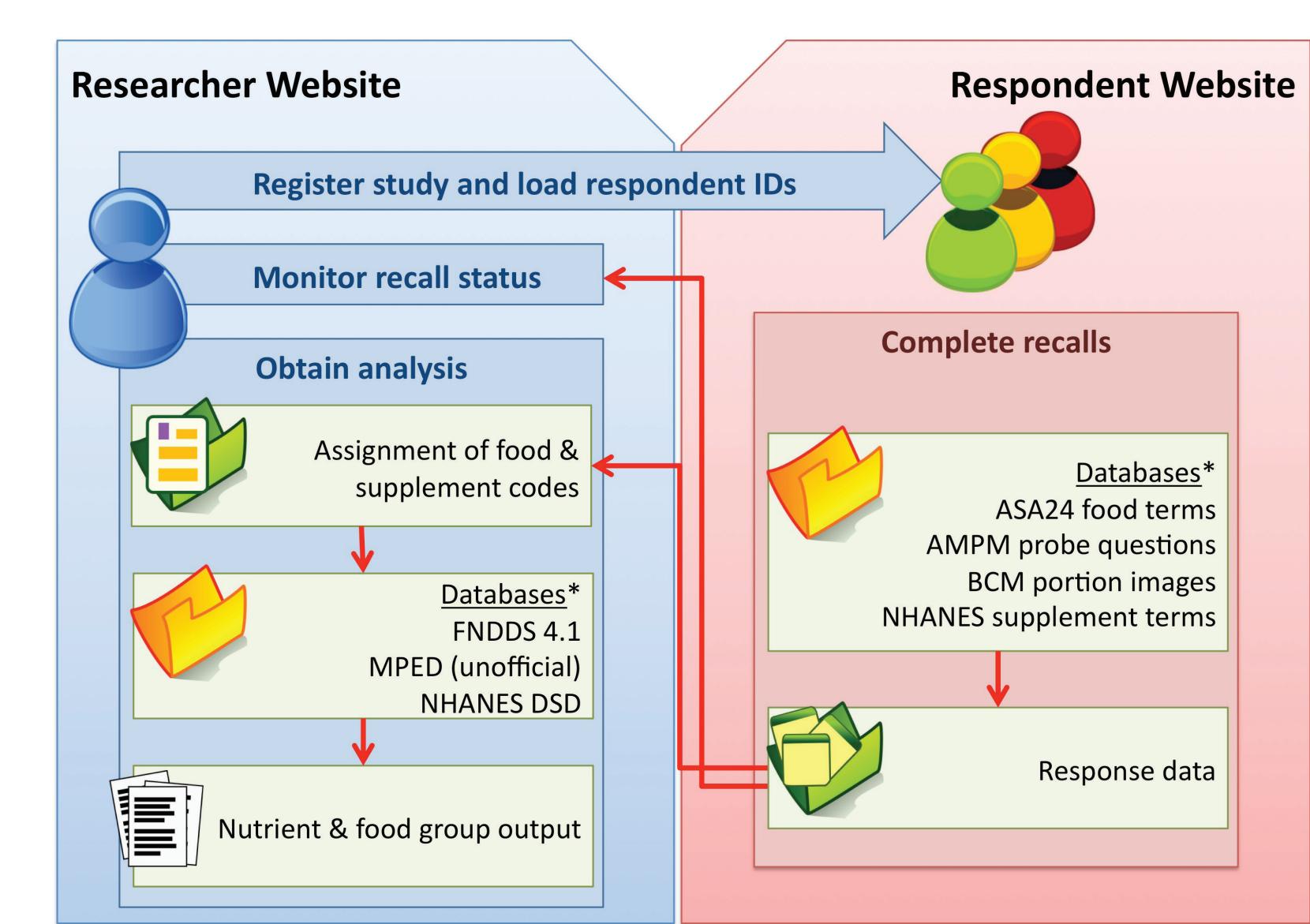# Comparison of Dietary Intake Estimates from NCI's Automated Self-Administered 24-Hour Recall (ASA24™) to Interviewer-Administered Automated Multiple-Pass Method Recall

Thompson FE[1], Dixit-Joshi S[2], Potischman N[1], Kirkpatrick SI[1,7], Alexander GL[3], Coleman LA[4,8], Kushi LH[5], Zimmerman TP[2], Groesbeck M[3], Sundaram M[4], Clancy HA[5], Douglass D[2], Mittl B[2], George SM[1], Kahle L[6], Subar AF[1]

[1]National Cancer Institute; [2]Westat, Inc.; [3]Henry Ford Health System; [4]Marshfield Clinic; [5]Kaiser Permanente Northern California; [6]Information Management Services, Inc., [7]Currently at University of Waterloo; [8]Currently at Abbott Nutrition

**ASA24**™
ASA24 Automated Self-administered 24-hour Recall

## Background

24-hour recalls provide high-quality dietary data with less measurement error than food frequency questionnaires.

- Traditional recalls are expensive due to the need for trained interviewers and multiple days of data.

- As a result, recalls have not always been feasible for large-scale dietary research.

- A web-based 24-hour recall can provide a low-cost means to obtain high-quality dietary data.

## What Is ASA24?

- Web-based, self-administered 24-hour recall
- Fully automated system for probing, assigning codes, and summarizing total intakes of foods and nutrients

## Availability

- Available online free of charge to researchers, clinicians, and educators
  - ASA24-2011, released September 2011
  - ASA24-Kids, released September 2012
  - New version expected in 2014

- To date, ASA24 has been used in >800 studies; >110,000 recalls have been collected

## ASA24 System



Researcher Website — Register study and load respondent IDs — Monitor recall status — Obtain analysis — Assignment of food & supplement codes — Databases* FNDDS 4.1, MPED (unofficial), NHANES DSD — Nutrient & food group output

Respondent Website — Complete recalls — Databases* ASA24 food terms, AMPM probe questions, BCM portion images, NHANES supplement terms — Response data

* Abbreviations: AMPM, Automated Multiple Pass Method; BCM, Baylor College of Medicine; DSD, Dietary Supplement Database; FNDDS, Food and Nutrient Database for Dietary Surveys; MPED, MyPyramid Equivalents Database; NHANES, National Health and Nutrition Examination Survey

## Evaluation: Comparison Study
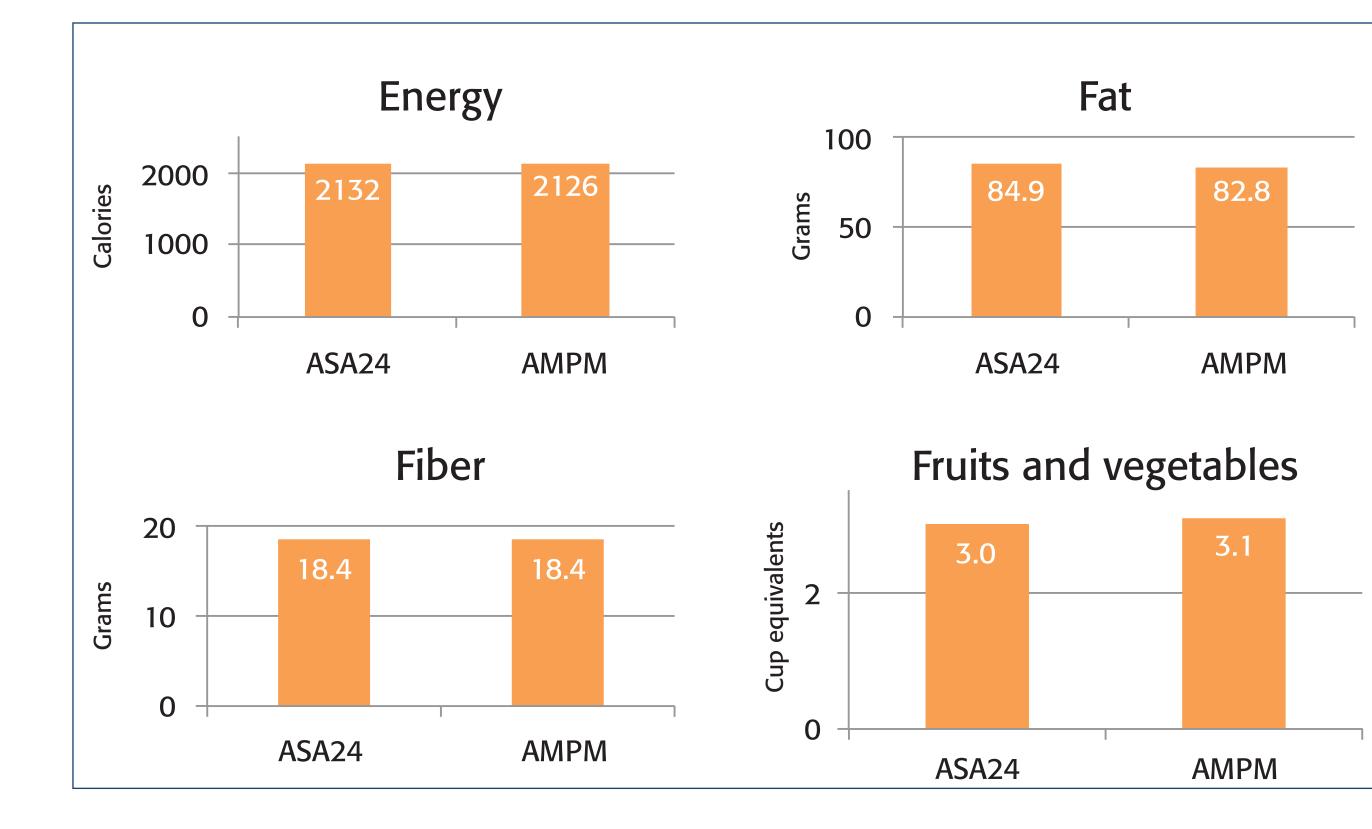
### ■ Purpose

- Comparison study of intakes reported on ASA24 versus standardized interviewer-administered recalls (USDA Automated Multiple-Pass Method, AMPM), used in NHANES

### ■ Design

- 1183 adults aged 20-70 years recruited from three integrated health systems (WI, MI, and CA)

- Randomized into four groups and completed two recalls 4-7 weeks apart:

  1) two ASA24 recalls
  2) two AMPM recalls
  3) one ASA24 recall followed by one AMPM recall
  4) one AMPM recall followed by one ASA24 recall

- Participants received modest incentives and were given multiple attempts to complete each recall

## ■ Relative Validity

### Mean intakes for ASA24 and AMPM were similar



Energy: ASA24 2132, AMPM 2126. Fat: ASA24 84.9, AMPM 82.8. Fiber: ASA24 18.4, AMPM 18.4. Fruits and vegetables: ASA24 3.0, AMPM 3.1.

## ■ Feasibility

- Response rate
  - Of those invited, 10% visited recruitment website
  - Of those who visited website, 74% were eligible and consented
  - 1083 respondents: 50% male; 35% African-American and 22% Hispanic

- Completion/attrition rates
  - Of those who were eligible and consented:
    ○ 95% completed at least one recall
    ○ 80% completed both recalls
  - Completion and attrition rates similar across study groups and by recall mode

## ■ Preference

### Respondents preferred ASA24 over AMPM*

| | Males (n=205) | | Females (n=240) | |
|---|---|---|---|---|
| | AMPM | ASA24 | AMPM | ASA24 |
| Total | 56 (27%) | 149 (73%) | 56 (23%) | 184 (77%) |
| Age Group | | | | |
| 20-34 | 11 (23%) | 36 (77%) | 10 (12%) | 74 (88%) |
| 35-54 | 20 (24%) | 64 (76%) | 19 (27%) | 51 (73%) |
| 55-70 | 24 (33%) | 49 (67%) | 27 (32%) | 57 (68%) |
| *Significance* | | ns | | .012 |
| Education | | | | |
| HS | 5 (20%) | 20 (80%) | 2 (8%) | 23 (92%) |
| > HS | 49 (28%) | 128 (72%) | 54 (25%) | 159 (75%) |
| *Significance* | | ns | | .0530 |

* Asked only for those who completed recalls using both ASA24 and AMPM

## ■ Need for editing free text in ASA24

- All free text is automatically coded within ASA24 system

- Of the 1016 ASA24 recalls (>18,000 foods reported), 440 (43%) recalls had free text for 749 foods (4%)

  • For 524 foods (70%), default code was correct
  • For 225 foods (30%), default code was incorrect

- Incorrect default codes affected 184 ASA24 recalls

### Editing did not significantly affect mean reported intakes

| Mean Daily Nutrient/ Food Group Intake | Before Editing | After Editing |
|---|---|---|
| Energy (calories) | 2148 | 2173 |
| Fat (g) | 85.6 | 85.3 |
| Fruit/Veg (cup equiv.) | 2.87 | 2.88 |

## Summary and Conclusions

- ASA24 performs well relative to interviewer-administered recalls supporting its use in the collection of high-quality dietary data.

- The ASA24 is low-cost, well-accepted, and provides data without need for editing.

- The ASA24 offers a feasible way to collect high-quality dietary data in a variety of research settings.
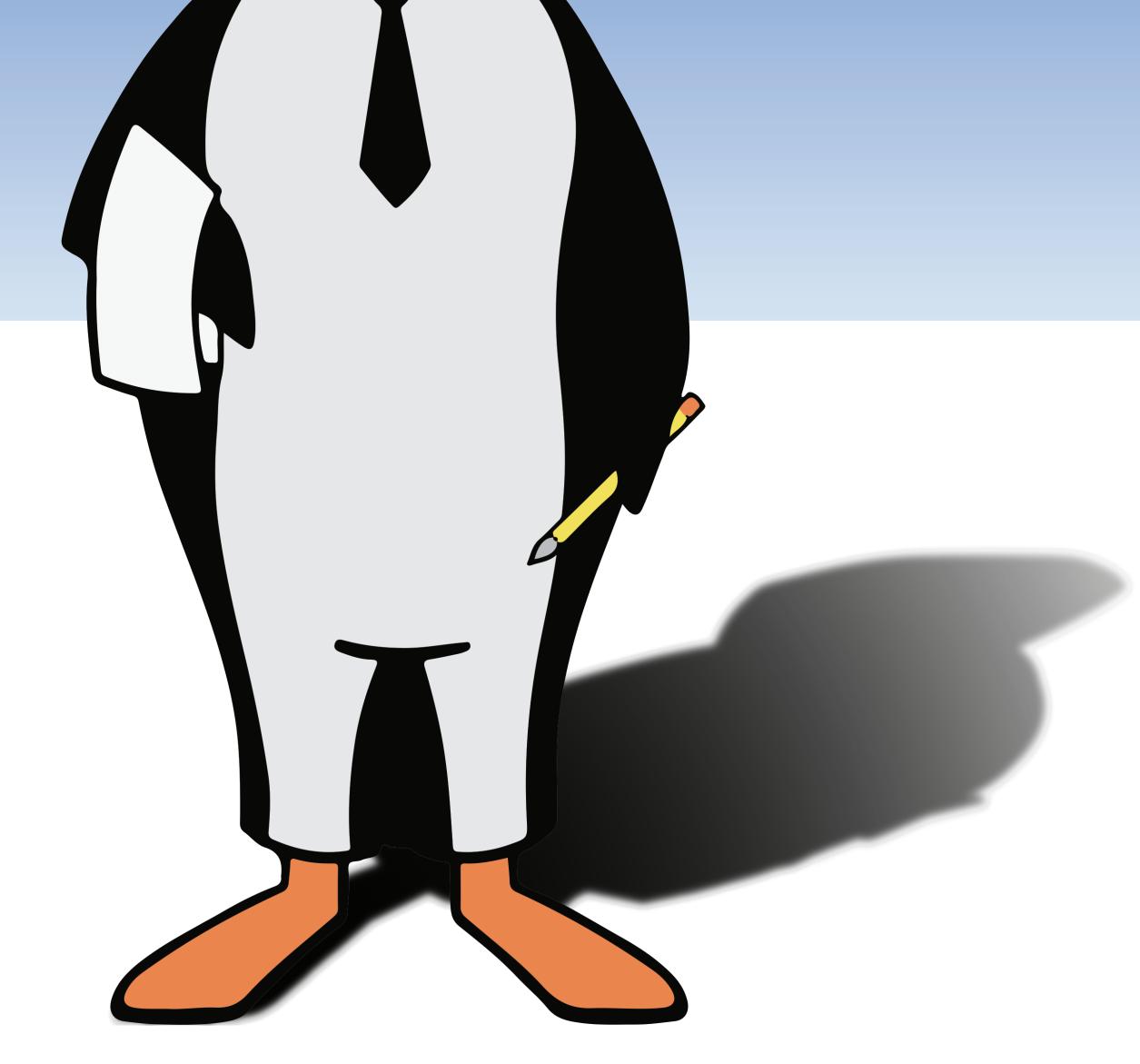
## For further information:

http://riskfactor.cancer.gov/tools/instruments/asa24

Subar AF, Kirkpatrick SI, Mittl B, Zimmerman TP, Thompson FE, Bingley C, Willis G, Islam NG, Baranowski T, McNutt S, Potischman N. The Automated Self-Administered 24-hour dietary recall (ASA24): a resource for researchers, clinicians, and educators from the National Cancer Institute. J Acad Nutr Diet 2012; 112(8):1134-7.

NIH National Cancer Institute — Westat®