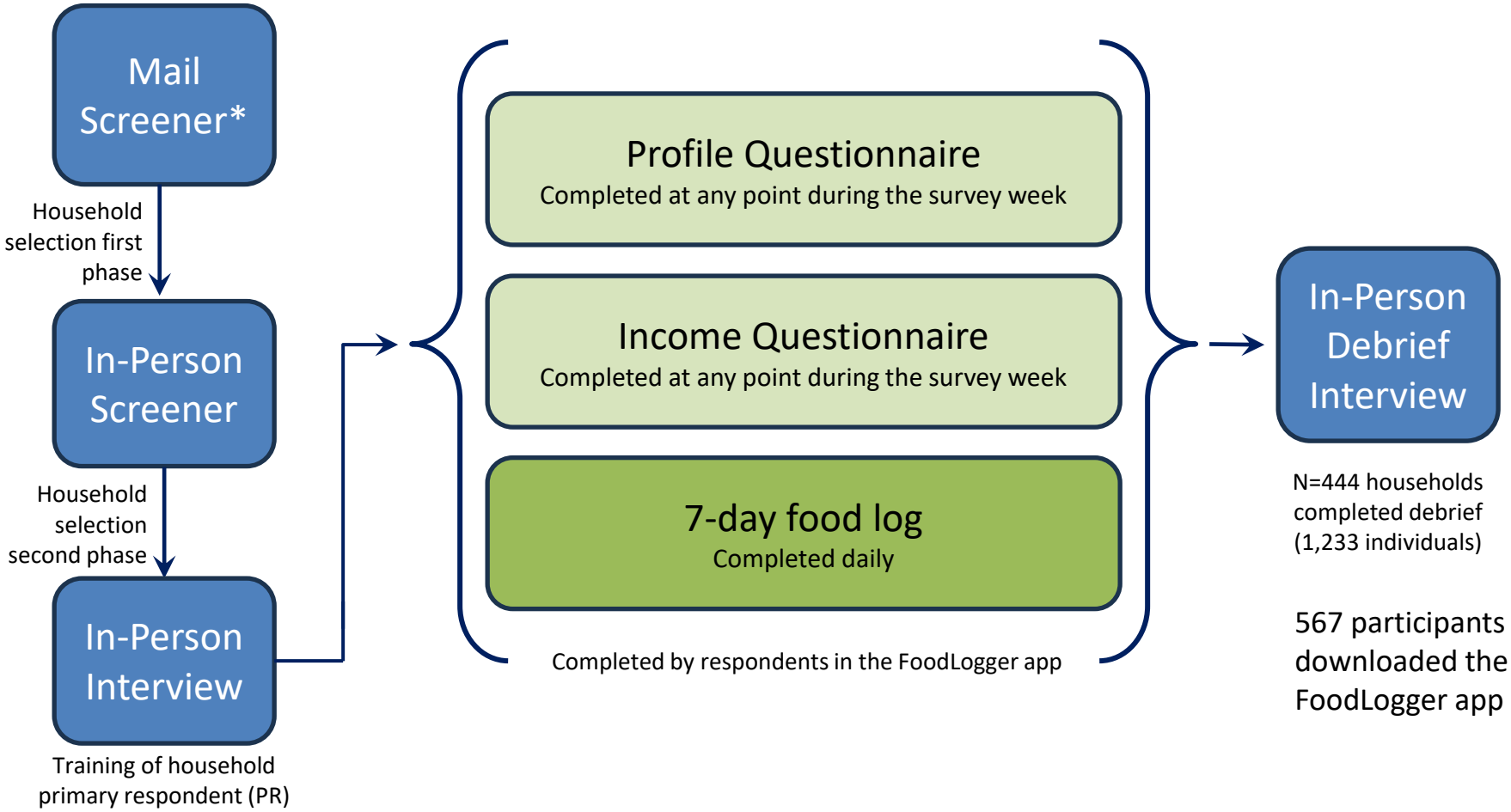
(Hu et. al, 2020)

FoodAPS Timeline

- FoodAPS-1 was a paper diary with CATI and CAPI components
- Development efforts have introduced technology and extant databases to increase response rates, reduce respondent burden, and reduce backend processing time.

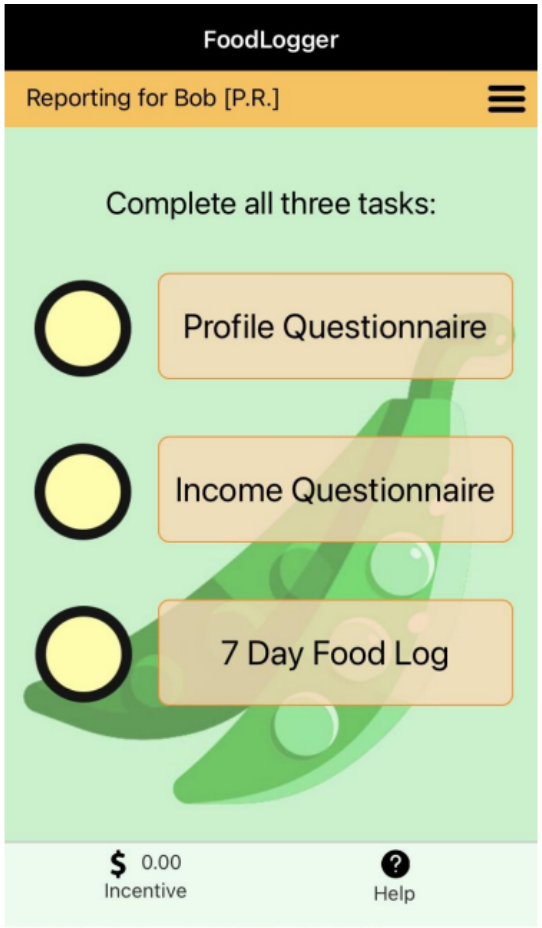


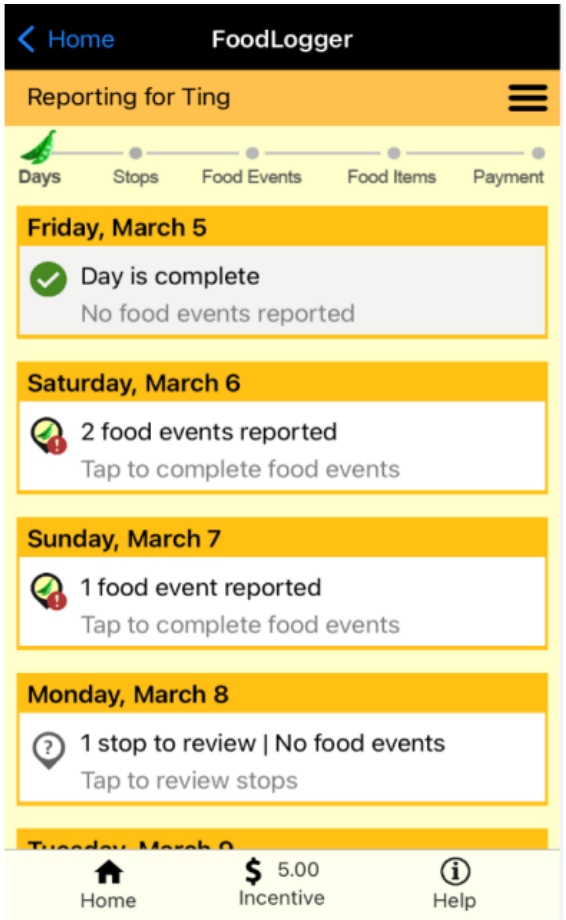
Data Collection Process

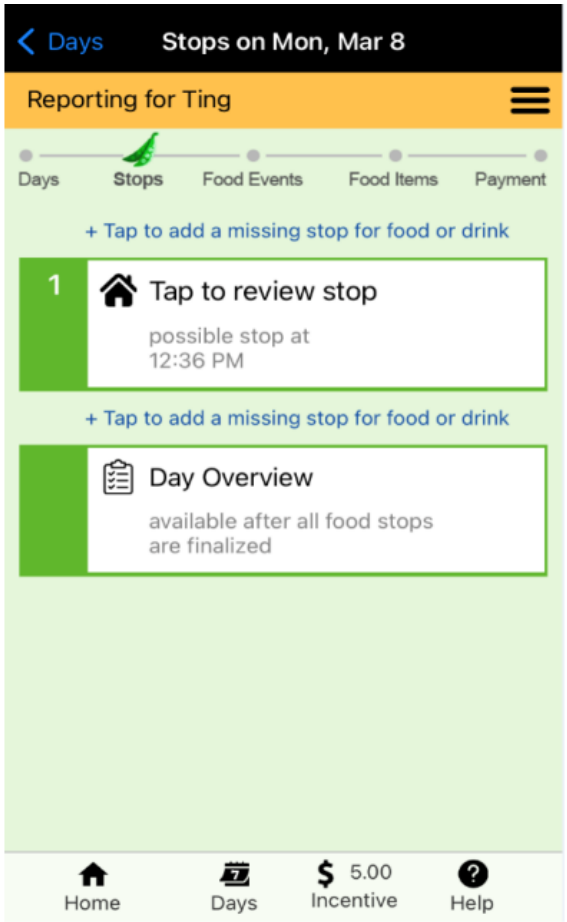


*Not sent to households sampled from SNAP lists

FoodLogger App Interface





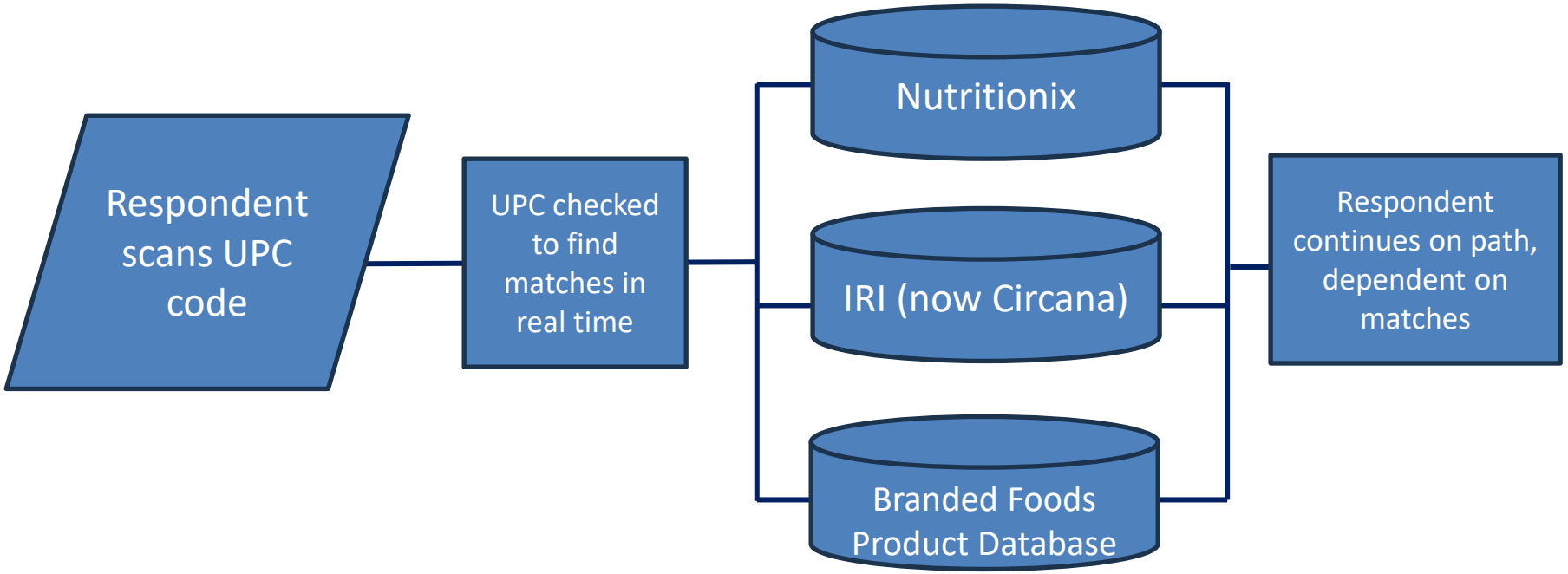


Smartphone Features Used in the App Design

- Utilizing the smartphone's camera
  - Barcode scanning
  - Pictures of receipts
  - Pictures of FAFH meals (experiment)
- GPS
  - Location "nudges"
  - Ability to pick up nearby retailers
- Extant database matching
  - Type ahead feature for item identification and real time matching
  - Google Places matching for food place locations

Barcode Scanning - Databases

- Respondents were trained how to scan the barcode during the initial interview
  - 86% of households were successful during the training

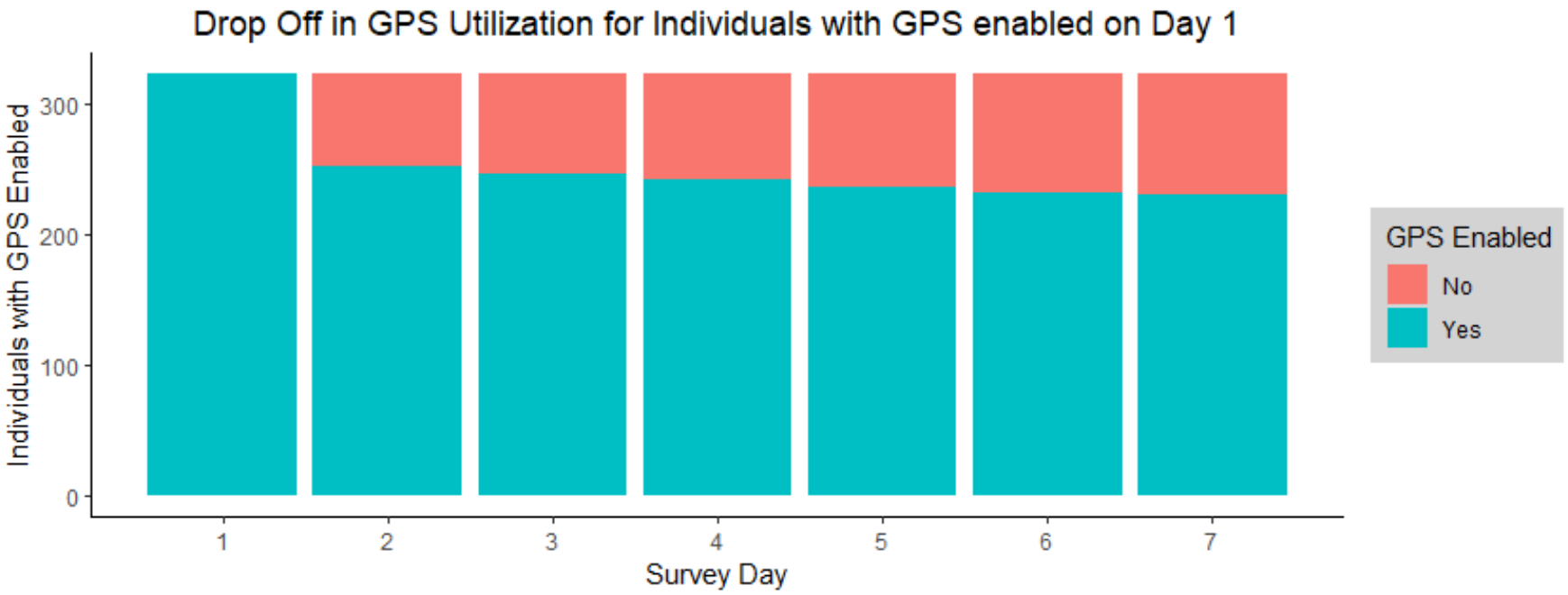


Barcode Scanning - Implementation

- Of 4,250 food-at-home items that were scanned for a barcode, 92% were able to successfully identify a barcode
- Of those that were successfully scanned:
  - 44% matched to all three databases
  - 18% matched to two databases
  - 17% matched to only one database
  - 21% did not match to any databases
- Nutritionix was the most effective for UPC matching in the Field Test
  - 72% of scanned UPCs matched to Nutritionix

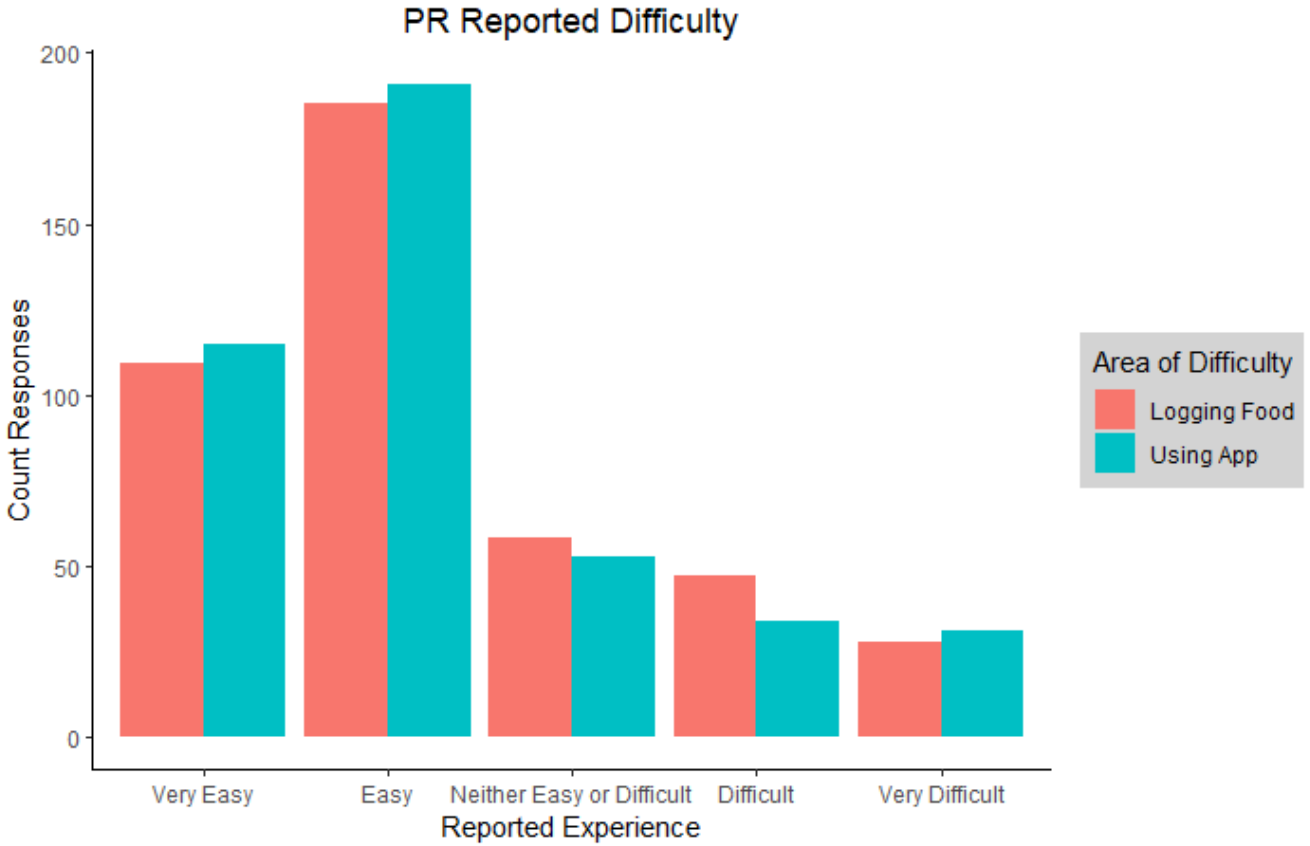
GPS Utilization

- About 79% of participants who downloaded the app turned on GPS features at least one day over the survey week
- For those that enabled GPS on day 1, about 28% ended up disabling the feature by the end of the week



Reported Experience

- PRs were asked to rate how difficult it was to use the app and to log food during a debriefing interview at the end of the survey week



Demographics of PR-Reported App Experience

Easy or very easy (69%)	Difficult or very difficult (15%)
• Mean age: 48*	• Mean age: 62*
• 41% have Associate's degree or higher*	• 19% have Associate's degree or higher*
• 36% below 130% of Federal Poverty Line	• 43% below 130% of Federal Poverty Line
• Average household size: 2.9	• Average household size: 2.6
• 19% of households had small children (5 years old and under)	• 11% of households had small children (5 years old and under)

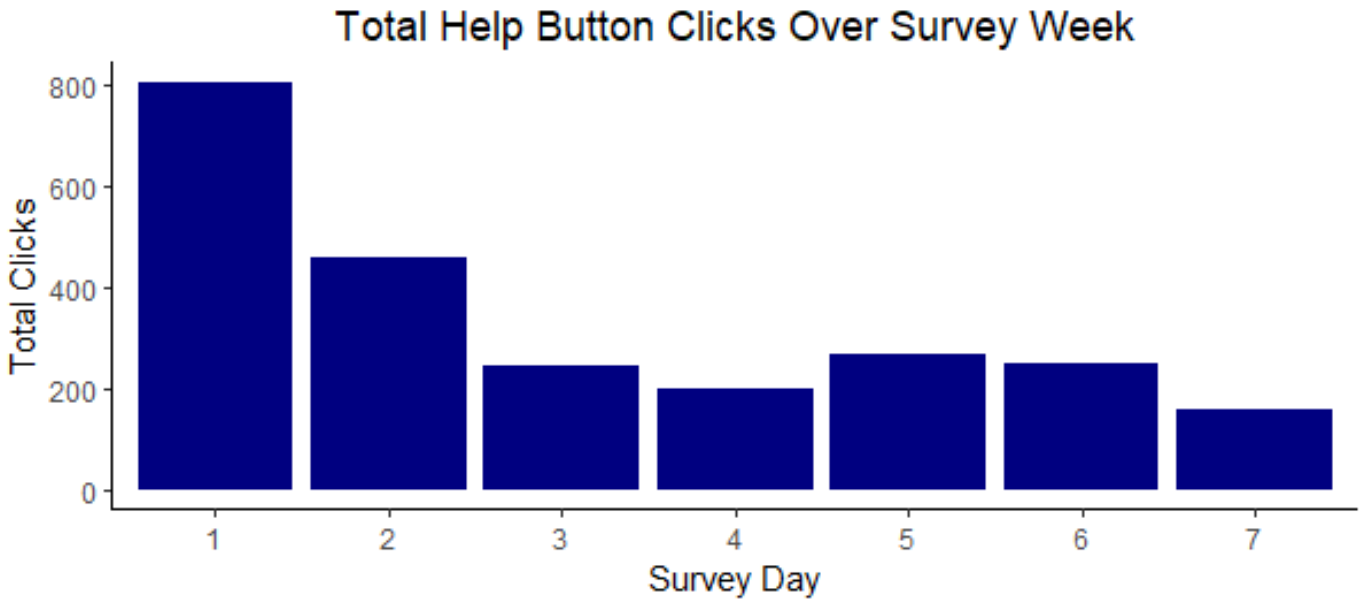
*p-value < 0.05

Other Considerations

- Crashes
  - Some users experienced a higher number of crashes that may have impacted their usage of the app
  - Paradata shows the Android users experienced more crashes on average than other users
- Broadband availability and speed
  - Using Ookla data, we found that participants living in metro areas had over double the download speed on average, and about 1.5 times faster upload speed on average in their local areas than their rural counterparts

Help Button Clicks

- Day 1 had the most help button activity
- However, there was an increase towards the end of the week as well.



Lessons Learned

- Biggest challenge is getting participants to download app and participate
  - Challenges specifically on getting all individuals within a household to participate
- There are benefits and limitations of relying on paradata
- UPC scanning was effective and helped data quality and respondent burden
- Who did the app “work” for?
  - Younger, more educated populations tended to report an easier experience
  - Older, less educated populations tended to report a more difficult experience

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About the Field Test

- Participants reported using:
  - –Their own iPhone (36%)
  - –Their own Android (22%)
  - –A loaner iPhone from Westat (7%)
  - –If respondents declined the mobile mode, they were offered web mode (<1%)
  - –Some participants responded via proxy through another household member (34%)