Feasibility of mobile technology for monitoring dietary intake in resource-limited communities: Investigating digital food records in the CV Health and Needs Assessment in Washington, D.C

Leah R. Yingling

IRTA Research Fellow
Powell-Wiley Research Lab
Cardiovascular and Pulmonary Branch
Division of Intramural Research, NHLBI

NIH National Heart, Lung, and Blood Institute

Mobile Health Technologies May Reach Low SES Communities Outside The Clinical Setting

~1 hour/year

5000+ hours/year

- Less is understood about incorporating mHealth technology in **community-based interventions**

- Need to account for resource limitations when using technology in community-based interventions

Asch DA et al, NEJM 2012; Burke LE, et al., AJPM 2012; Cortez NG, et al. NEJM; Bennett GG, et al. Obesity Reviews

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OBJECTIVE*:*

To evaluate the feasibility of a **digital food record** among church-based populations in resource-limited Washington, D.C. wards

Washington D.C. CV Health and Needs Assessment

- Participants (n=18) from churches in **Wards 5, 7, and 8**

- Photo-documented **3-day dietary intake** using a digital food record on a Wi-Fi-dependent, mobile device
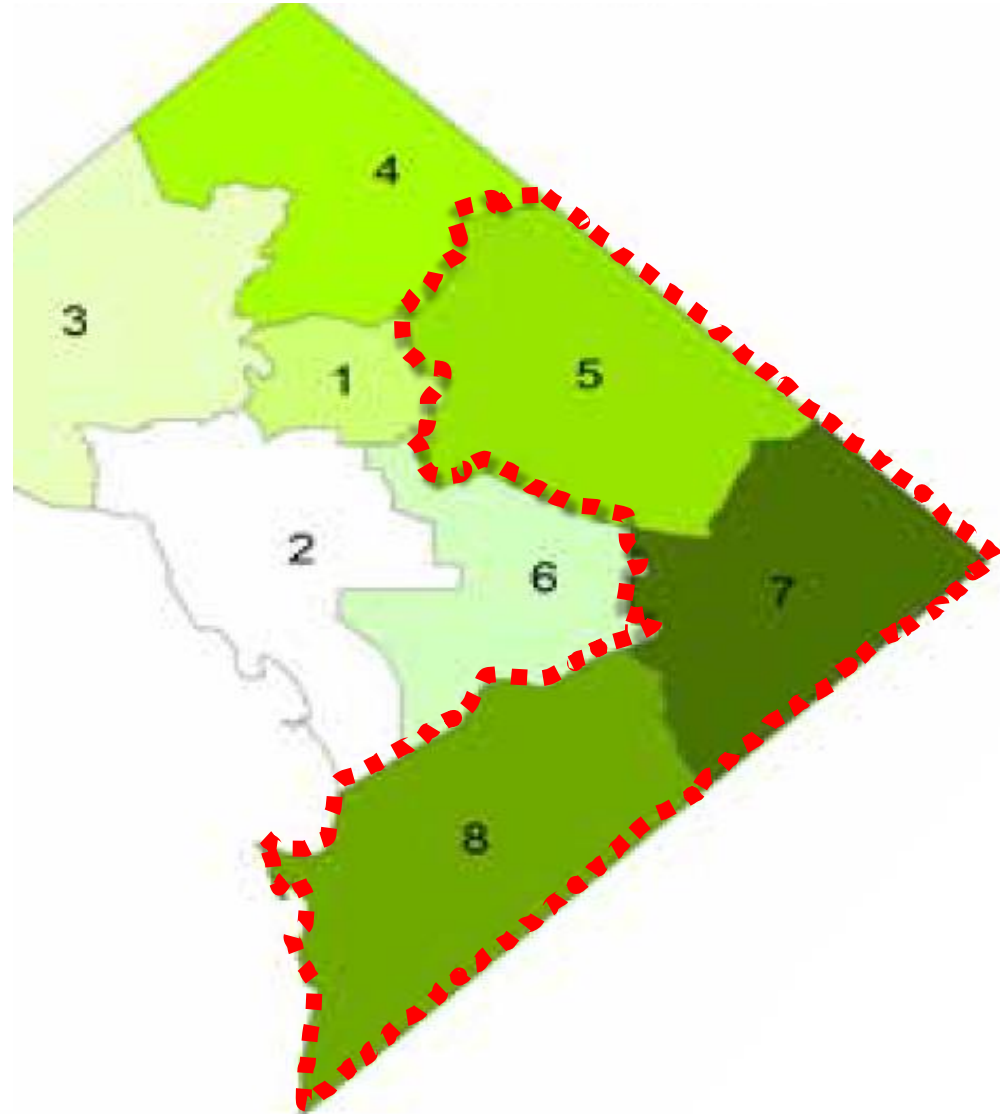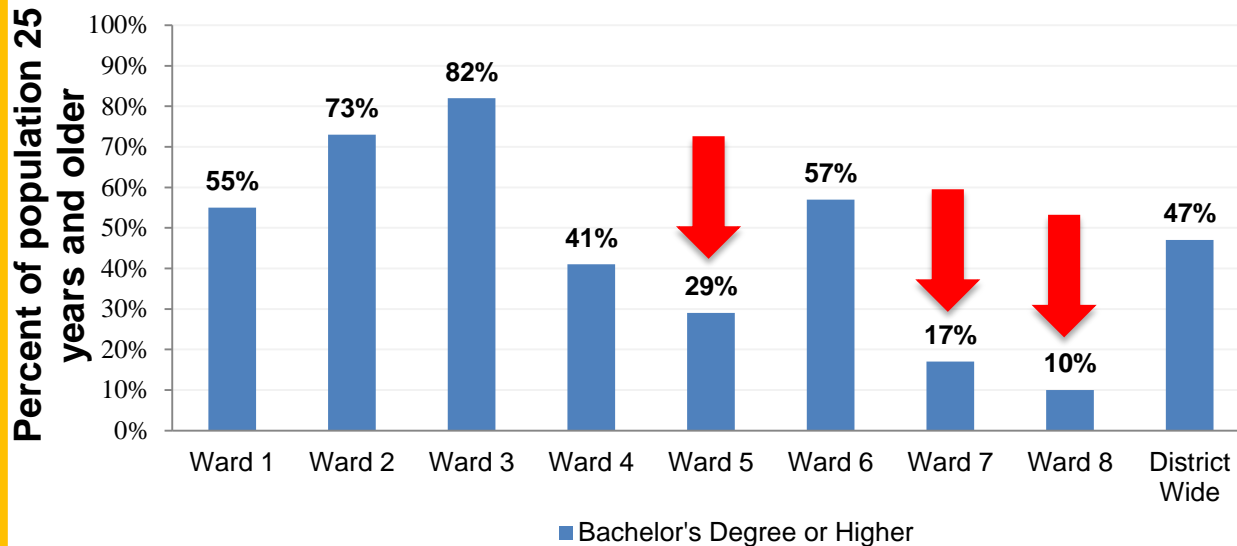
Median Household Income ($/year):
Ward 5: $53,000
Ward 7: $39,000
Ward 8: $30,000
Washington, DC: **$66,000**

Educational Attainment in Washington, D.C.

Bar chart — Percent of population 25 years and older (Bachelor's Degree or Higher):
- Ward 1: 55%
- Ward 2: 73%
- Ward 3: 82%
- Ward 4: 41%
- Ward 5: 29%
- Ward 6: 57%
- Ward 7: 17%
- Ward 8: 10%
- District Wide: 47%

■ Bachelor's Degree or Higher

# Participants Received an Instruction Manual and Device With Pre-loaded App

Cardiovascular Health and Needs Assessment in Washington D.C.   ❤ vignet

FitNinja Instruction Manual

FitNinja is a mobile app (program) that lets you record your meals throughout the day. You will use the FitNinja for two separate assignments.

1. You will be required to use FitNinja to keep a 3-day detailed food record. You will need to take a picture of all of your food items before you begin your meal/snack and a picture of any remaining food items after you finish your meal/snack. For each meal/snack, you should have at least two pictures. You should take pictures of your meals for at least 3 days in a row (with a least one weekend day and two weekdays).

2. You can also use FitNinja to log your meals for the duration of the study.

3. You will need Wi-Fi connectivity to use FitNinja.

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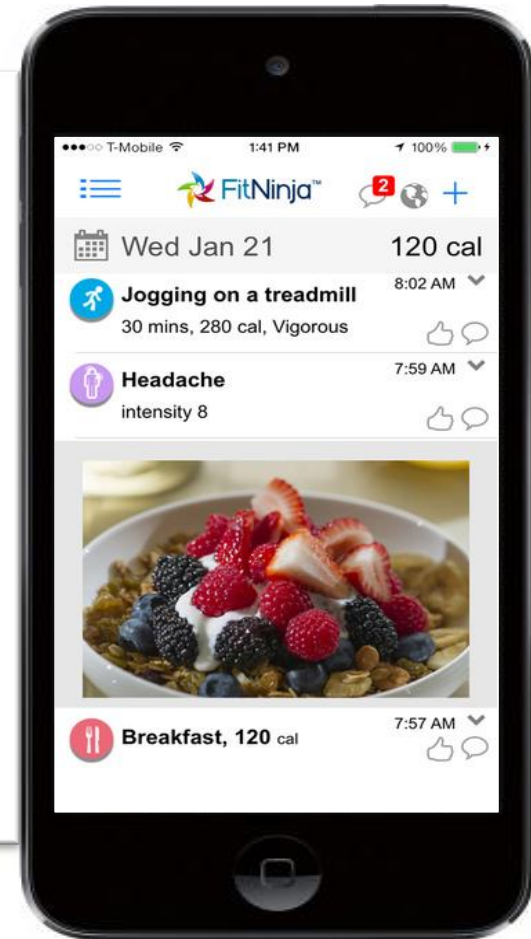
Participants Had Several Additional Options for Logging Their Meals
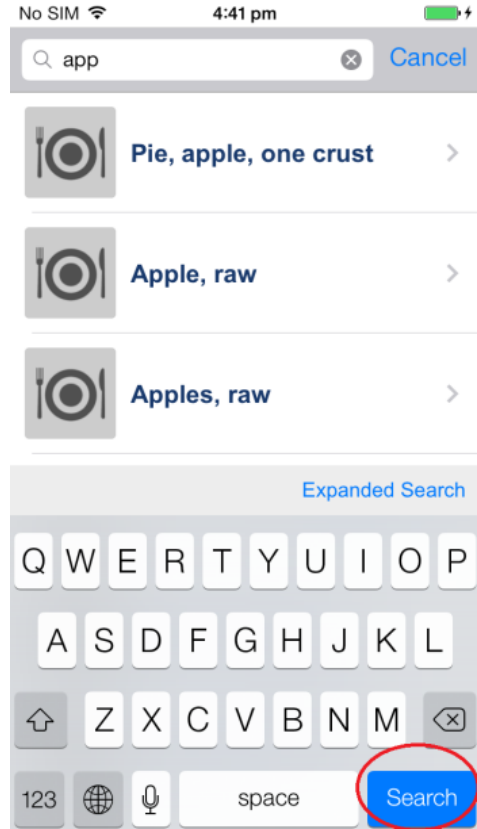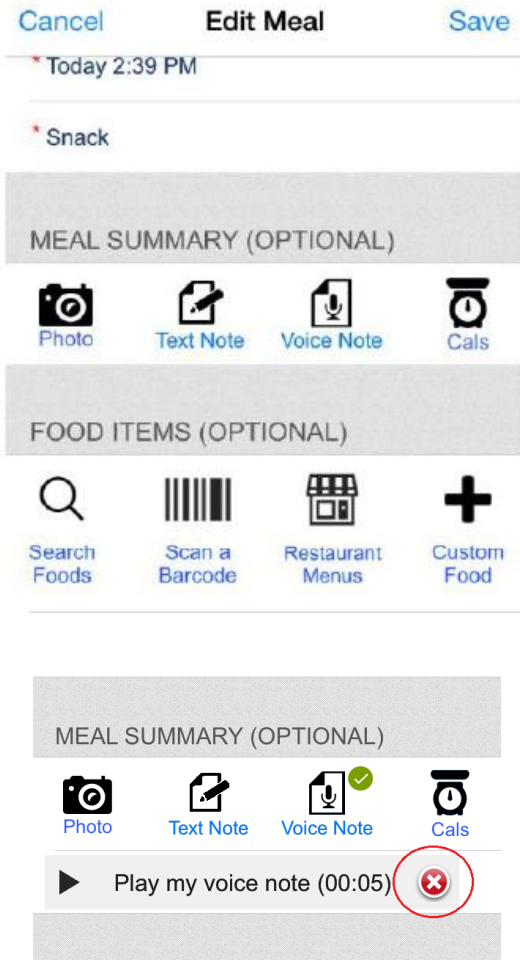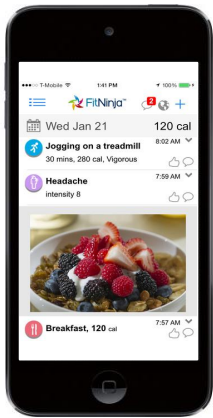
**Digital Food Record On Wi-fi-
Dependent Device**
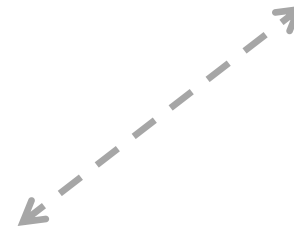
Wi-Fi

Internet

**Secure, Server
HIPAA Compliant**

Wi-Fi

**NHLBI
Researcher**
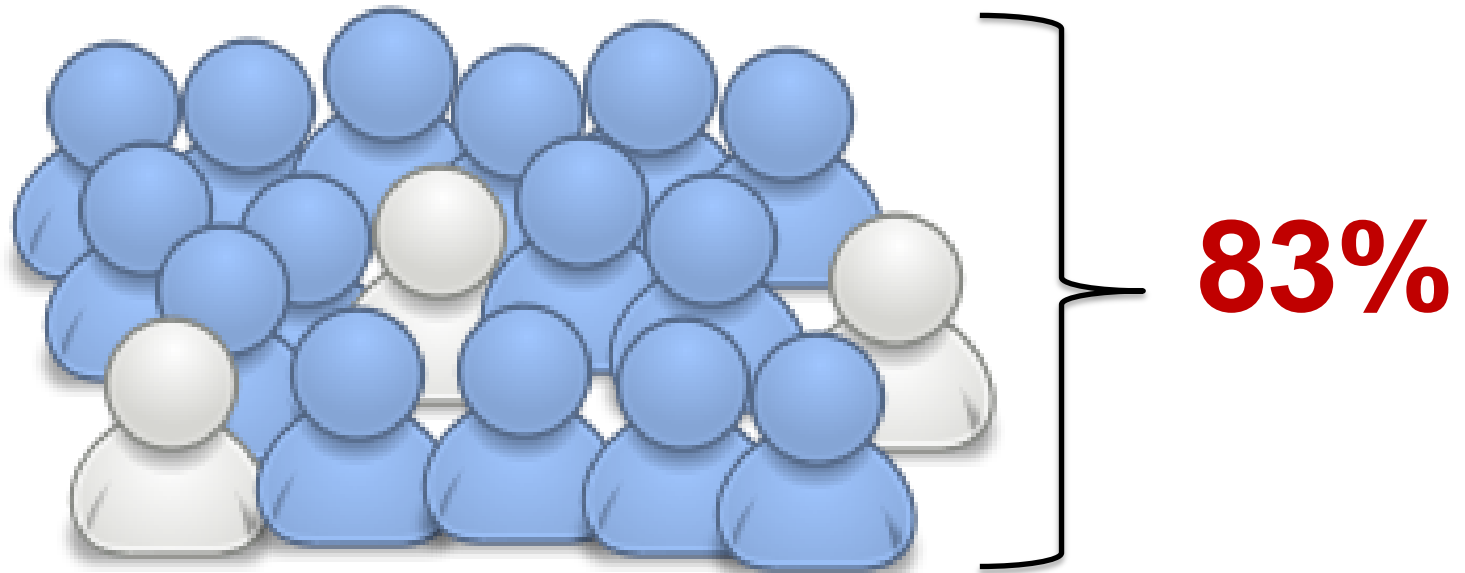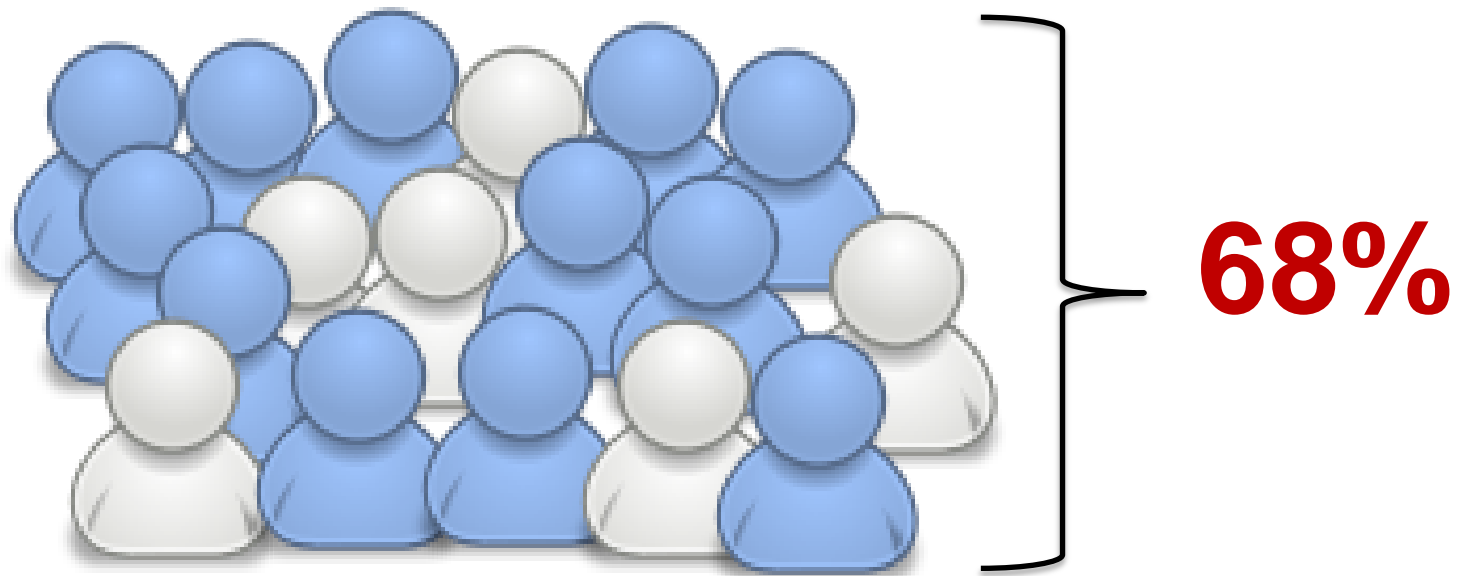
Internet

FEASIBILITY:

Successfully capturing **before and after images** for **at least two meals** (i.e. breakfast, lunch, dinner, or snack) on **three days**

Most Participants Photo-Documented Their Meals

83%
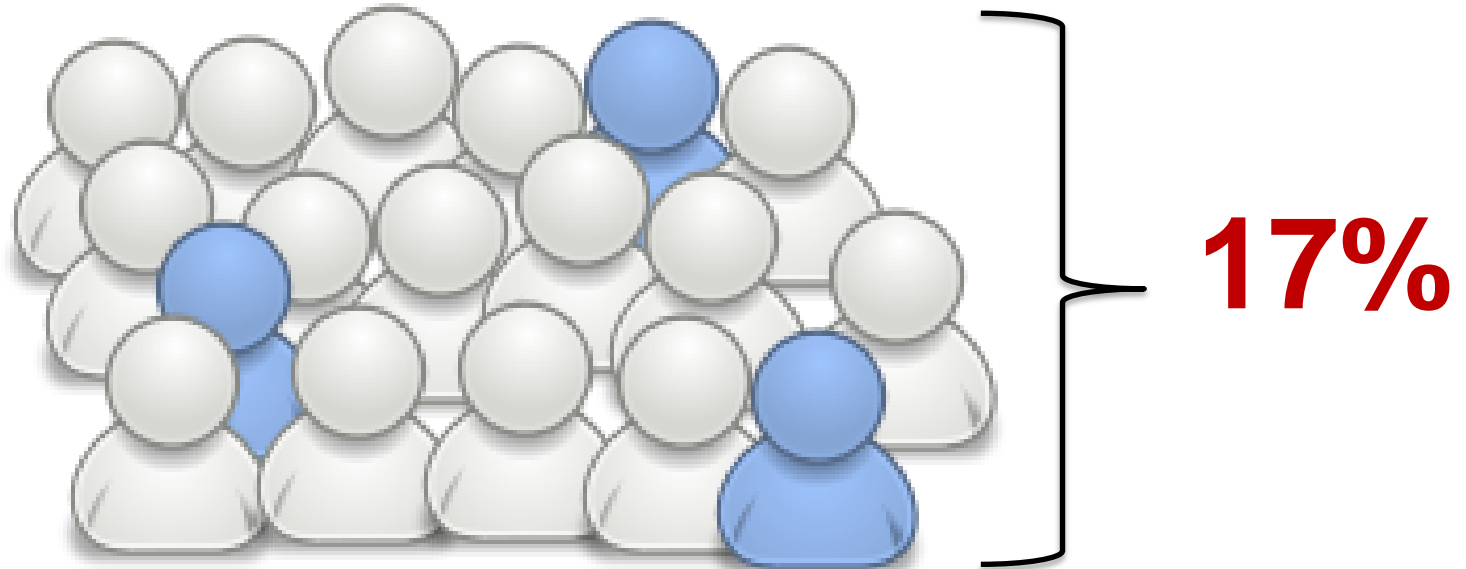
Average # Logged Meals/Day = 2.8 ± 0.8

Over Half Captured At Least One Photo For 2 Meals/Day For 3 Days

68%

Few Participants Captured Meal Data as Directed

17%

*(i.e. before **AND** after photos for **2 meals/day** for **3 days**)*

Participants Typically Captured 'Before' Photos and Forgot 'After' Photos

Dinner -   "For dinner I am eating a veggie burger

Participants Typically Captured 'Before' Photos and Forgot 'After' Photos

Lunch -   "basil pesto chicken and chili"

Photo Quality Varied Across Participants

Good Quality

Poor Quality

Meal Categorization was an Issue for Some Participants

Snacks -

Conclusions

- Most participants photo-documented their meals for the required 3 days

- However, they were less successful at including **BOTH** before and after meal photos

Implementing digital food records specifically requires training or reminders on the importance of before and after photos to ensure greater accuracy in dietary intake data.

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Questions?

leah.yingling@nih.gov
tiffany.powell@nih.gov