FoodAPS: Alternative Data Collection Methods

Is "Proof of Purchase" Really Proof?

Adam M. Kaderabek

University of Michigan
Institute for Social Research
Program in Survey & Data Science

Prepared and Presented in Collaboration with:

Yajuan Si, Institute for Social Research
Brady T. West, Institute for Social Research
Jeffrey M. Gonzalez, USDA – Economic Research Service
Elina T. Page, USDA – Economic Research Service
John A. Kirlin, Kirlin Analytical Services

ERS
ECONOMIC RESEARCH SERVICE
United States Department of Agriculture

INSTITUTE FOR SOCIAL RESEARCH
UNIVERSITY OF MICHIGAN

This presentation was supported in part by the U.S. Department of Agriculture, Economic Research Service.

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

Background

- FoodAPS-1 was a nationally representative survey that collected data about household food purchases and acquisitions.
- The Alternative Data Collection Method (ADCM) study was conducted to test using a web-based app to collect data. The app included the ability to upload images of receipts.
- The ADCM aimed to investigate the likelihood respondents would provide receipts, and if the receipt data could be used to reduce the reporting burden and improve data quality.
- From the events where a receipt was available, a SRS of 100 *food away from home (FAFH)* and 100 *food at home (FAH)* events was taken and receipt data was compared to the respondent's report.
- Sampled events displayed variation in receipt quality, indicating several factors were influencing the reliability of the receipts for data validation.

Expectation of Receipt

Receipt Expected group (3,112 events):

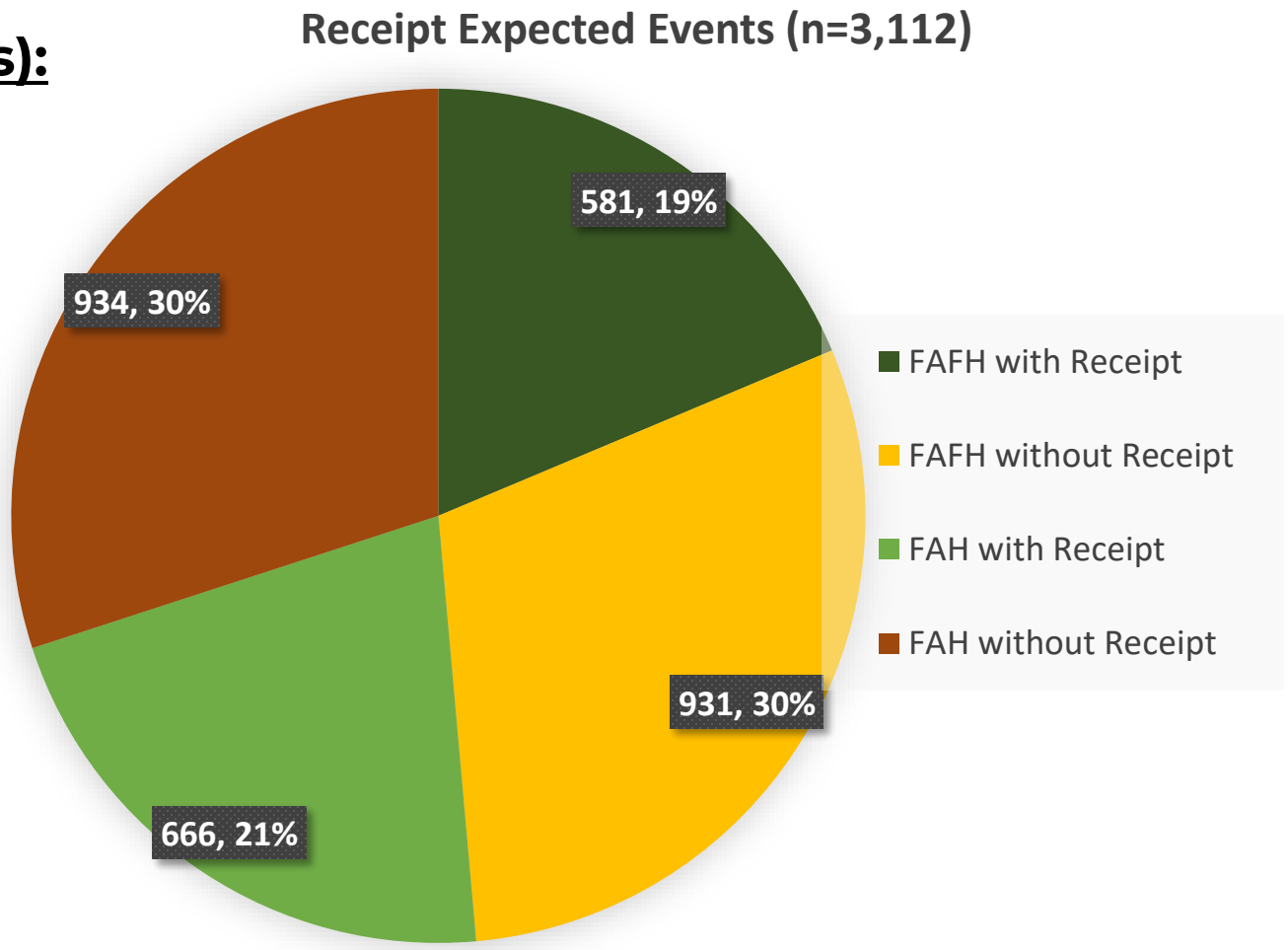
Grocery stores, restaurants/bars, convenience stores, club stores, and superstores/big box stores.

No Receipt Expected group (1,457 events):

School meals (including before and after school care), work, vending machines, and friend's or family's place.

Receipt Possible (336 events):

Farmers markets, food pantries, soup kitchens and locales defined as "other".



Research Questions

1. Are there relationships between the participants, their households, and food-events that can predict the probability a respondent will provide a receipt?

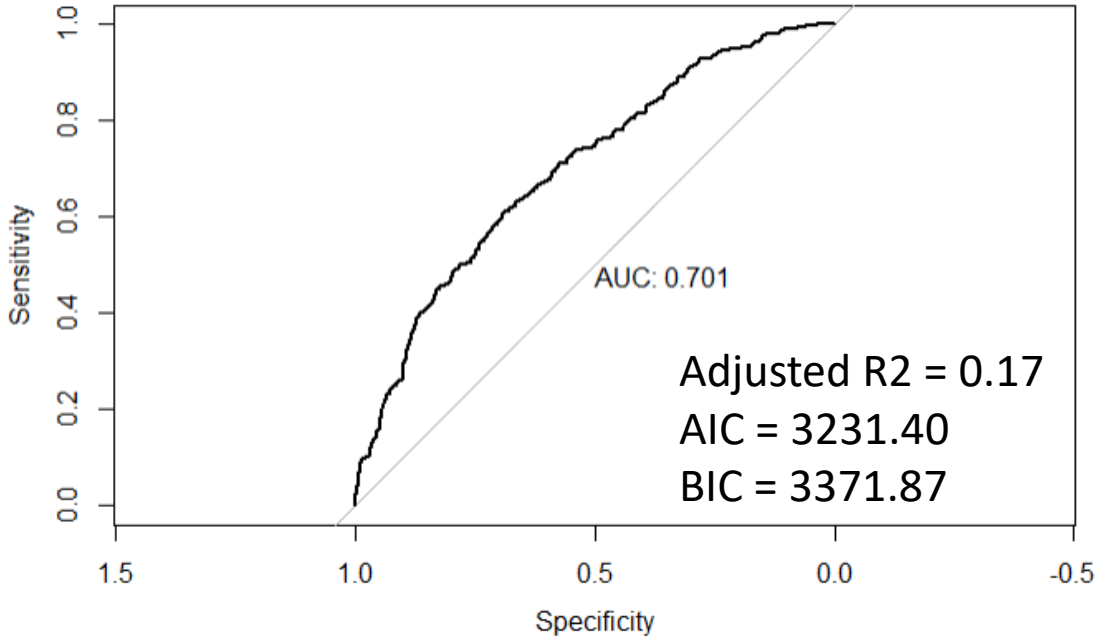
2. Can modeling these relationships identify opportunities for interventions that may influence respondent behavior and in turn improve data quality?

Receipt Predictors

Event Level	Respondent Level	Household Level
Report Mode/Application	**Age**	**Household Size**
Smartphone or Computer	*18-29; 30-39; 40-49; 50-59; 60+ years old*	*1, 2, 3, 4, or 5+ person(s)*
Event Type	**Gender**	**Interview Length**
FAFH or FAH	*Female or Male*	*11-20 min; 21-30 min; 31-40 min; 40+ min*
Item Count	**Race**	**SNAP Status** (received SNAP benefits in prior month)
Few items or Many items	*White, Black, Other (including Hispanic)*	*Yes or No*
Event Cost	**Education**	
Low cost or High cost	*High school or less or More than high school*	
Number of Participants	**Employment**	
One or Multiple	*In labor force or Not in labor force*	
	Primary Respondent for Household	
	Yes or No	

Model Specification

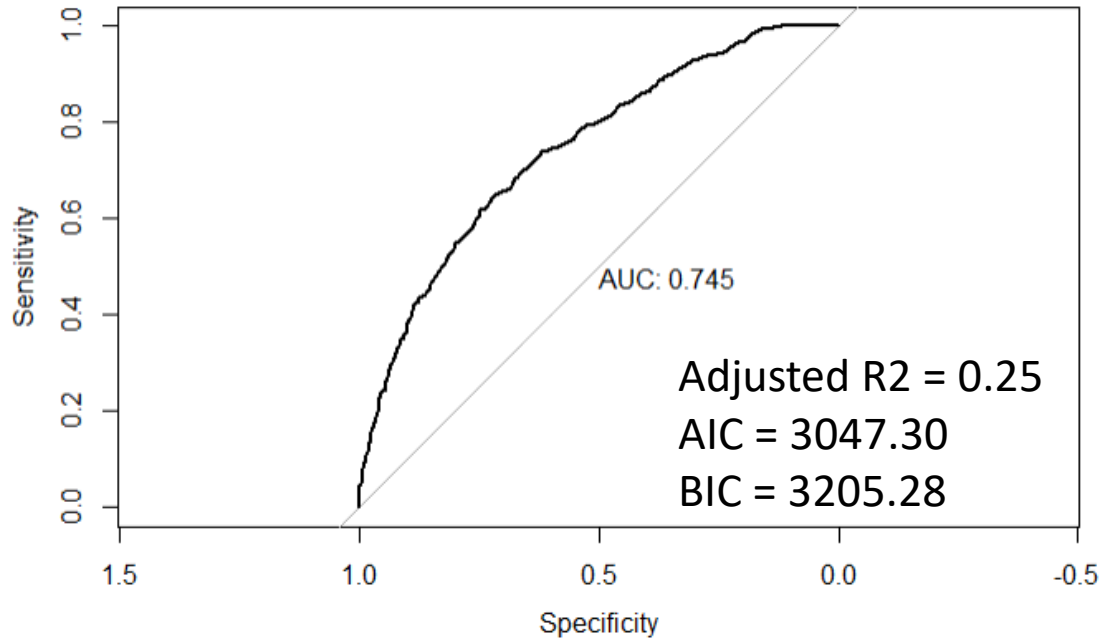
ROC Plot Reference Model



Initial Model with 14 covariates

Event Type, App, Item Count, Event Cost, Participants, Age, Gender, Race, Education, Employment, Primary R, Household Size, Int. Length, SNAP

ROC Plot Final Model



Stepwise BIC Model with 8 covariates (+7 interactions)

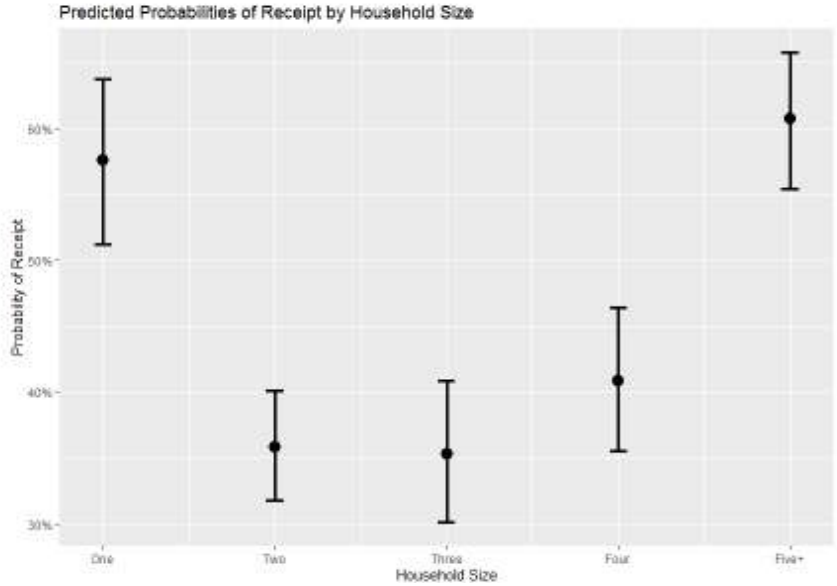
Event Type, App, Item Count, ~~Event Cost~~, ~~Participants~~, ~~Age~~, ~~Gender~~, Race, Education, Employment, ~~Primary R~~, Household Size, ~~Int. Length~~, SNAP

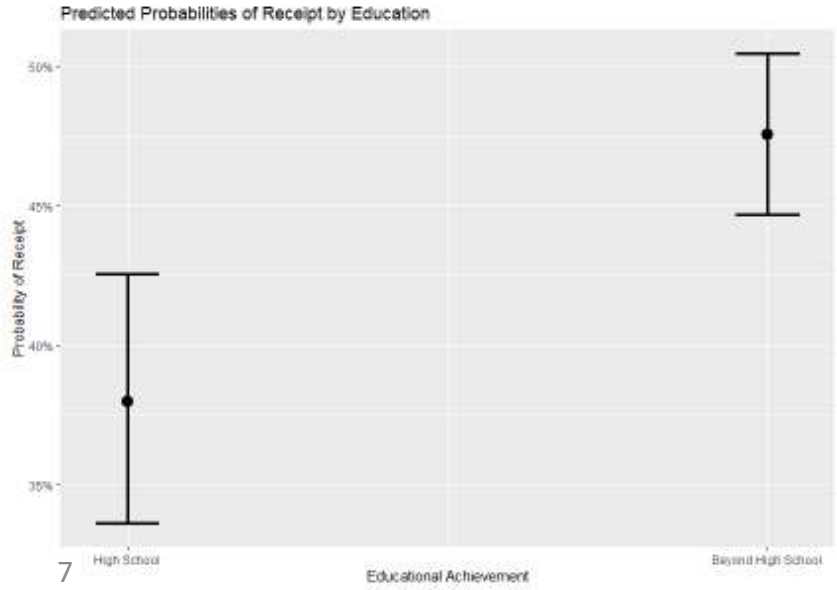
*Education*Household Size, App*Employment, Event Type*Item Count, App*Education, App*Household Size, Race*SNAP, App*SNAP*

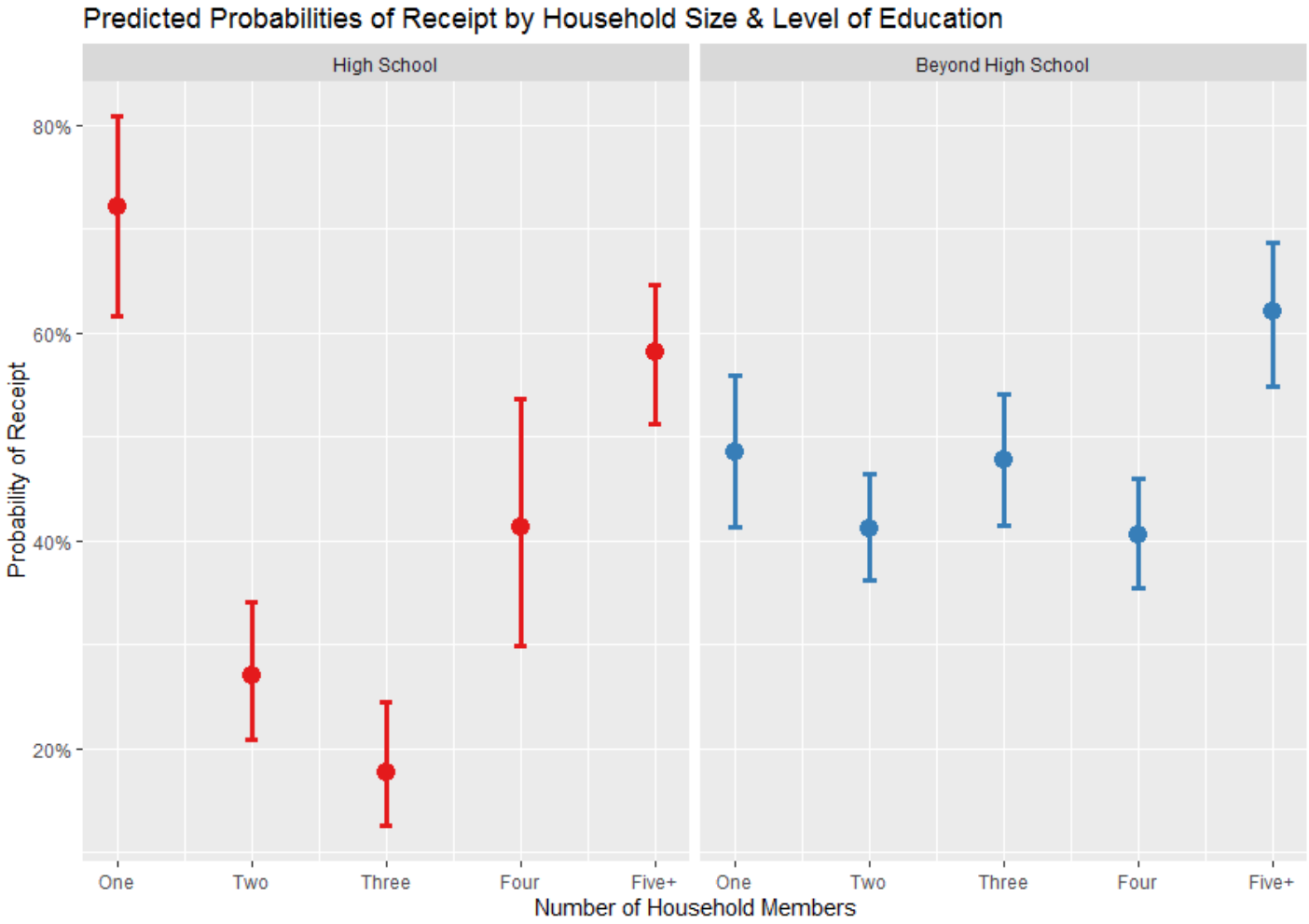
ERS ECONOMIC RESEARCH SERVICE United States Department of Agriculture

INSTITUTE FOR SOCIAL RESEARCH UNIVERSITY OF MICHIGAN

Household Size & Education



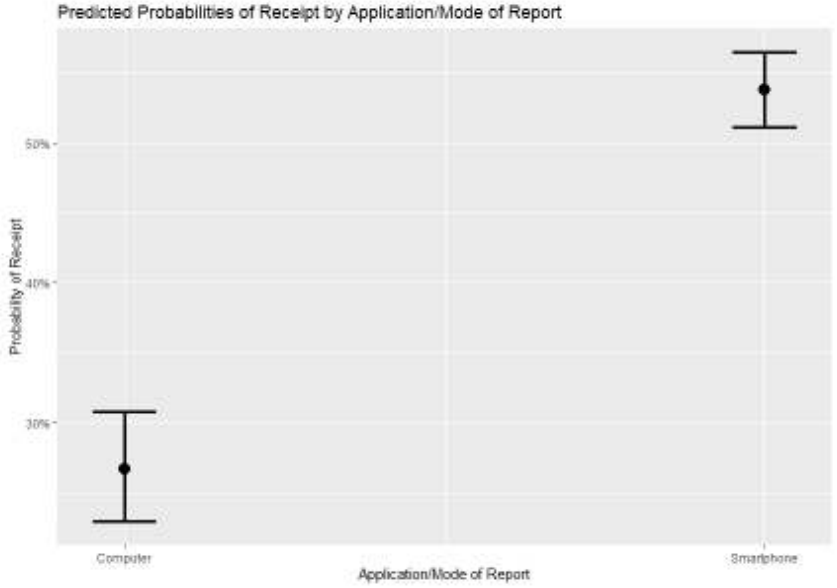


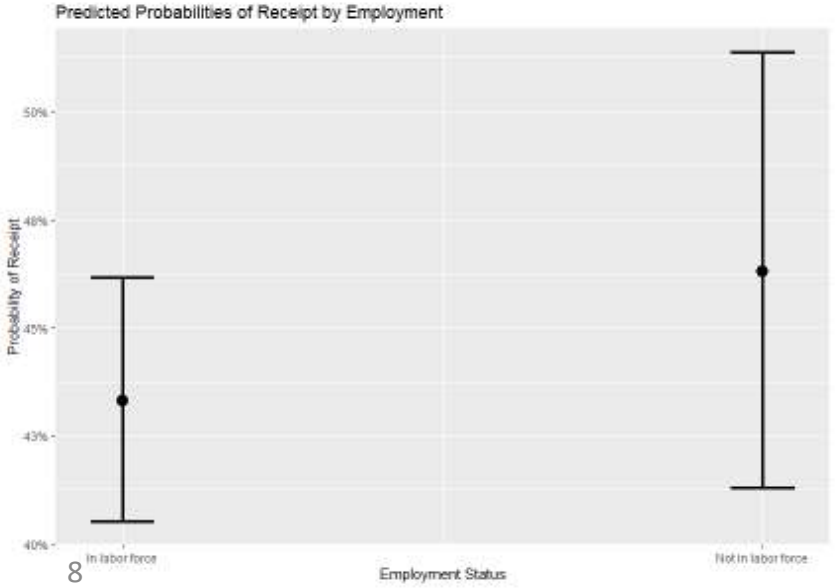


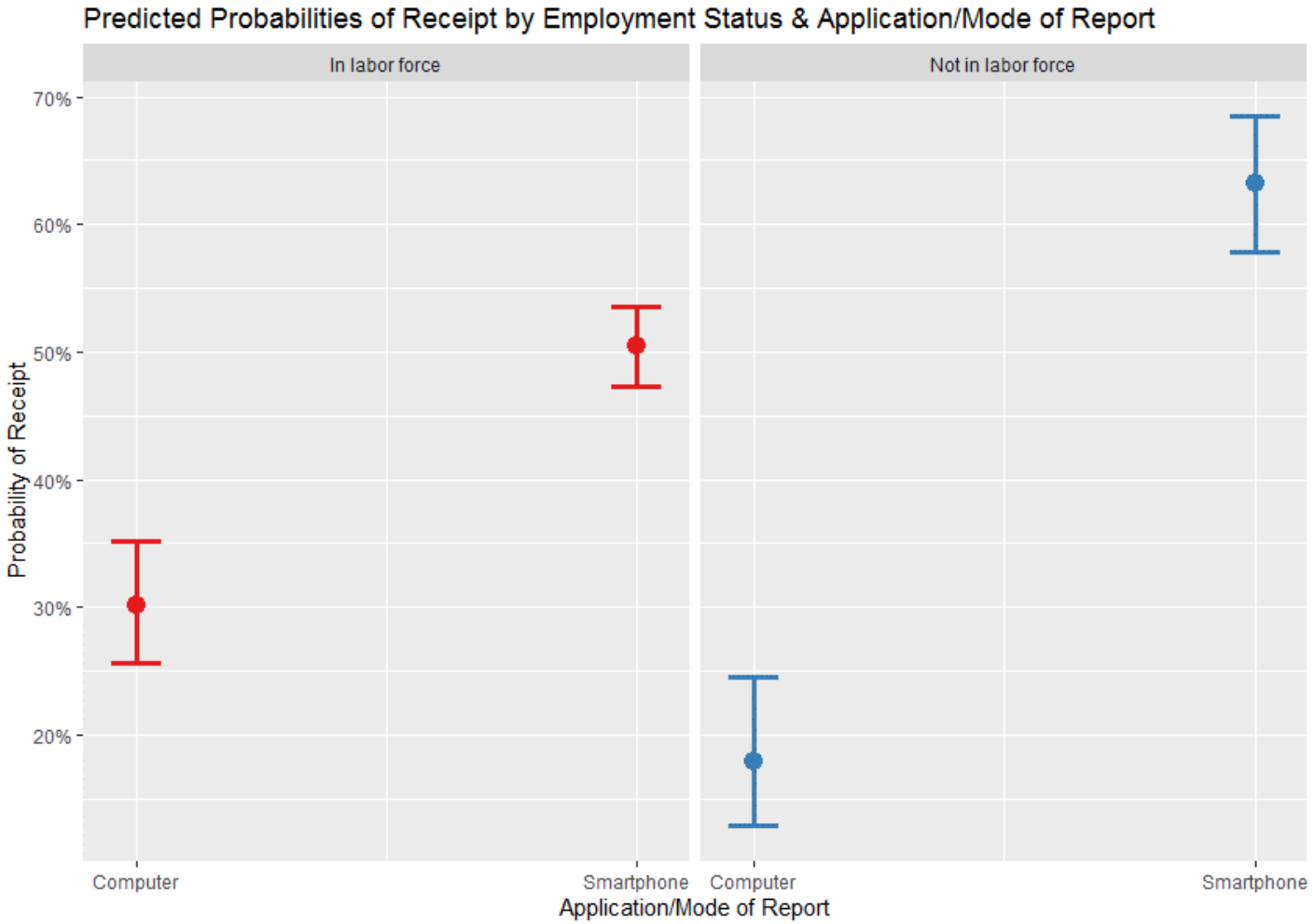
ERS ECONOMIC RESEARCH SERVICE United States Department of Agriculture

INSTITUTE FOR SOCIAL RESEARCH UNIVERSITY OF MICHIGAN

Application/Mode & Employment



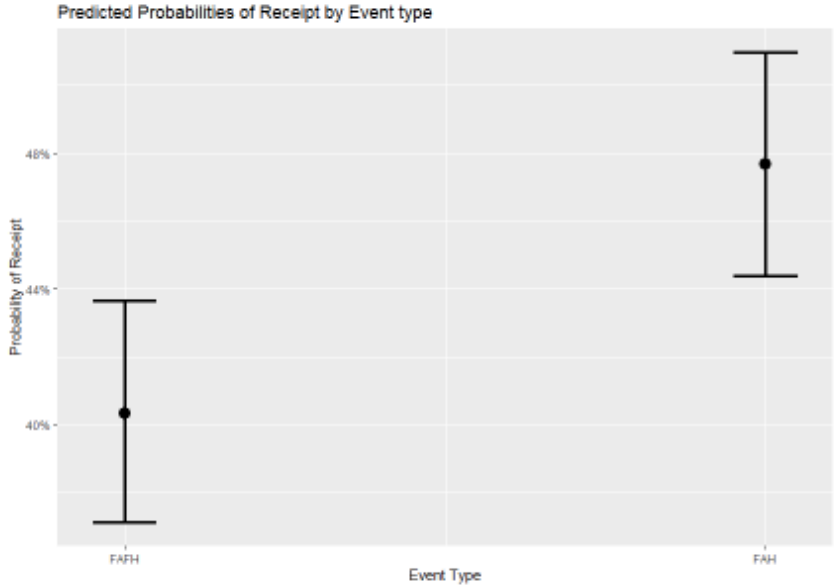


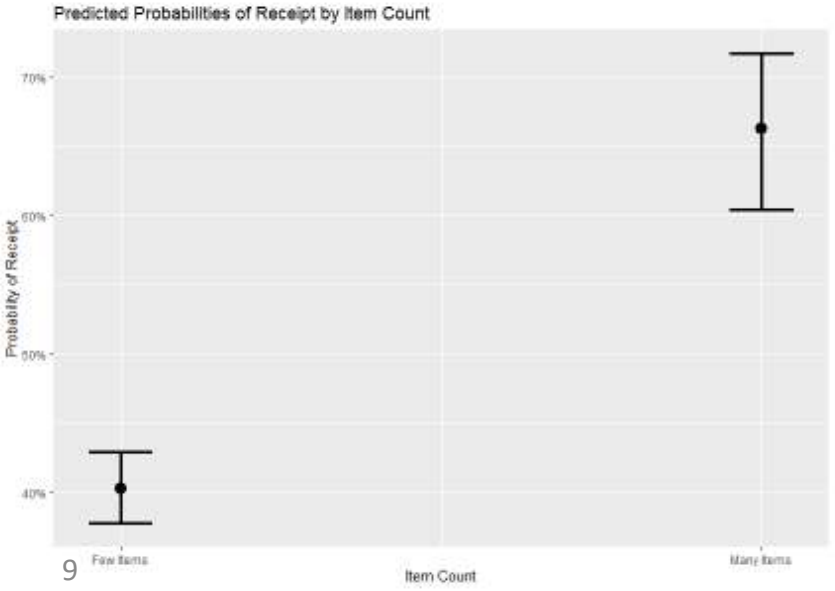


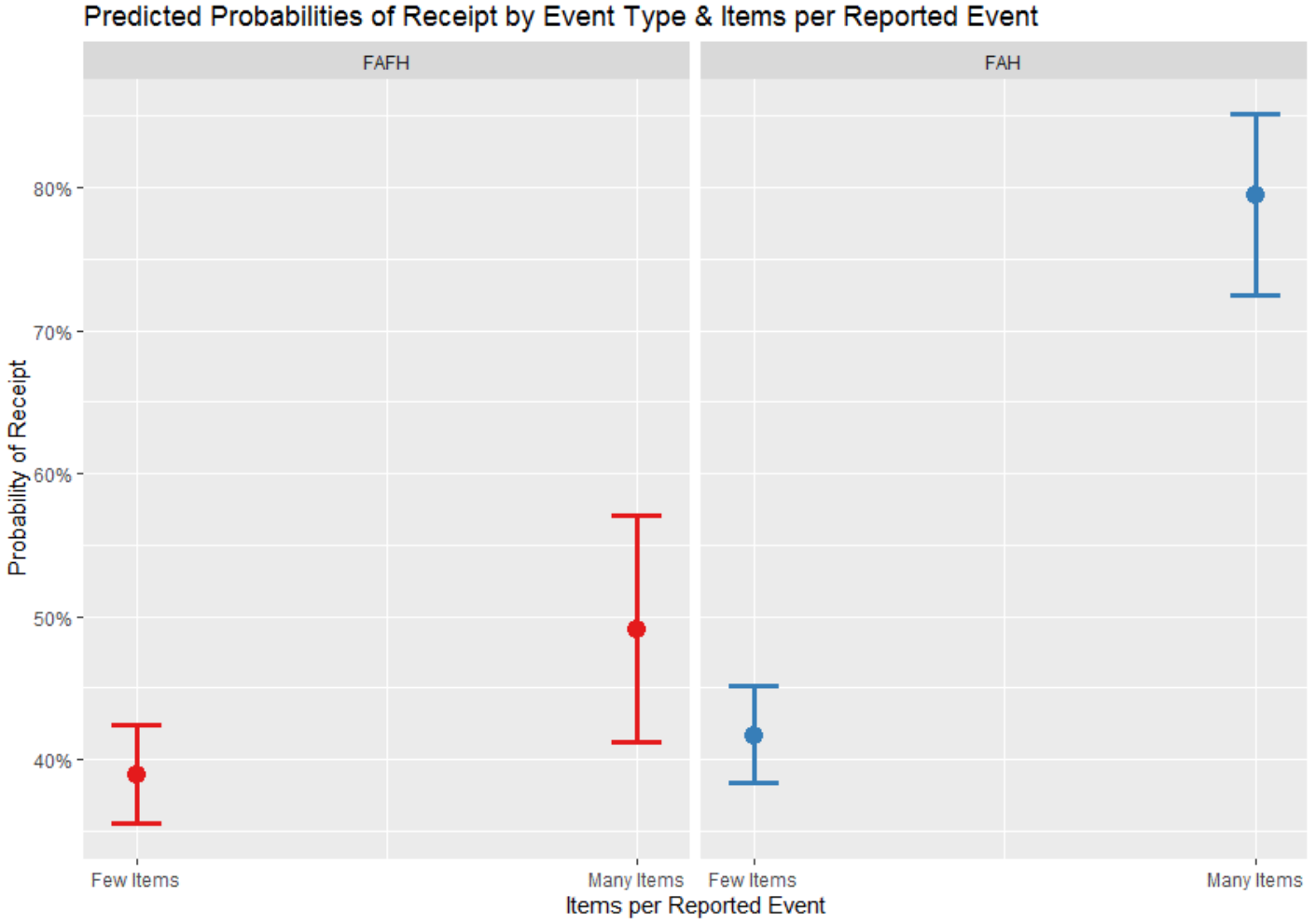
ERS ECONOMIC RESEARCH SERVICE United States Department of Agriculture

INSTITUTE FOR SOCIAL RESEARCH UNIVERSITY OF MICHIGAN

Event Type & Item Count



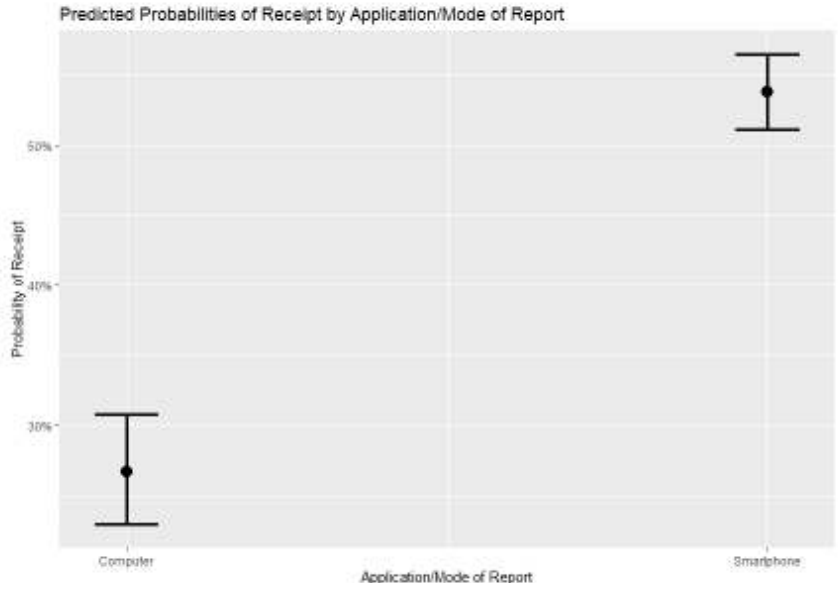


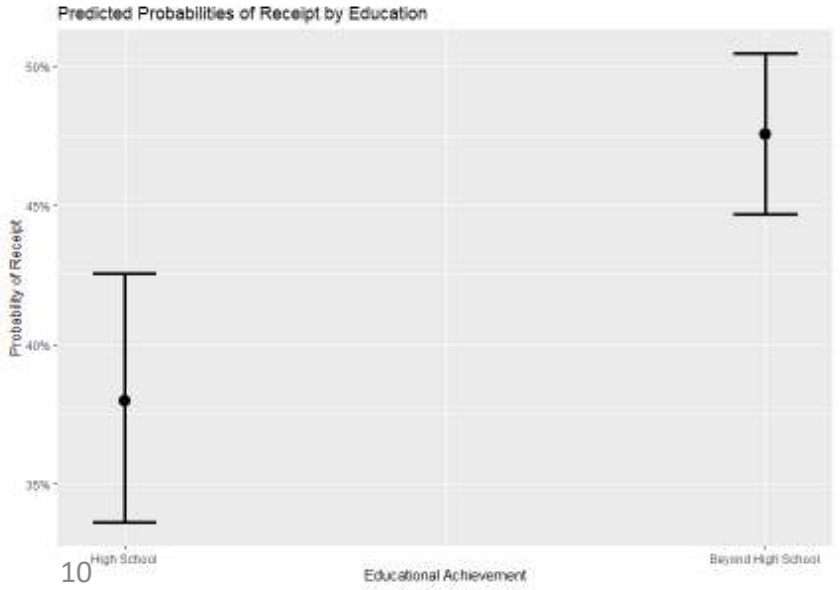


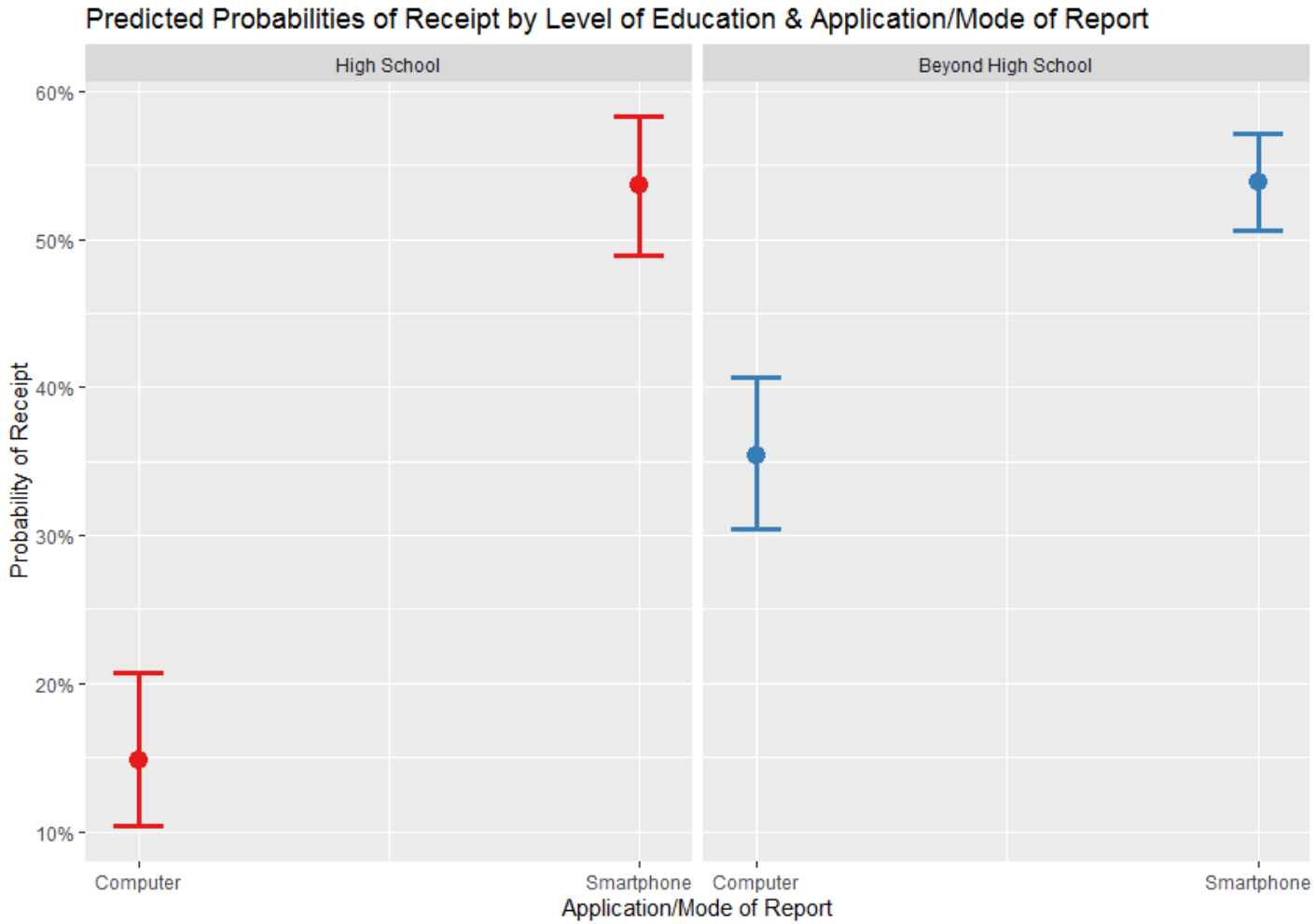
ERS ECONOMIC RESEARCH SERVICE
United States Department of Agriculture

INSTITUTE FOR SOCIAL RESEARCH
UNIVERSITY OF MICHIGAN

Application/Mode & Education



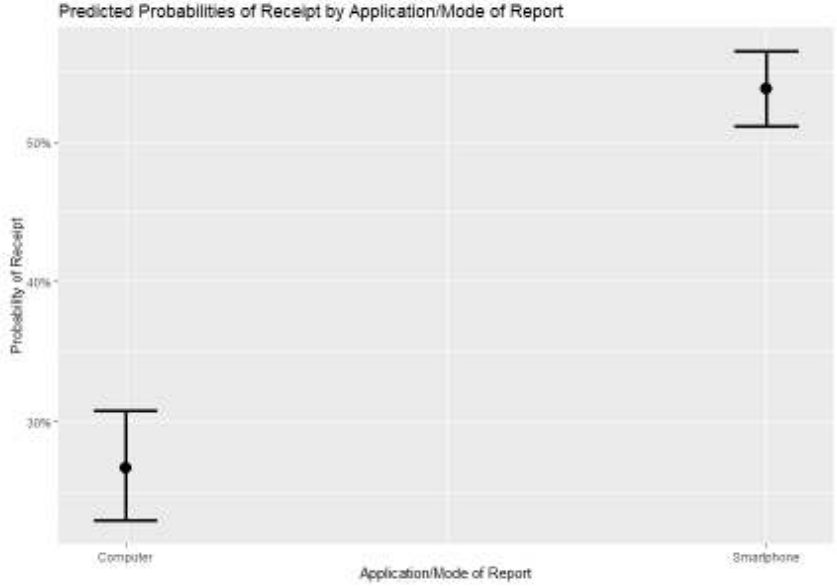


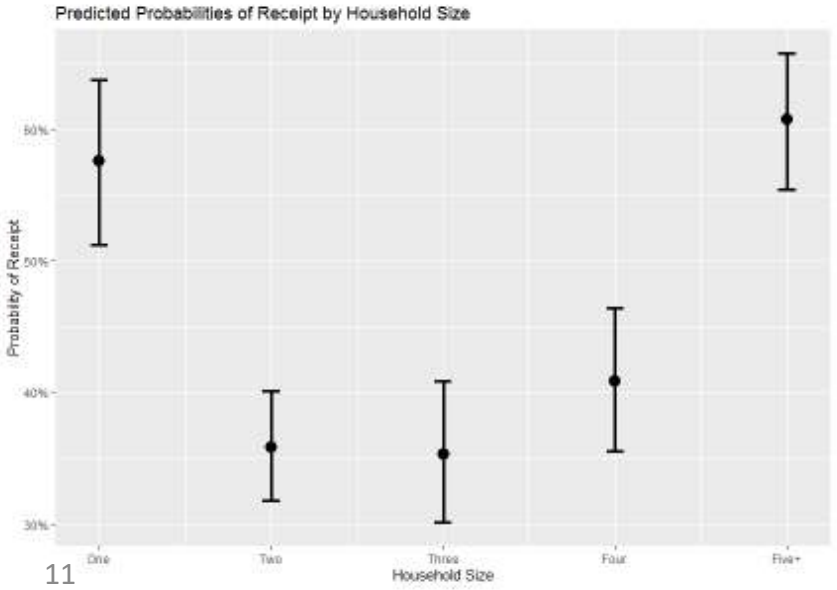


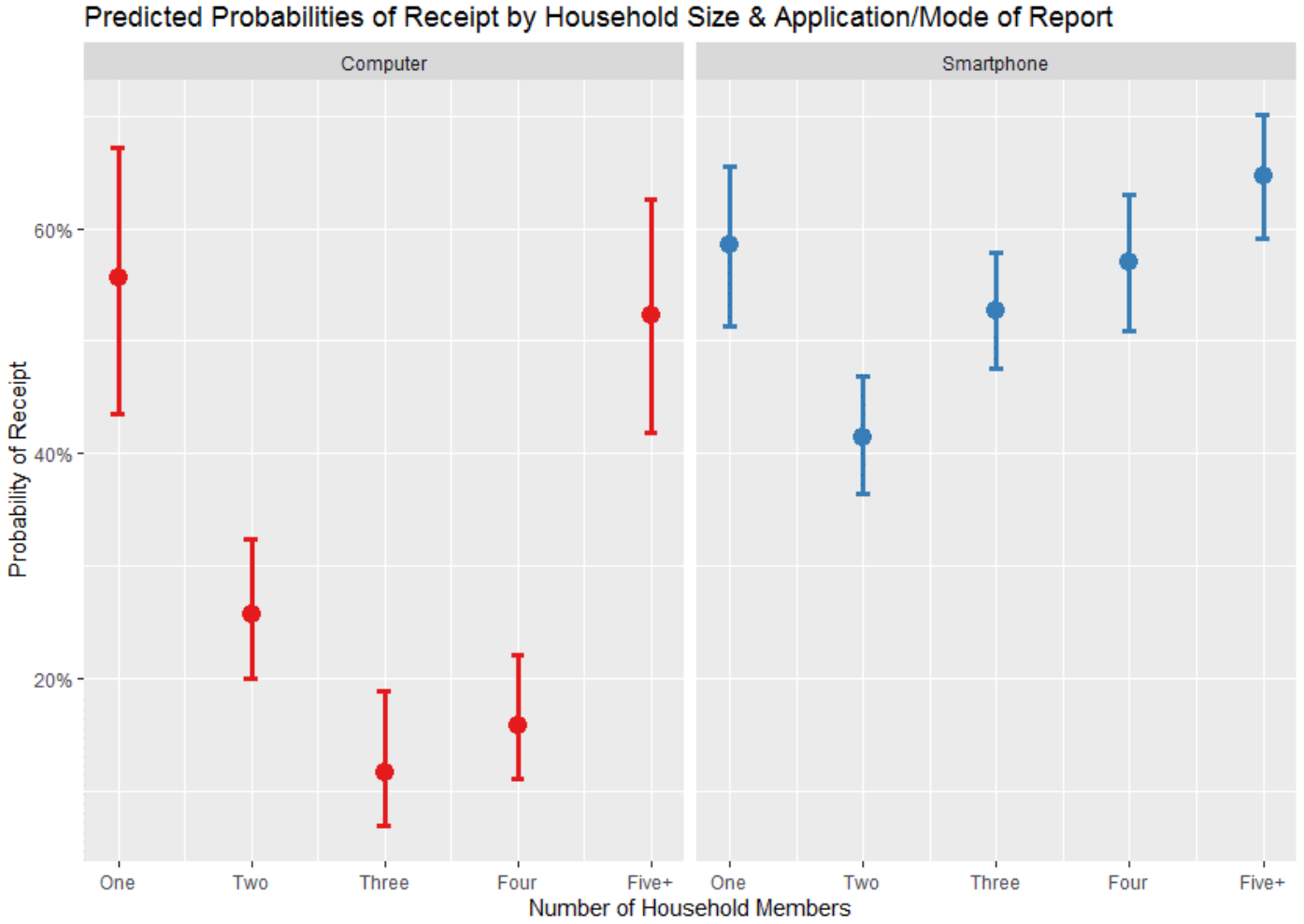
ERS ECONOMIC RESEARCH SERVICE United States Department of Agriculture

INSTITUTE FOR SOCIAL RESEARCH UNIVERSITY OF MICHIGAN

Application/Mode & Household Size



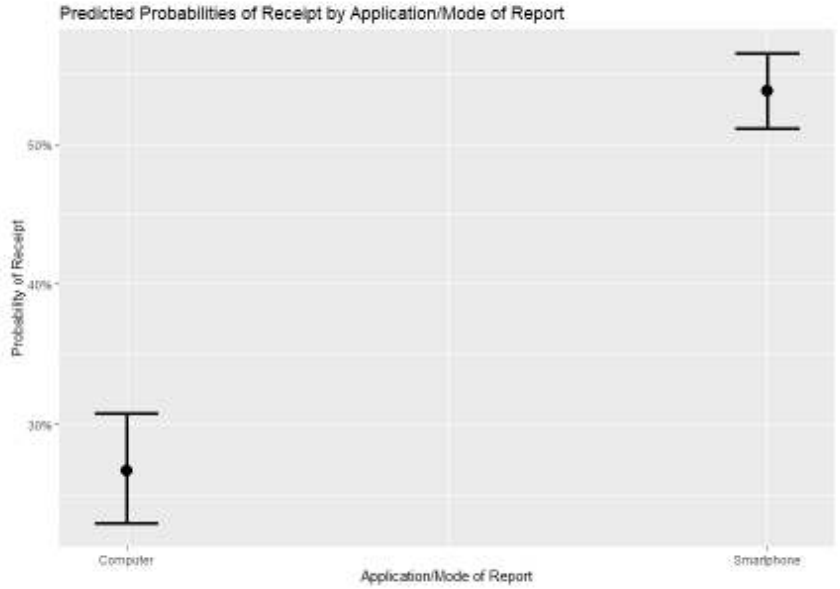


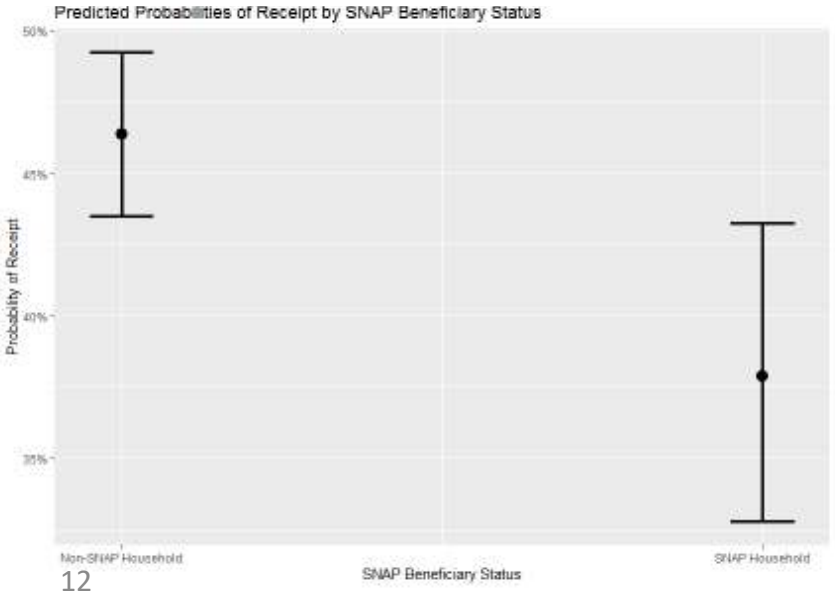


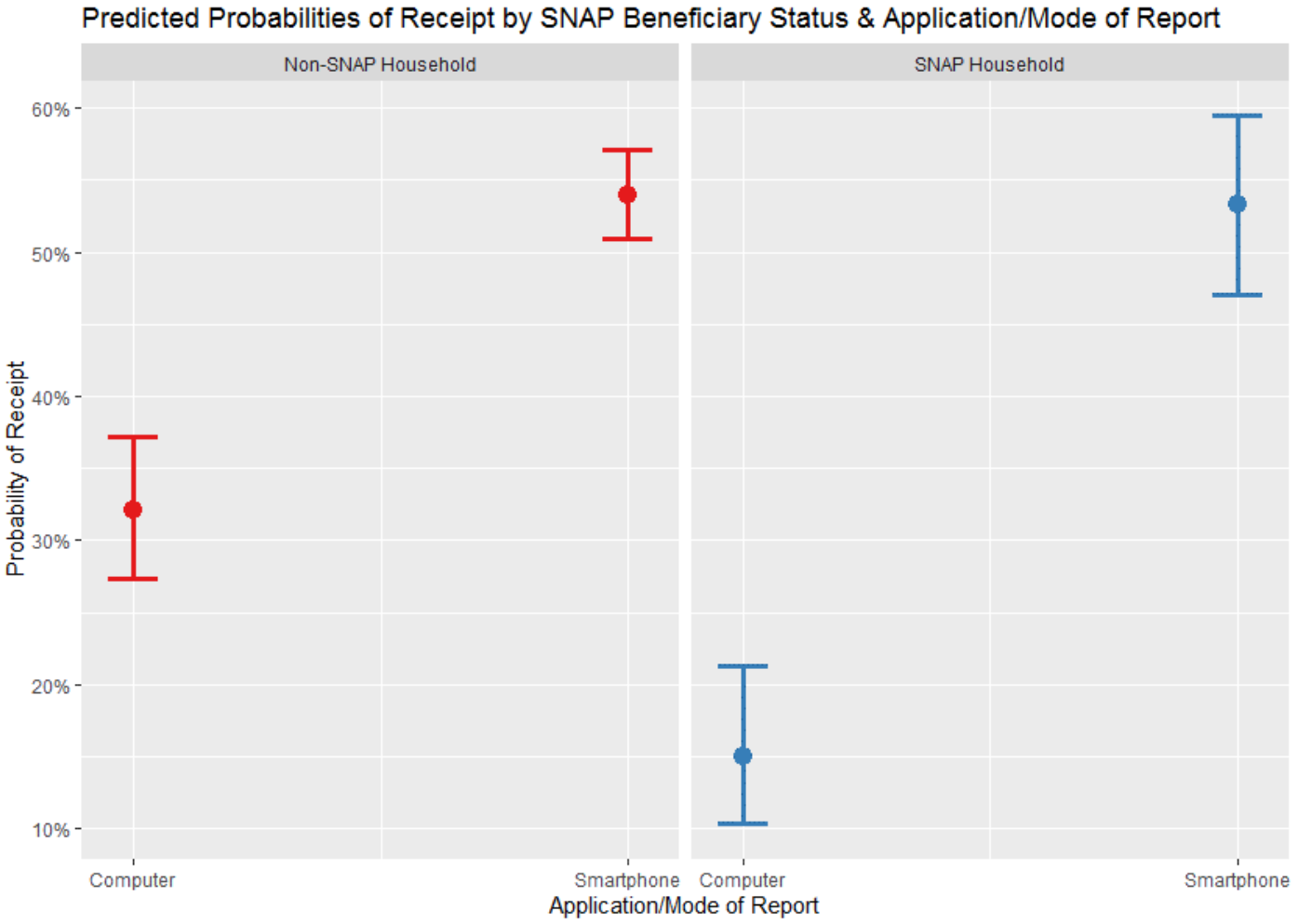
ERS ECONOMIC RESEARCH SERVICE
United States Department of Agriculture

INSTITUTE FOR SOCIAL RESEARCH
UNIVERSITY OF MICHIGAN

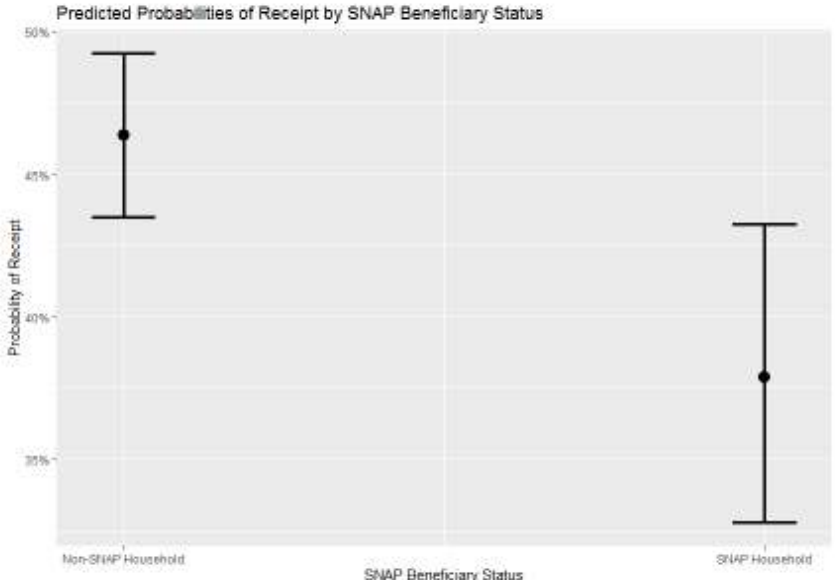
Application/Mode & SNAP Status

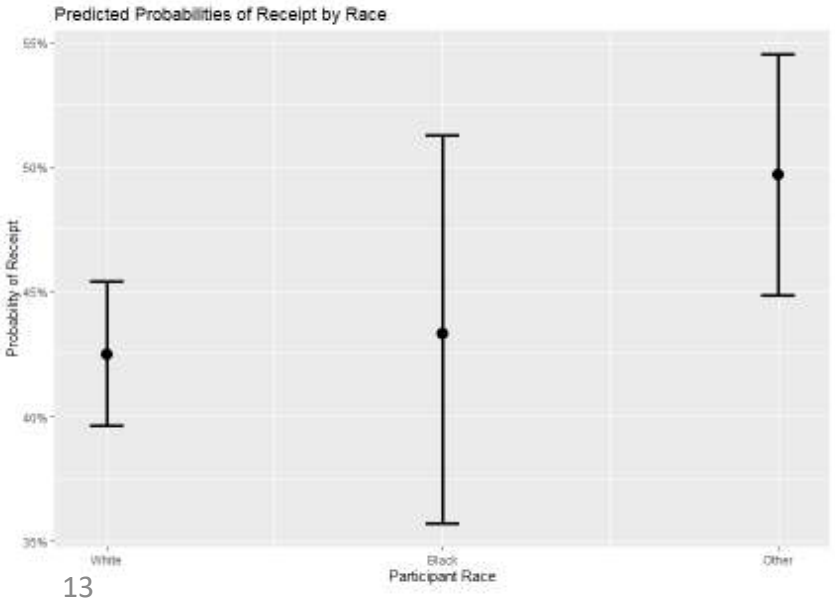


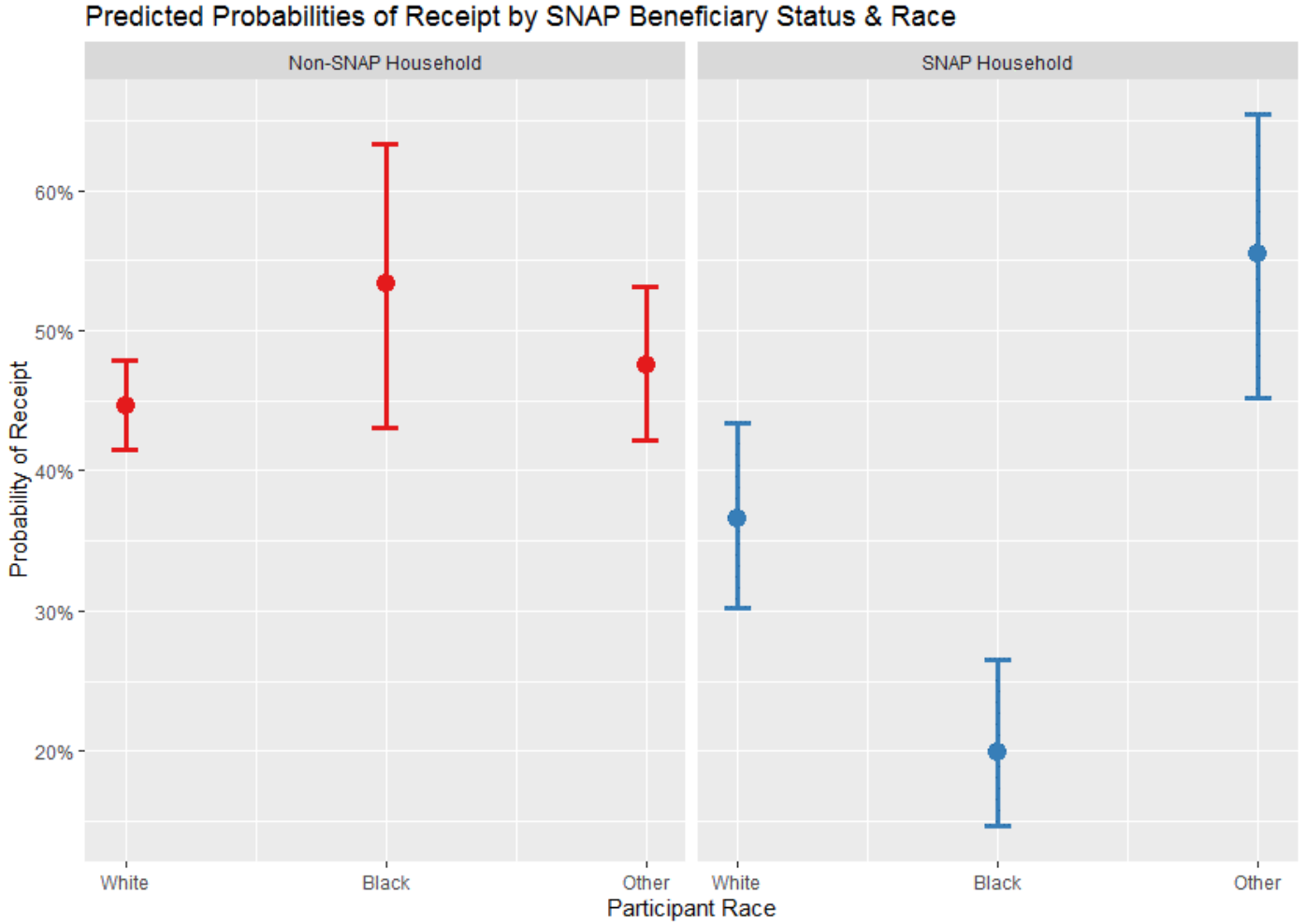




SNAP Status & Race







ERS ECONOMIC RESEARCH SERVICE United States Department of Agriculture

INSTITUTE FOR SOCIAL RESEARCH UNIVERSITY OF MICHIGAN

Key Takeaways

- Probability of a receipt among smartphone reports appear stable compared to computer reports. The use of a mobile format (i.e., smartphone) seems like a reliable method for encouraging respondent cooperation.
- Probability of a receipt is higher for FAH events and events with more items. It's possible the influence of item count is one that increases the saliency of the event.
- Dynamics of FAFH events may be substantively different than FAH events. Events could be less significant to respondents and more difficult to report promptly resulting in lower rates of receipt submission.
- Extra effort may be needed to engage SNAP beneficiaries, particularly among white and black households.

Next Steps?

- FoodAPS-2 Field Test
- FoodLogger Application
- Formalize Task Protocol
- Identify Compliance Issues

Thank you!

Adam M. Kaderabek

amkad@umich.edu

University of Michigan
Institute for Social Research
Program in Survey & Data Science

Prepared and Presented in Collaboration with:

Yajuan Si, Institute for Social Research
Jeffrey M. Gonzalez, USDA – Economic Research Service
Elina T. Page, USDA – Economic Research Service
Brady T. West, Institute for Social Research
John A. Kirlin, Kirlin Analytical Services

ERS
ECONOMIC RESEARCH SERVICE
United States Department of Agriculture

INSTITUTE FOR SOCIAL RESEARCH
UNIVERSITY OF MICHIGAN

This presentation was supported in part by the U.S. Department of Agriculture, Economic Research Service.

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