Improving Efficiencies on FoodAPS with Online Food Logs

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FoodAPS Data Collection Goals

- Collect all food items purchased or acquired by all household members over a 7-day period
  - Both food at home (FAH) and food away from home (FAFH)
  - Both purchased and free food
  - Information at the event and item level

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FoodAPS-1 Data Collection

- Started and ended with an in-person interview
- Provided UPC scanner (only technology used)
- Used paper food logs and income worksheets
- Items recorded on paper are reported during daily telephone calls
- Reported receipt information; provide paper copy
- Respondent determined FAH versus FAFH
- Respondent entered addresses of event locations

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Alternative Data Collection Method (ADCM) Pilot Tested Use of an Online Food Log

Objective: Use technology to reduce burden and improve data quality

- Started and ended with an in-person interview
- Provided UPC scanner, smartphone, laptop + Internet
- Items recorded through an online log
- Uploaded photo of receipts
- System determined FAH versus FAFH: event locations

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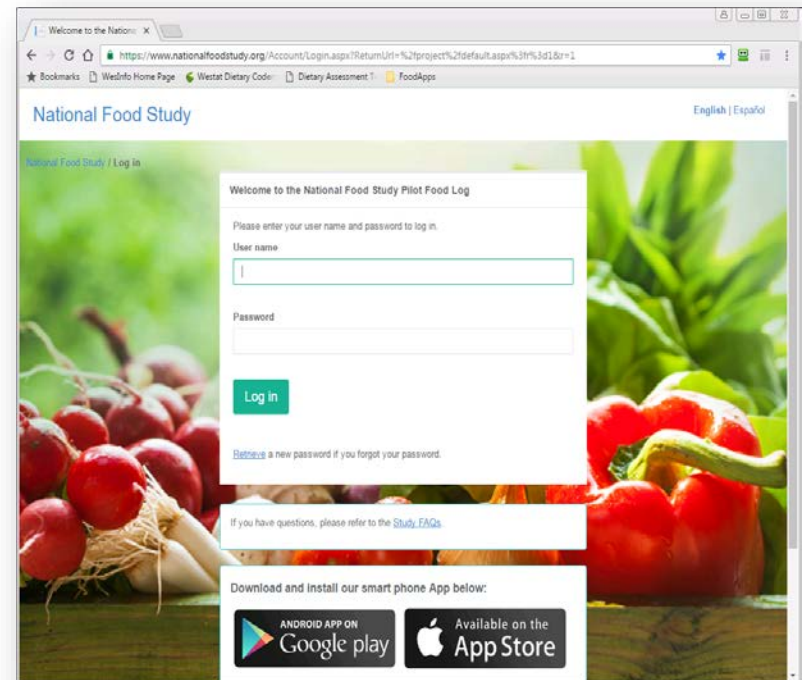
Multiple Ways to Access Web Food Log

Computer with handheld barcode scanner

Smartphone with downloaded barcode App

FoodAPS-1 versus the ADCM Data Collection Procedures

FoodAPS-1   **ACDM**

Scan UPCs ✓   ⇨ Scan UPCs, can verify if product ✓
                                         match is correct

Paper food logs and income worksheets; ✓ ⇨ Web system for food logs + income ✓
report via phone   worksheets

Report receipt information; provide ✓ ⇨ Take picture and upload receipts ✓
paper copy

Respondent determines FAH versus FAFH ✓ ⇨ System determines FAH vs. FAFH ✓

Respondent enters event locations ✓ ⇨ Google map look up for location ✓

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Usability of Technology

- No significant issues with the technology

A bar chart titled with percentages. The y-axis ranges from 0% to 100%. Bars: "Declined" 3.5% (labeled "Decline to participate due to technology"), "Took equipment" 76.0%, "Theft" 2.0%.
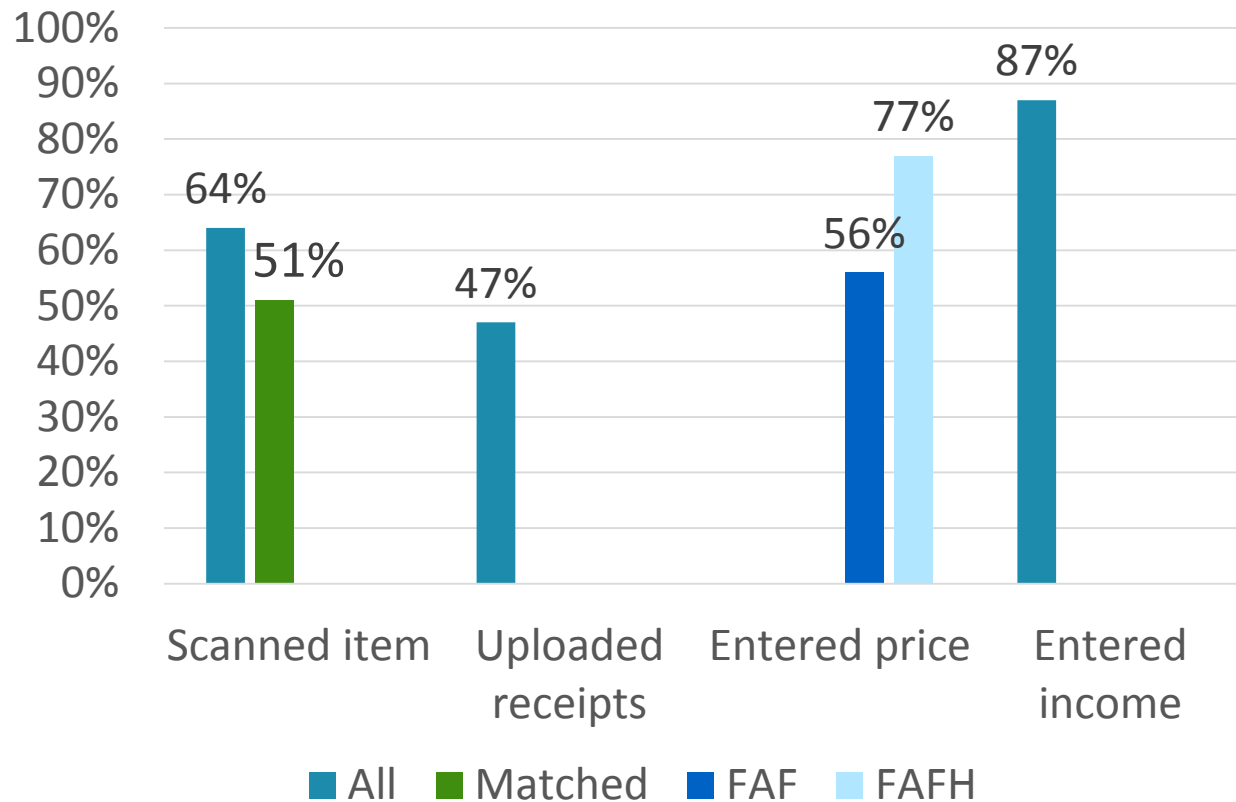
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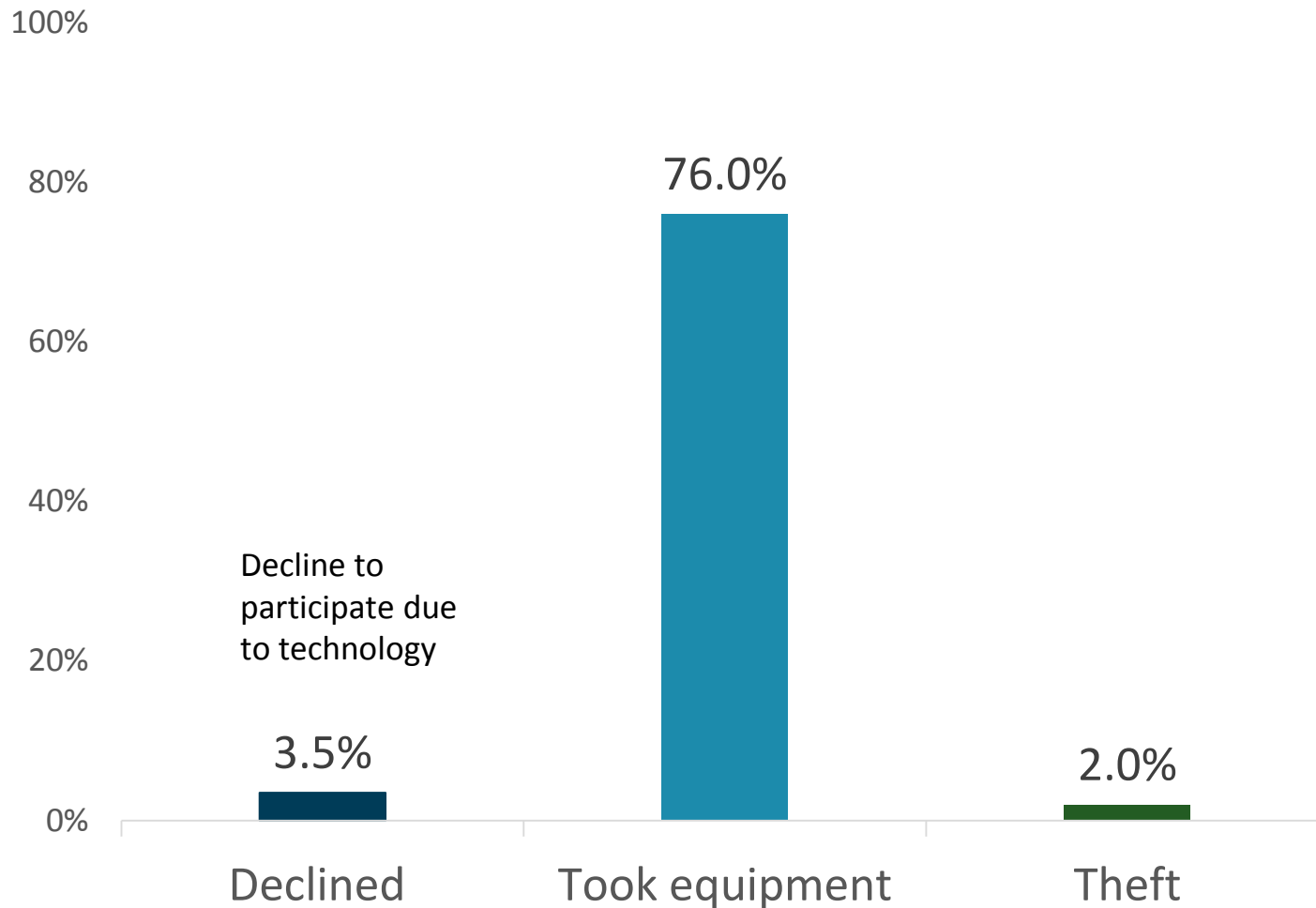
Burden

- No direct measure of overall burden
  - Infer from the activities
- Average total time to complete the food log is 49 minutes
- Scanning verses no scanning reduces time per item
  - Scanning cuts average time per item by about 1.5 minutes
  - But found that scanning intensity is inversely related to quantity bought

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Data Completeness Challenges

- For items and events reported, not all questions are answered (item non-response)
- Appears that not all events and food items are reported (underreporting)
- Item non-response and underreporting were issues for both FoodAP-1 as well

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Completeness/Cleanliness of Items Reported

- 100% match of items to events and events to households
- Medium to high use of automated data entry features
  - data entered by automated methods are fairly clean

Bar chart showing percentages by category:
- Scanned item: All 64%, Matched 51%
- Uploaded receipts: All 47%
- Entered price: FAF 56%, FAFH 77%
- Entered income: All 87%

Legend: All, Matched, FAF, FAFH

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Evidence of Event and Item Under Reporting

- Daily reporting
  - Reporting drops off over the 7 days data collection period
  - Similar to FoodAPS-1 pattern
- Recall validation suggests 25 percent of respondents forgot to report at least one item in last 2 days

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Events Reported by Day

For Pilot, n=430 HHs, Weighted
For FoodAPS1, n=4,826 HHs, weighted
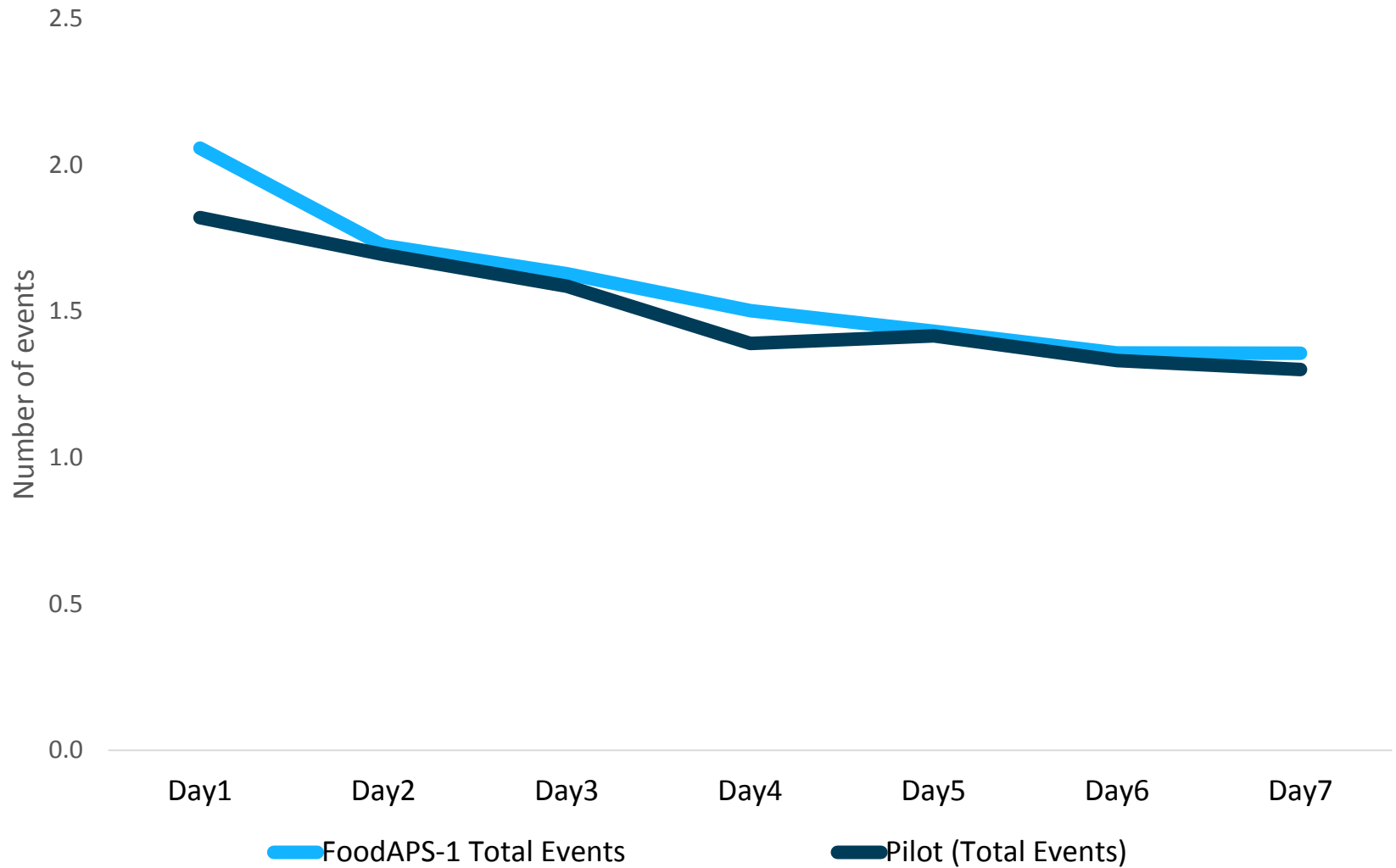
Items Reported by Day Adjusting for Recall
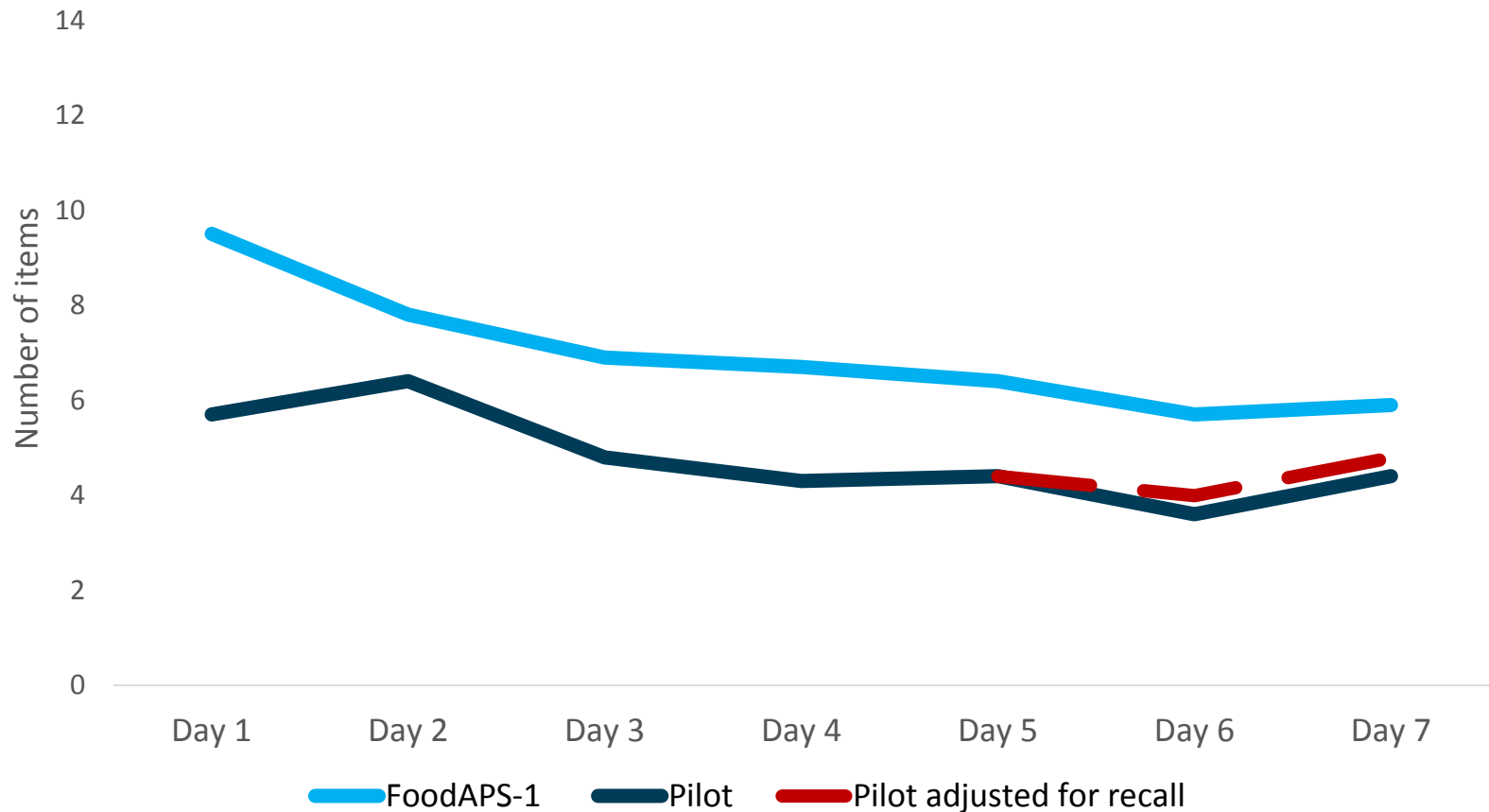
Pilot: n= 419 HHs, Weighted
FoodAPS1: n=4,826 HHs, weighted

How to Improve the Online Diary?

- Extract data from receipts in real-time
  - Lessens reporting time and effort
  - Reduced burden could result in more complete reports
  - Provides an accurate record of the actual purchase
- Won't eliminate manual data entry but can substantially lessen it
  - Perhaps cut it in half

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Use of Receipts in FoodAPS-2

- With current funding
  - Upload receipt images for both FAH and FAFH events
  - Compare receipt information to reported usual shopping behavior; telephone prompt to under reporting households
  - Use receipt in post-data collection Q/C and coding
- Explored partially automating data entry using receipts but currently unfunded
  - Few available receipt scanning software capture item level information
  - Found none that do this accurately in real-time
  - Requires new development

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Challenges of Automating Reading of Receipts

- Need to translate receipt into data in real-time
  - Defined variables
    - At a minimum: Item name, item price
- Variation in receipt structure makes it hard to convert to data
  - May need separate code for each store chain
- No common naming convention to items
  - Use chain specific short hand names for items
  - Only a minority of receipts contain UPCs (Walmart)
    - 12 percent of the Pilot study events and 19 percent of expenditures were from Walmart

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Automating Reading of Receipts

Covert receipt to data Item name + price	Match to IRI By item name (text match)	Get UPC + standard name + quantify/weight	Match to FNDDS
1	2	3	4
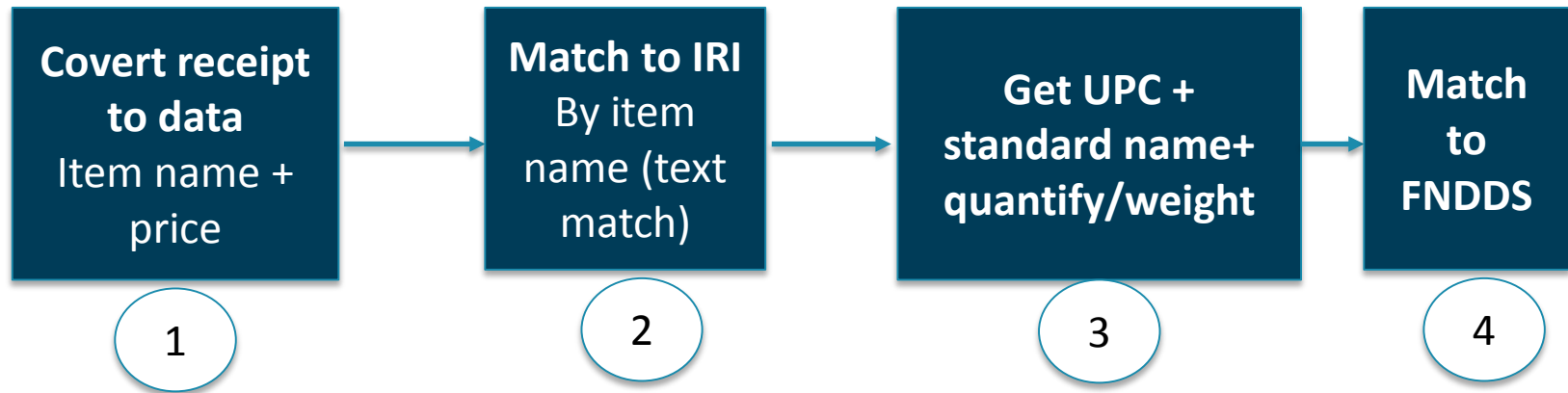
- If receipt has UPCs, step 1-2 is a straight forward UPC match

- Without UPCs, step 1-2 requires text matching
  - Ultimately build a thesaurus that links grocery store names to IRI names
  - Thesaurus has use beyond FoodAPS

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Other issues using receipts

- Removing non-food items
  - These are almost always coded
- Not all items will have a UPC match
  - Some cases will require respondent identifies the item

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Walmart Receipt (with UPCs)

Example: 13 items purchased, receipt has UPCs
For illustration assume "12 Cy Nitril" and "Folgers" do not match to a UPC

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         002550000377 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

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ACCOUNT :              5259
   46.30  TOTAL PURCHASE
REF # 131000195280
NETWORK ID. 0071 APPR CODE 297664
      11/06/11    02:22:54
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Screen 1: Upload your receipt
Provides directions

Real-time UPC match program is run. System returns list of unmatched food items. "12 Cy Nitril" is unmatched but is coded on the receipt as not food, so it is automatically removed

Screen 2: *For unmatched item, system asks respondent to provide a complete name and weight.*

Please provide a detailed item item name (use receipt name as a guide bought but write out any abbreviations)

Folgers Instant coffee

Please provide item weight
(from package, receipt, or if produce, quantity

8 oz.

Conclusion

- Using an online diary is an incremental improvement over paper
- Burden could be lessened and data quality potentially improved through real-time reading of receipts
  - Non-trivial effort to set up
  - Still will require manual inputs from respondent

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