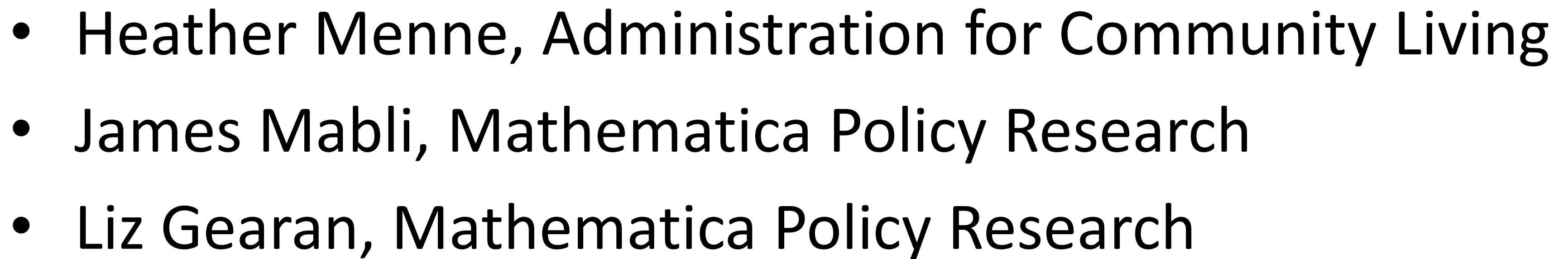
Evaluation of the Older Americans Act Title III-C Nutrition Services Program: Participants' Food Security, Socialization, and Diet Quality

2017 National Home and Community Based Services (HCBS) Conference
Thursday August 31, 2017

Presenters


Heather Menne, Administration for Community Living
James Mabli, Mathematica Policy Research
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U.S. Administration for Community Living

ACL brings together the Administration on Aging, the Administration on Intellectual and Developmental Disabilities, the National Institute on Disability, Independent Living, and Rehabilitation Research, and the HHS Office of Disability.

Mission

Maximize the independence, well-being, and health of older adults, people with disabilities across the lifespan, and their families and caregivers.

Vision

All people, regardless of age and disability, live with dignity, make their own choices, and participate fully in society.

Office of Performance and Evaluation

Mission:

To measure and evaluate the impact of ACL programs, their effectiveness in achieving stated goals in general, and in relation to their cost, their impact on related programs, their effectiveness in targeting for services unserved older individuals and persons with disabilities, and their structure and mechanisms for delivery of services, including, where appropriate, comparisons with appropriate control groups composed of persons who have not participated in such programs.

Office of Performance and Evaluation

Why evaluate?

With the changing demographics in the U.S., ACL and the aging and disability networks face exponentially increasing demands for comprehensive and coordinated supportive services. These increasing demands require rigorous and independent assessment of progress, efficiency and effectiveness to ensure the most productive use of government funds for the best citizen outcomes.

Title III-C Nutrition Services Program

The purpose of the Older Americans Act Nutrition Services Programs are to:

- Reduce hunger and food insecurity among older individuals,
- Promote socialization of older individuals,
- Promote the health and well-being of older individuals, and
- Delay adverse health conditions for older individuals.

They fulfill their purpose by providing access to healthy meals, nutrition education and nutrition counseling.

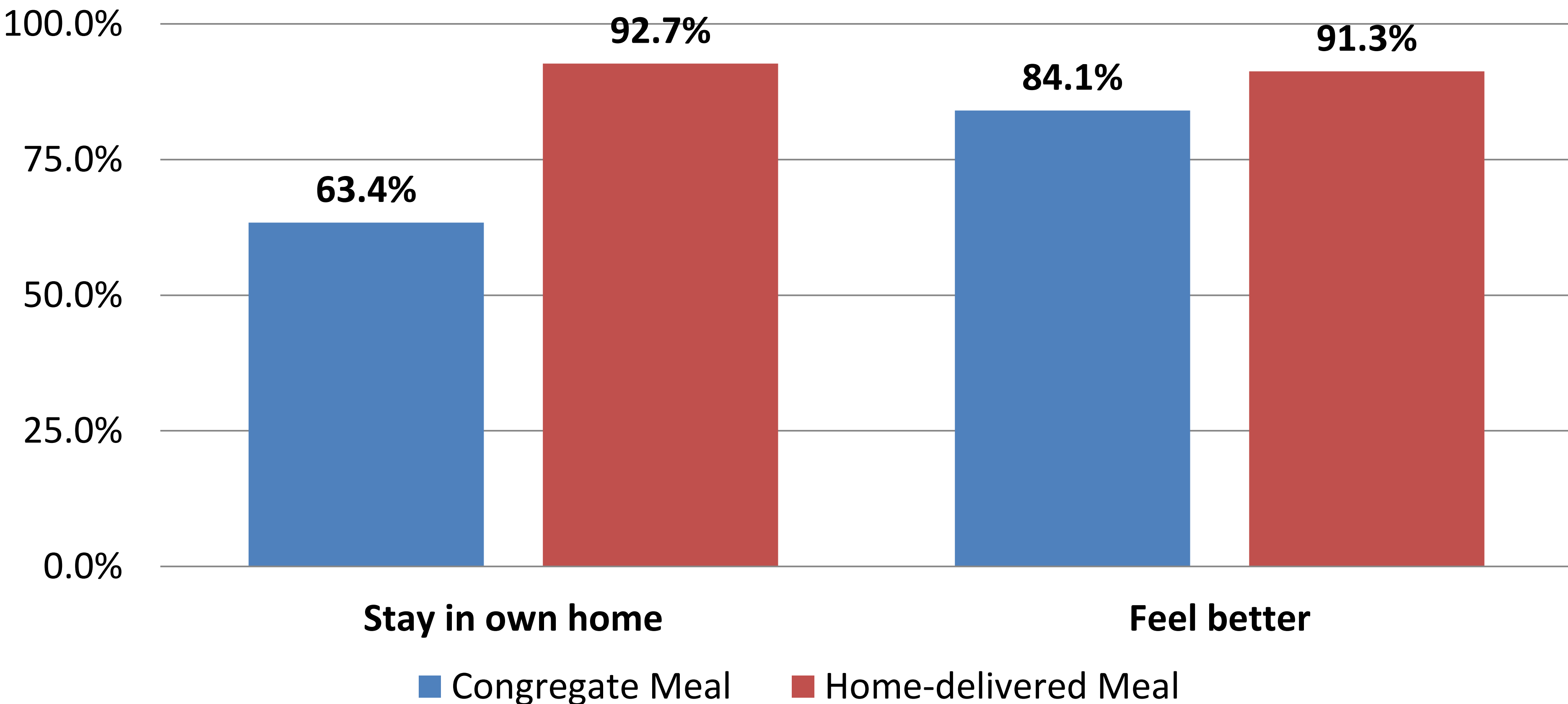
Title III-C Nutrition Services Program Facts

In 2015:

- > than 76 million congregate meals were served to 1,554,658 people
- >140 million home-delivered meals were served to 847,526 people
- > 72 thousand sessions of nutrition counseling were offered
- > 3 million nutrition education events were conducted

Source: State Program Reports (SPR; 2015) via the AGing Integrated Database (AGID) , https://agid.acl.gov/

Title III-C Nutrition Services Program Facts



Source: National Survey of Older Americans Act Participants (2016)

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Findings from the Administration on Aging Title III-C Nutrition Services Program Outcomes Evaluation

HCBS Conference
Baltimore, Maryland

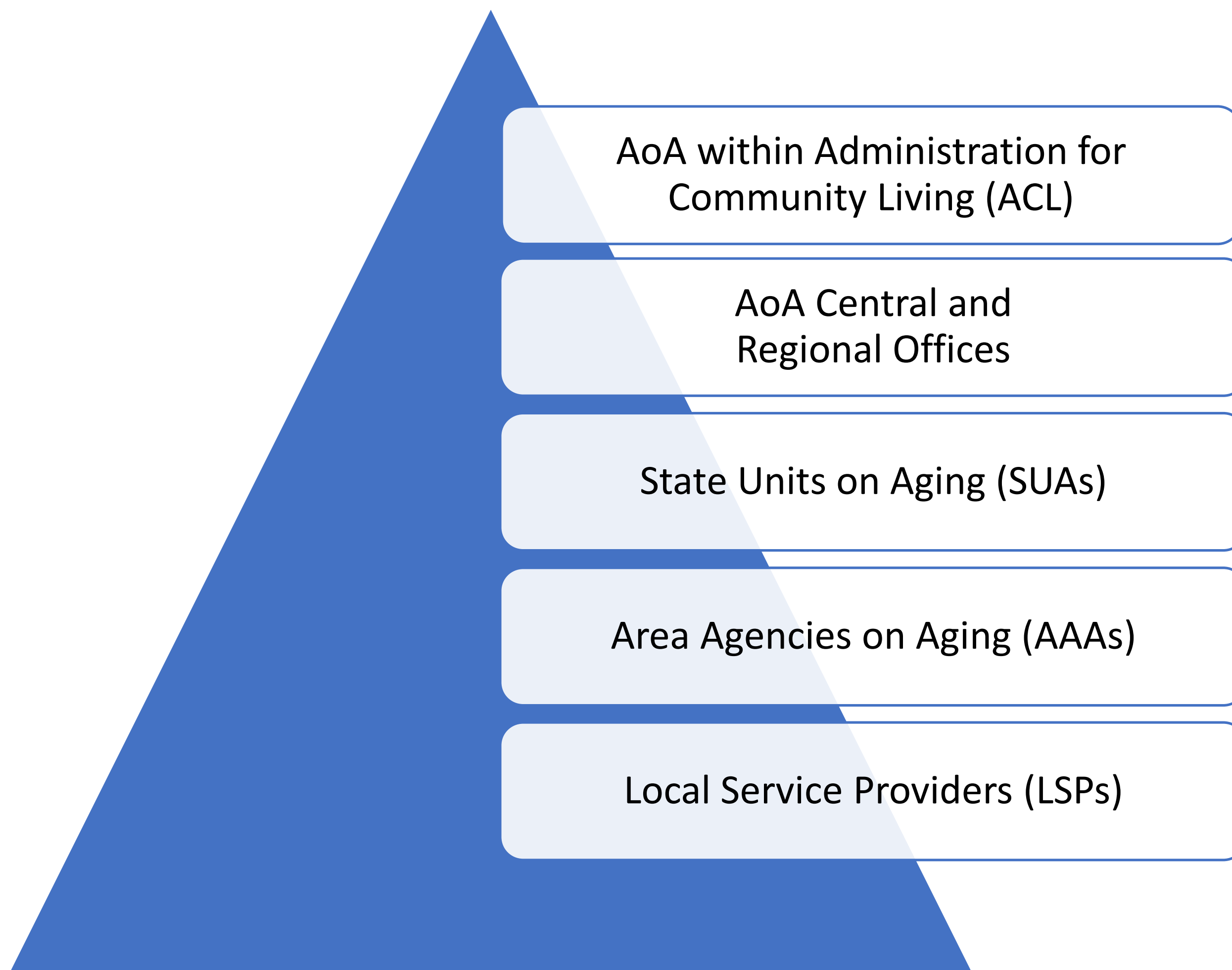
August 31, 2017

James Mabli
Liz Gearan
Heather Menne

Title III-C Nutrition Services Program (AoA Nutrition Programs)

- **Adequate nutrition is critical for people of all ages, but especially important for older adults**
- **Administration on Aging (AoA) Nutrition Services Program (NSP) plays a vital role in ensuring needs of older adults are met**
- **Program services include:**
  - **Nutrition services**
    - Congregate and home-delivered meals
    - Nutrition screening, assessment, education, and counseling
  - **Other services**
    - Health promotion
    - Medical screening
    - Social or recreational activities

Administration of AoA Nutrition Programs



AoA Nutrition Programs Evaluation Objectives

1. **Process study**
   - Provide information to support program planning
   - Analyze program structure, administration, staffing, coordination, processes, and service delivery
2. **Cost study**
   - Estimate the average cost of a congregate and a home-delivered meal
   - Assess variation in costs by select characteristics of local providers
3. **Outcomes evaluation (ongoing)**
   - Assess program effectiveness in improving food security, socialization, and diet quality
   - Assess program effectiveness in improving longer-term health and delaying or avoiding institutionalization

Objectives of the Outcomes Evaluation

1. Describe participants' demographic and household characteristics, health status, mobility, eating behaviors, diet quality, food security, and socialization
2. Describe participants' experiences with and impressions of the and their valuation of meals and supportive services received through the program
3. Determine the impact of meals and related services on participants' nutrition, food security, and diet quality
4. Determine the impact of meals and nutrition services on overall wellness and well-being

Study Design of Outcomes Evaluation

Sample of LSPs from process and cost studies

Selected congregate meal site for each LSP

Sampled congregate meal program participants

Identified and surveyed nonparticipants with similar demographic and health characteristics

Study Design of Outcomes Evaluation

Sample of LSPs from process and cost studies

Selected congregate meal site for each LSP

Selected home-delivered meal distribution location

Sampled congregate meal program participants

Sampled distribution route and sampled home-delivered meal participants

Identified and surveyed nonparticipants with similar demographic and health characteristics

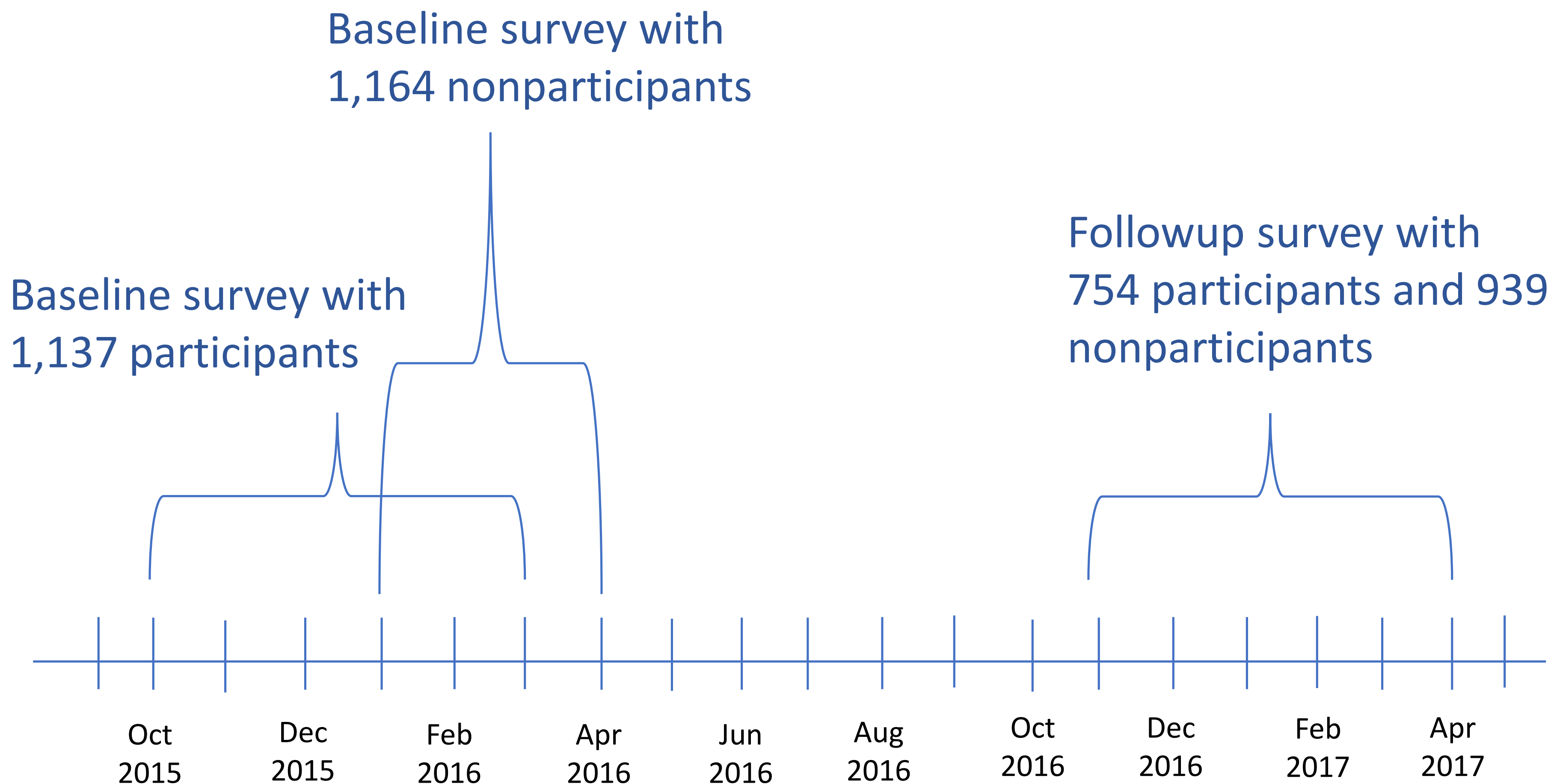
Data Collection Instruments

- **Outcomes survey**

NSP Participation History, Usage, and Frequency	Types of Services Received	Recreational and Social Activities Available	Information and Referrals Available
Impression of Helpfulness of Program	Impressions of NSP Services and Meals	Participants' Monetary Contributions	Eating Behavior, Diet, Food Preparation
Food Security	Health Insurance Health Status, Mobility, Prescriptions	Depression, Loneliness, and Social Isolation	Demographic Characteristics

- **24-hour dietary recall**
  - **Automated Self-Administered 24-hour dietary recall (ASA-24) module**
  - **Administered in-person by interviewer**

Survey Timeline and Sample Sizes



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Outcome Measure: Food Security

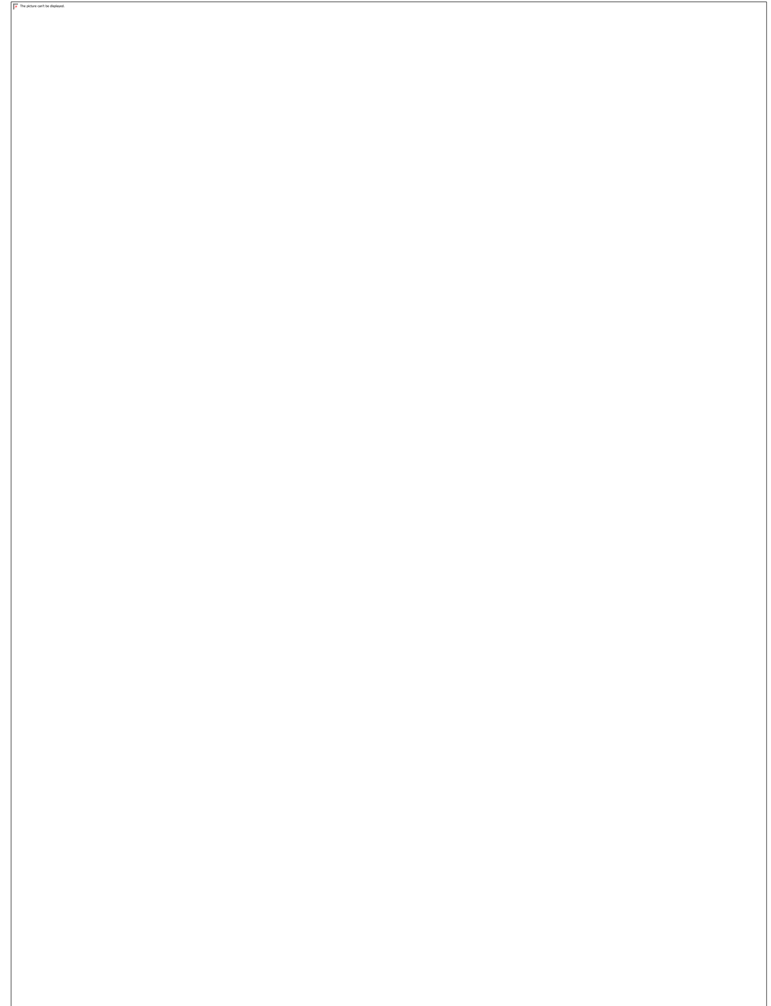
- Having access at all times to enough food for an active, healthy life for all household members
- Based on USDA's six-item food security module based on 30-day recall
- Food insecurity and very low food security

Outcome Measure: Socialization

- **Revised UCLA Loneliness Scale (R-UCLA) based on responses to three questions related to how often one feels lack of companionship, left out, and isolated from others**
- **Patient Health Questionnaire 2 (PHQ-2) based on two questions assessing frequency of depressed mood over past two weeks. Used to screen for depression**
- **Self-reported satisfaction with opportunities to spend time with other people**

Outcome Measure: Diet Quality

- Percentage contribution program meals made to participants' nutrient intakes
- Usual intakes of vitamins, minerals, and macronutrients relative to recommendations
- Healthy Eating Index 2010 scores (HEI-2010) to assess overall diet quality



Descriptive Analysis Methods

- Describe characteristics of older adults, impressions of program, valuation of meals and services
- Use percentages, means, and medians
- Describe characteristics separately for congregate meal (CM) and home-delivered meal (HDM) participants
- Based on weighted data, participant findings are nationally representative of the population of CM and HDM participants

Characteristics of Program Participants and Impressions of Meals and Services

Demographic Characteristics

- CM and HDM participants similar in terms of gender, veteran status, whether they lived alone, and race and ethnicity
  - More than 2/3rds were women
  - 15 to 17 percent were veterans
  - About 60 percent lived alone
  - 14 to 18 percent non-Hispanic black; 9 to 13 percent Hispanic
- Compared with CM participants, HDM participants were older, had less education, and were more likely to be widowed
  - Average age was 77 (CM) versus 82 (HDM)
  - 24 to 40 percent had not completed high school
  - 47 to 52 percent were widowed

Source: AoA NSP outcomes survey, weighted data, Tables III.1.

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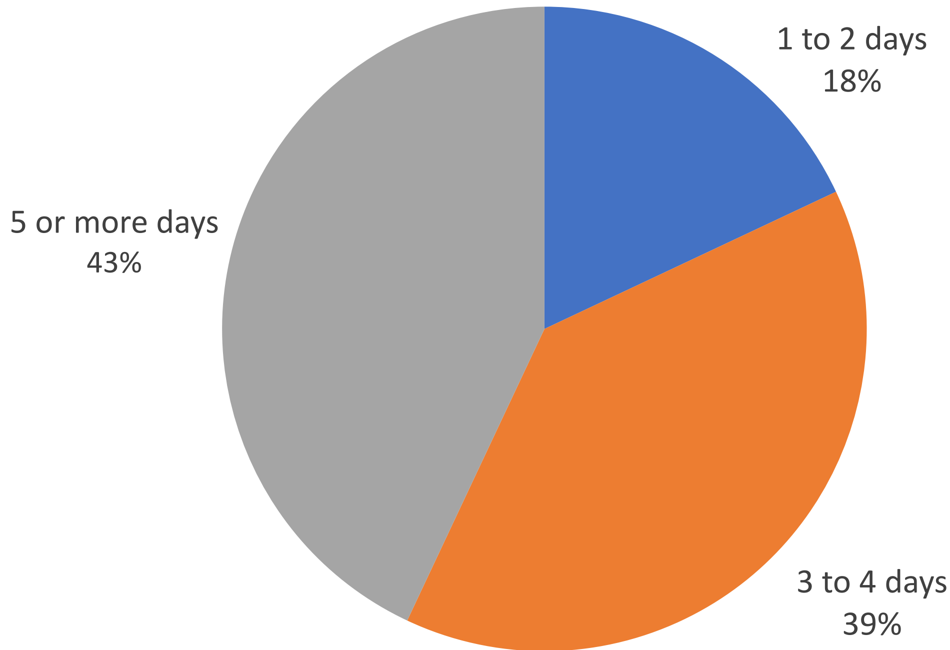
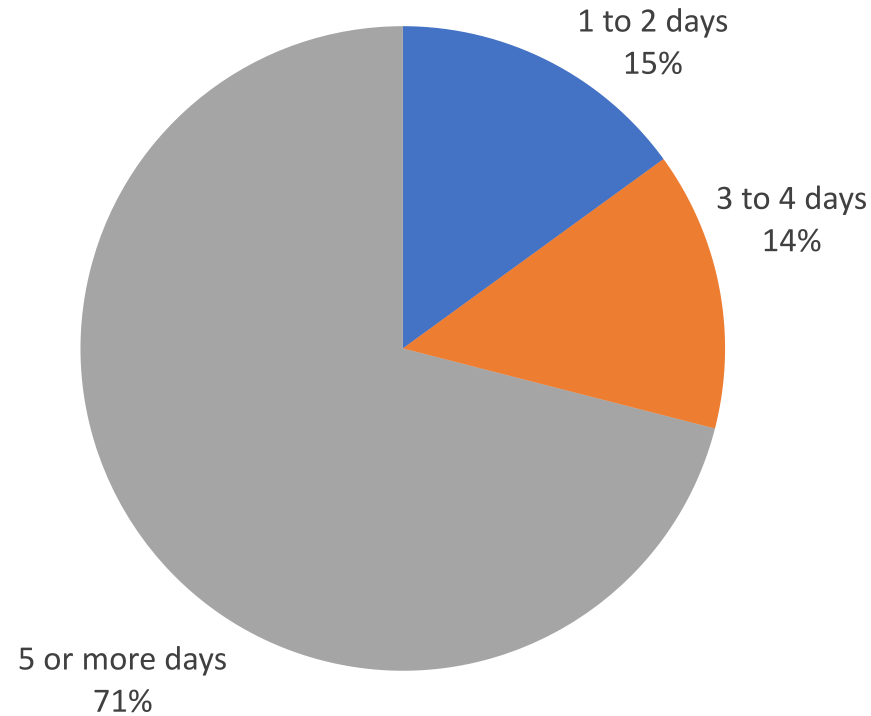
Frequency of Participation





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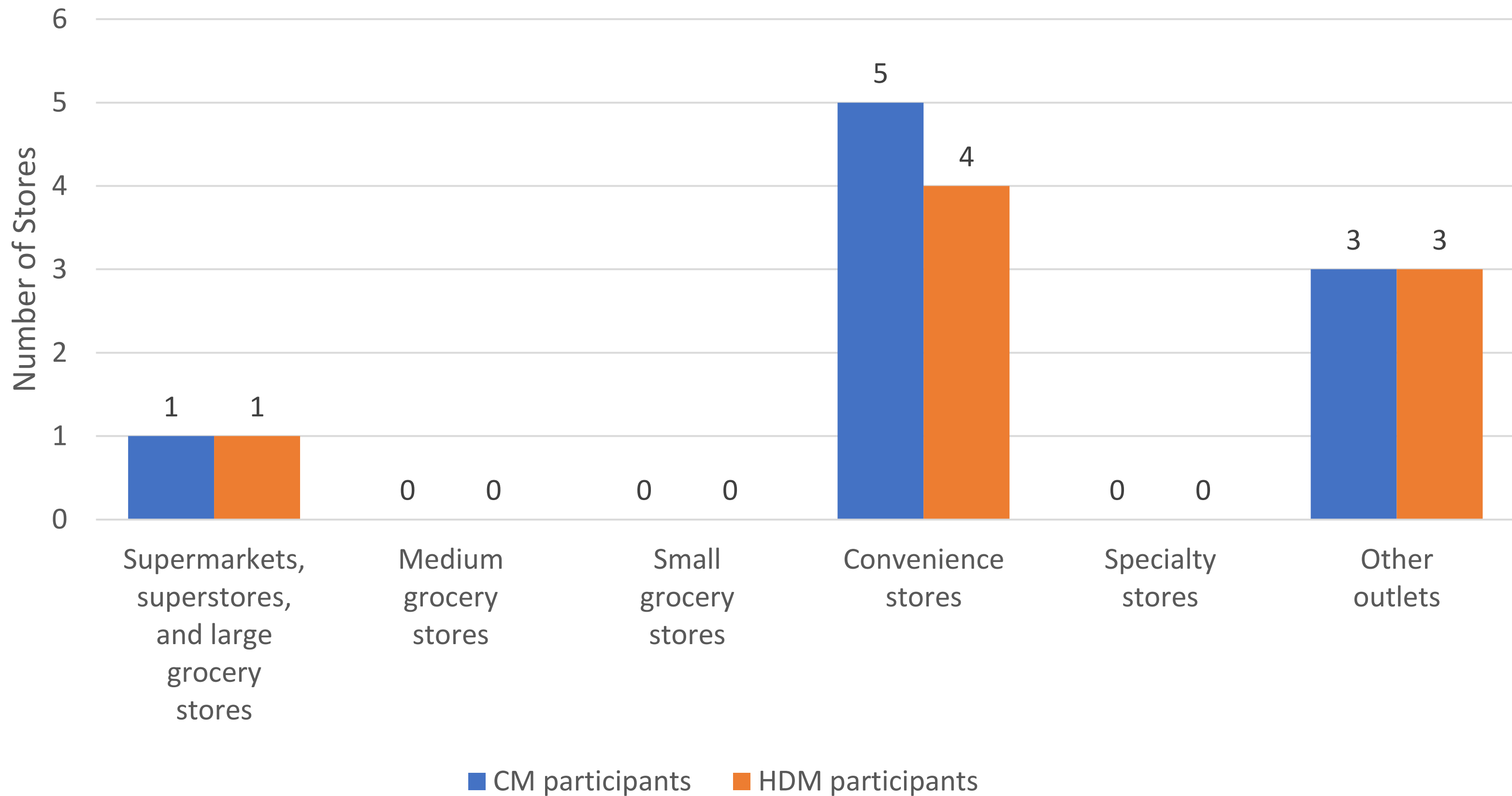
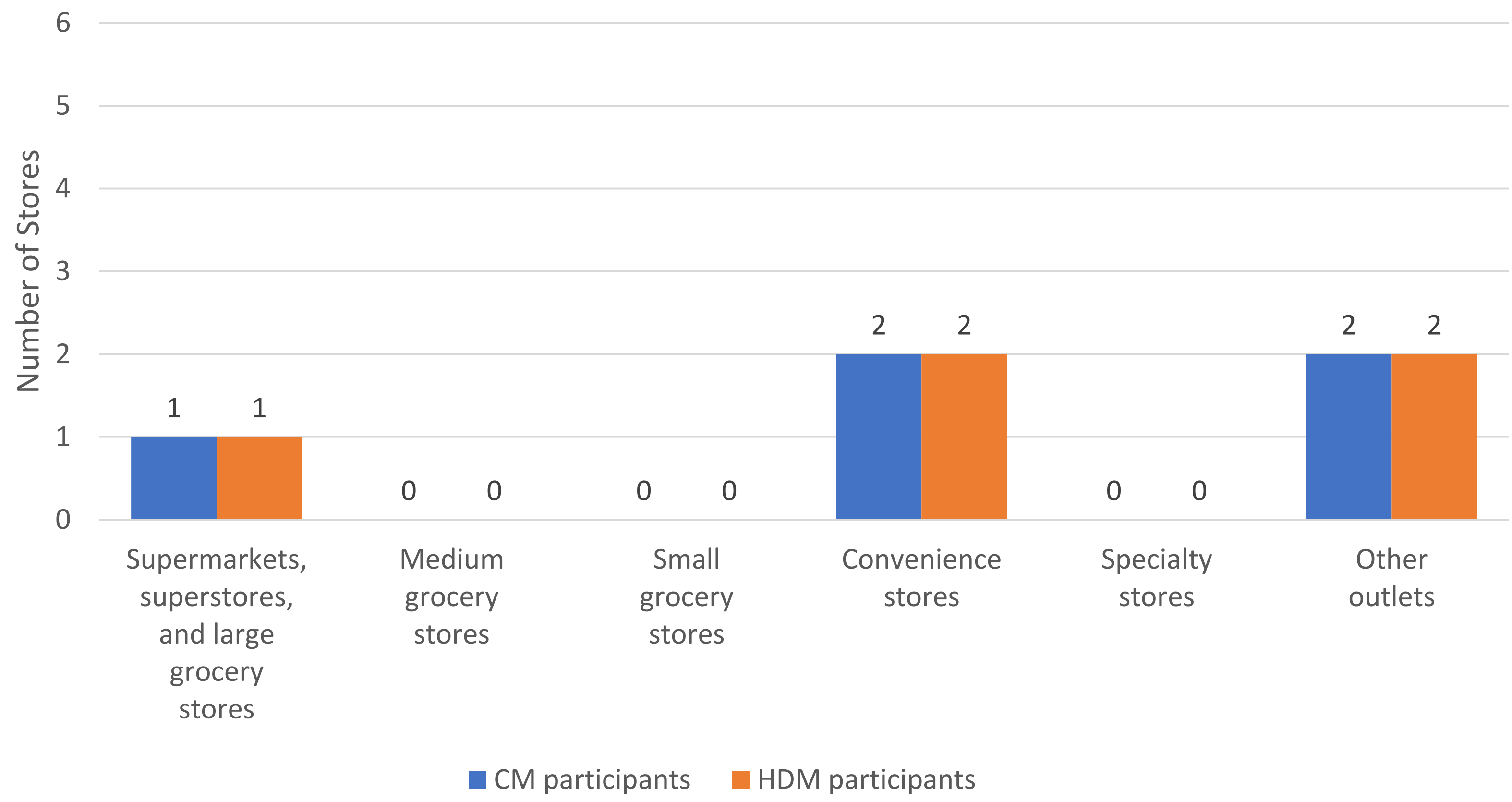
Source: AoA NSP outcomes survey, weighted data, Table III.14.

Geographic Access to Food in Urban Areas: Median Number of Retailers Within 1 Mile of Home



Source: AoA NSP outcomes survey, weighted data, Table III.24.

Geographic Access to Food in Rural Areas: Median Number of Retailers Within 5 Miles of Home



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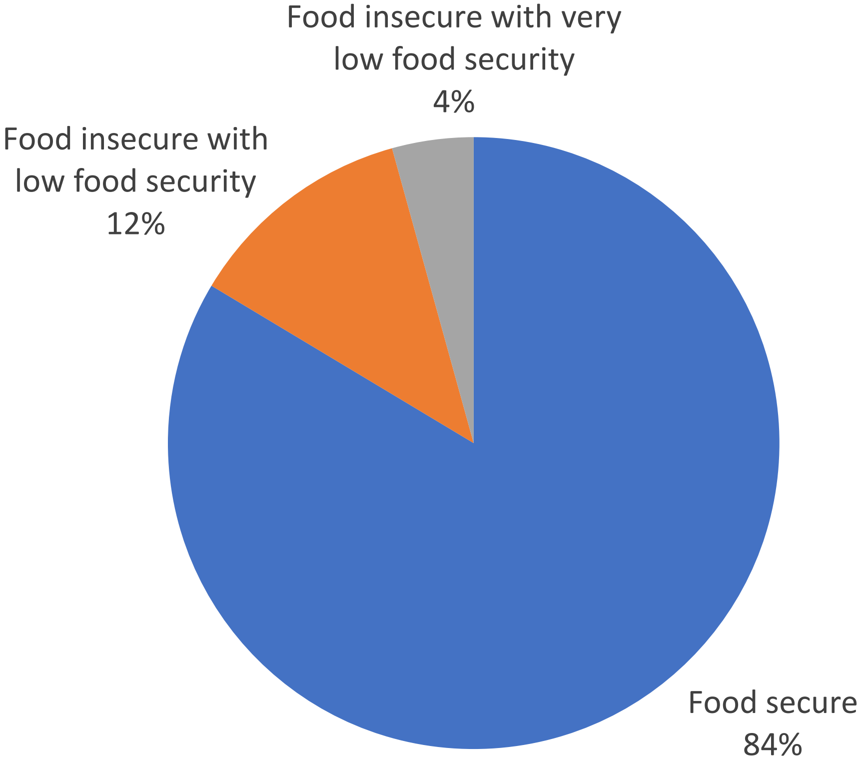
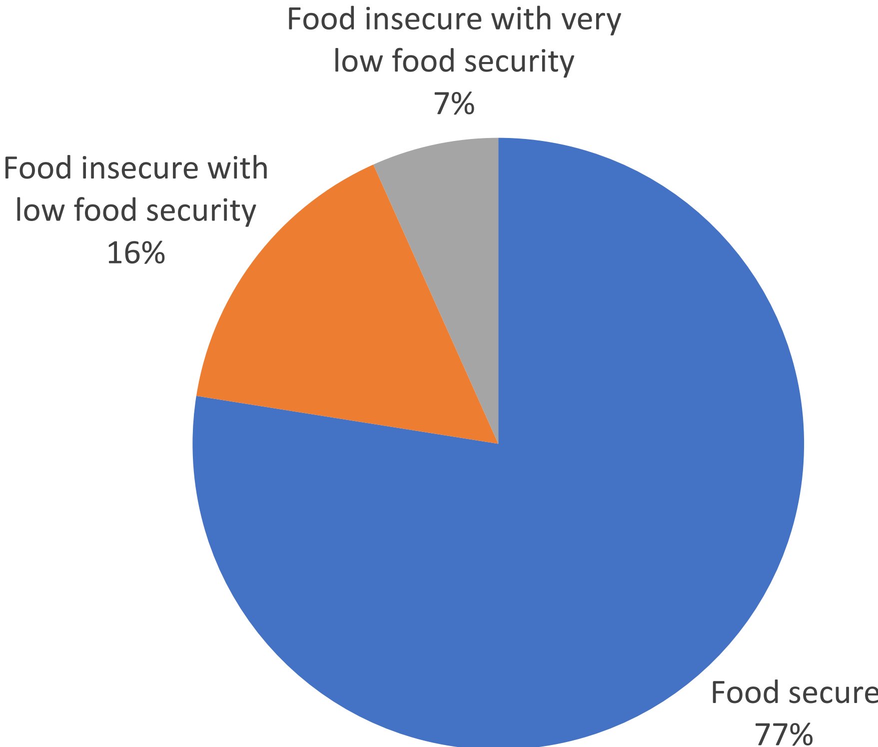
Source: AoA NSP outcomes survey, weighted data, Table III.25.

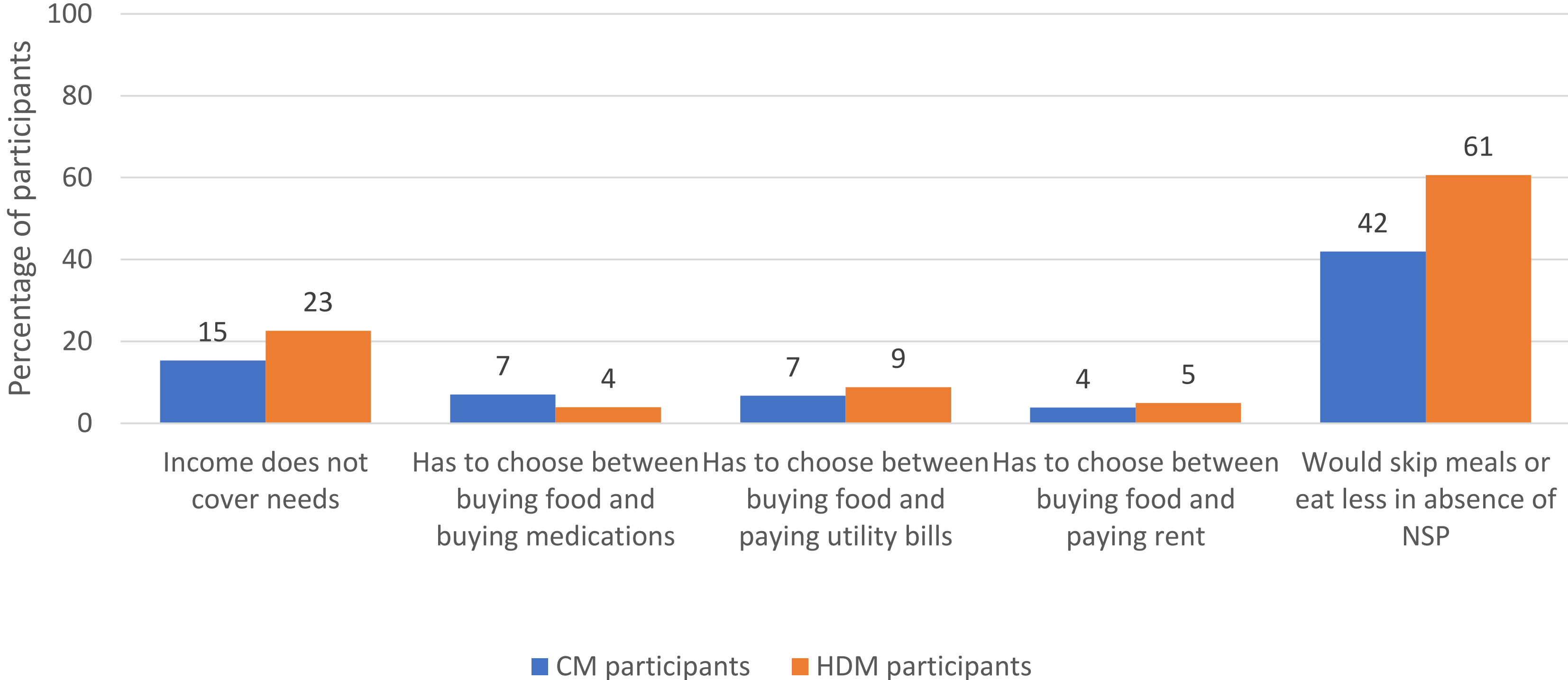
Food Security





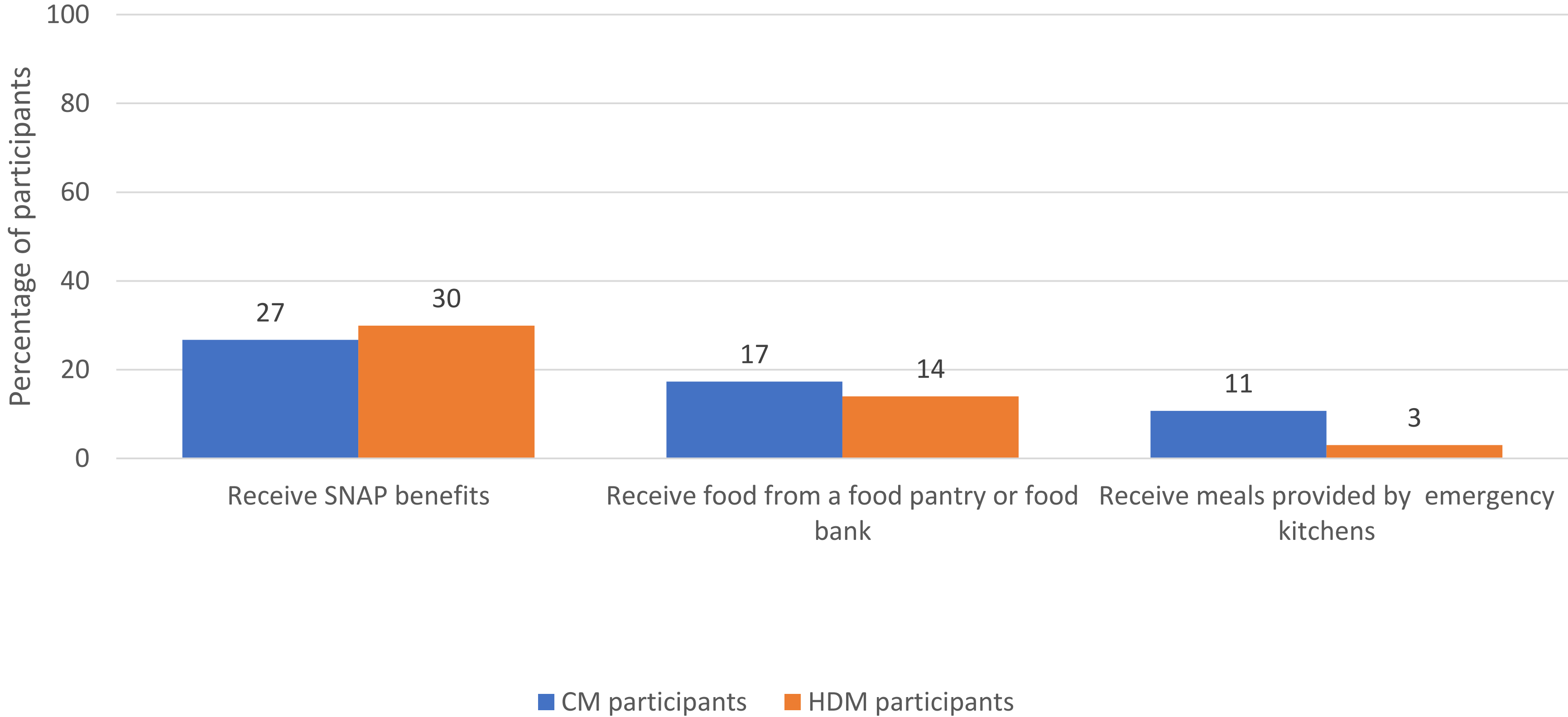
Source: AoA NSP outcomes survey, weighted data, Table III.26.

Adequacy of Income and Food Coping Strategies



Source: AoA NSP outcomes survey, weighted data, Table III.29.

Receipt of Other Food Assistance



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Source: AoA NSP outcomes survey, weighted data, Table III.30.

Impressions of Meals

- Many congregate meal participants were satisfied with:
  - Attractiveness of dining area (96 percent)
  - Overall meals (95 percent)
  - Amount of food (91 percent)
  - Proper temperature of food (91 percent)
  - Appearance of food (86 percent)
  - Way food smells (85 percent)
  - Variety of food (84 percent)
  - Taste of food (81 percent)
  - Foods provided (79 percent)
  - Meets special dietary needs or restrictions (73 percent)
- Similar findings for home-delivered meal participants

Source: AoA NSP outcomes survey, weighted data, Table III.35.

Effects of Program Participation on Food Security and Socialization Outcomes

Analysis Methods

- Selected matched comparison group using Medicare records and geography
  - Collected participants' SSNs as part of outcomes survey
  - Obtained Medicare records for participants
  - Identified potential nonparticipants in same geographic service area with similar characteristics to participants
  - Screened nonparticipants for eligibility
  - Conducted interview with nonparticipants
- Multivariate regression analysis to account for observed differences between participants and nonparticipants
- Propensity-score matching based on machine-learning algorithm

Effects of CM Program Participation on Socialization Outcomes

Outcome	Participants	Nonparticipants	Difference
R-UCLA loneliness score			
Average score	4.1	4.1	0.0
PHQ-2 depression screener questions			
Percentage affirmed 4 out of 6	2.3	6.5	-4.2**
Satisfaction with socialization opportunities			
Percentage that were satisfied	94.0	85.8	8.2***
Percentage that were very satisfied	67.5	55.5	12.0***

***, **, * Difference between participants and nonparticipants is significantly different from zero at the 0.01, 0.05, or 0.10 level.

Source: AoA NSP outcomes survey, 2015-2016, weighted data, Table IV.4.

Effects of HDM Program Participation on Socialization Outcomes

Outcome	Participants	Nonparticipants	Difference
R-UCLA loneliness score			
Average score	4.5	4.3	0.2*
PHQ-2 depression screener questions			
Percentage affirmed 4 out of 6	11.5	11.6	-0.1
Satisfaction with socialization opportunities			
Percentage that were satisfied	82.3	85.7	-3.3
Percentage that were very satisfied	44.5	53.4	-8.9**

***, **, * Difference between participants and nonparticipants is significantly different from zero at the 0.01, 0.05, or 0.10 level.

Source: AoA NSP outcomes survey, 2015-2016, weighted data, Table IV.5.

Effects of HDM Program Participation on Socialization Outcomes, by Number of Meals Received per Week

Outcome	Participants	Nonparticipants	Difference
R-UCLA loneliness score (average)			
Receive fewer than five meals	4.6	4.2	0.4*
Receive five or more meals	4.5	4.3	0.2
Percentage satisfied with socialization opportunities			
Receive fewer than five meals	79.7	87.2	-7.6**
Receive five or more meals	84.1	85.2	-1.1
Percentage very satisfied with socialization opportunities			
Receive fewer than five meals	34.5	55.0	-20.5***
Receive five or more meals	49.7	53.0	-3.4

***, **, * Difference between participants and nonparticipants is significantly different from zero at the 0.01, 0.05, or 0.10 level.

Source: AoA NSP outcomes survey, 2015-2016, weighted data, Table IV.6.

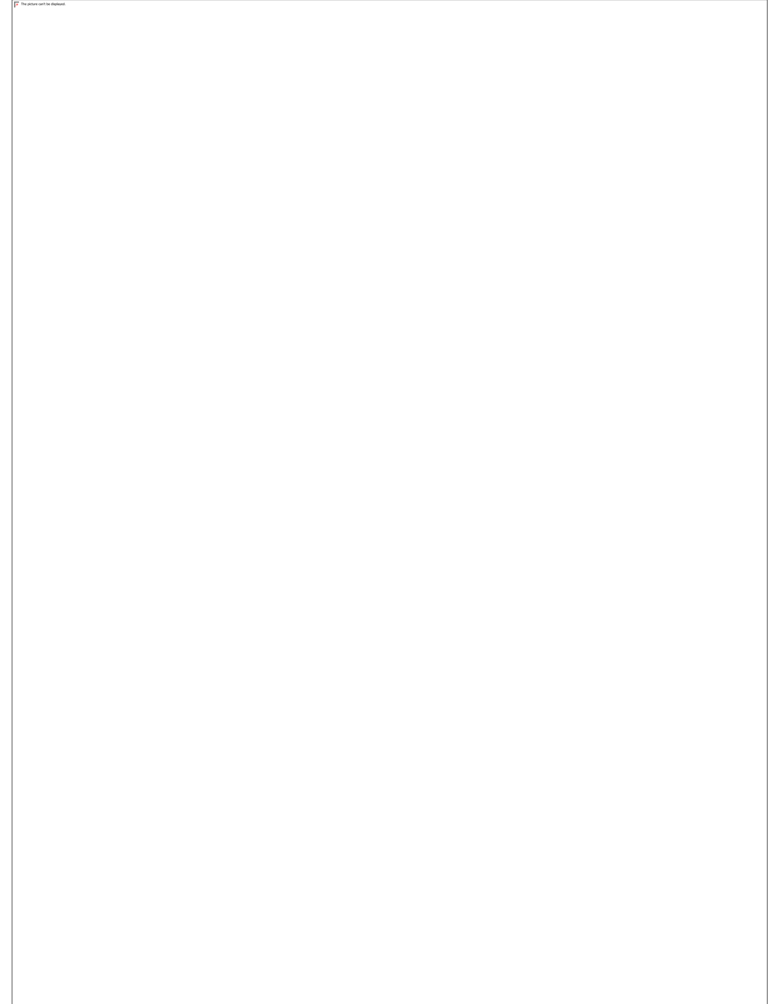
Diet Quality Analysis

Background on the Diet Quality Analysis

- **Objectives of the analysis**
  - Describe the quality of participants' diets
  - Determine the impact of participation on diet quality
- **24-hour dietary recall data**
  - Collected detailed information on all foods and beverages consumed during preceding 24 hours
  - Subset of participants and nonparticipants completed 2nd recall
  - Provide data on the amounts of nutrients and food groups consumed over 24 hours

Outcome Measure: Diet Quality

- Percentage contribution program meals made to participants' nutrient intakes
- Usual intakes of vitamins, minerals, and macronutrients relative to recommendations
- Healthy Eating Index-2010 scores (HEI-2010) to assess overall diet quality



Contribution of Program Meals to Participants' Daily Nutrient Intakes

- Identified foods consumed from program meals versus other sources
- Both congregate and home-delivered meals contributed substantially to participants' diets

	CM participants	HDM participants
Percentage of daily calories	41	38
Percentage of daily nutrients	39 to 47	35 to 47

- Program meals made largest contributions to participants' intakes of protein, vitamin C, vitamin A, alpha-linolenic acid, and sodium

Source: AoA NSP 24-hour dietary recall (Day 1), 2015-2016, weighted data, Table III.9.

Assessing Whether Participants' Usual Nutrient Intakes Met Recommendations

- Federal nutrition standards provide recommendations for amounts of nutrients to consume
  - Dietary Reference Intakes
  - Dietary Guidelines for Americans
- Nutrient recommendations should be met over time and applied to measures of usual intake
- Estimated usual nutrient intakes using method developed by the National Cancer Institute
  - Provides estimates of the percentage of participants with usual nutrient intakes that met recommendations

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Healthy Eating Index-2010

- **Diet quality index that assesses conformance to the 2010 Dietary Guidelines for Americans**
- **Consists of 12 components and a total score**
  - **9 adequacy components**
    - Total fruit
    - Whole fruit
    - Total vegetables
    - Greens and beans
    - Whole grains
    - Dairy
    - Total protein foods
    - Seafood and plant proteins
    - Fatty acids
  - **3 moderation components**
    - Refined grains
    - Sodium
    - Empty calories

Healthy Eating Index-2010 (cont.)

- HEI-2010 scoring
  - Each component has a maximum score
  - Scores assigned based on amounts of foods and calories consumed
  - Total score is sum of component scores
- Higher scores indicate better conformance with Dietary Guidelines recommendations and higher diet quality
- Estimated mean HEI-2010 scores using method developed by the National Cancer Institute
  - Scores are expressed as percentage of maximum possible score

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Effects of Program Participation on Diet Quality Outcomes

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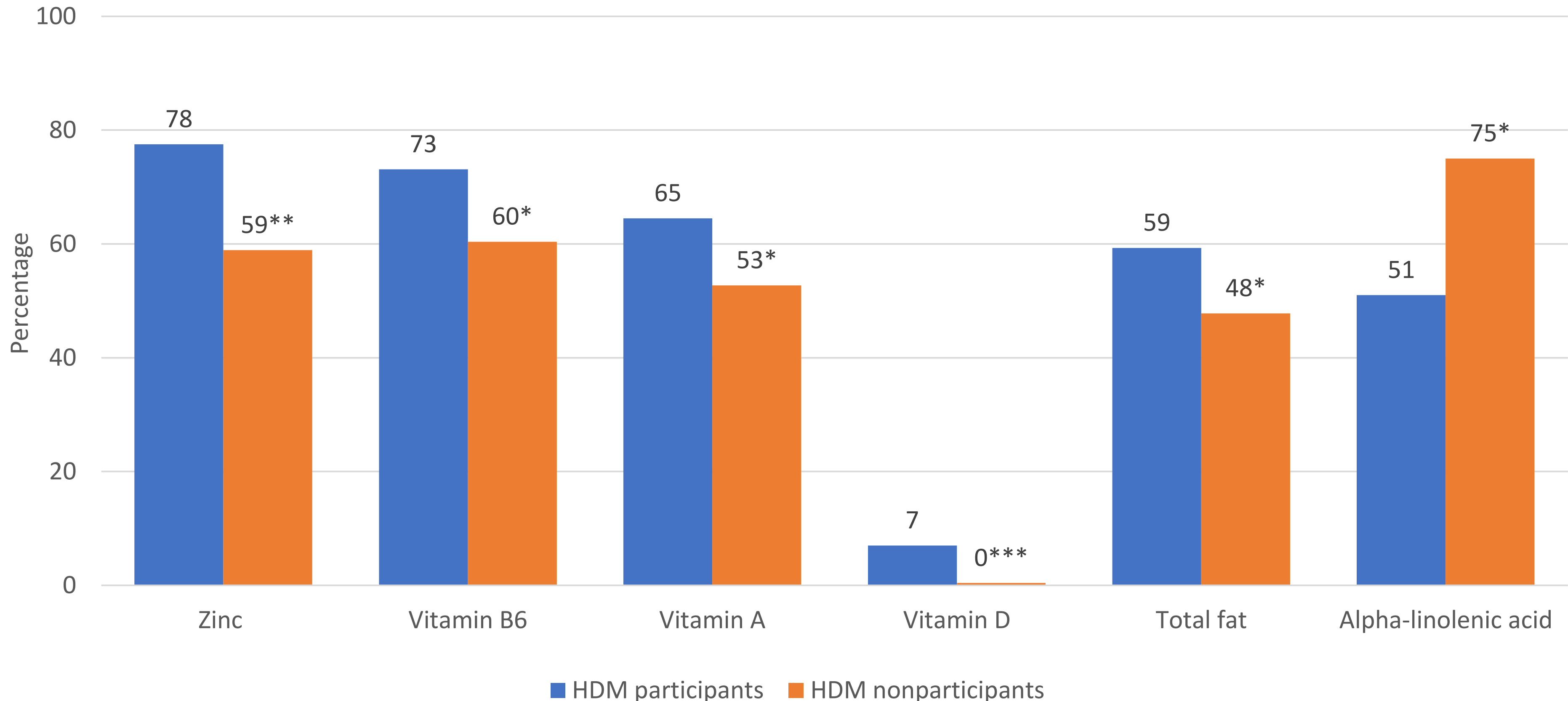
Effects of HDM Program Participation on Usual Nutrient Intakes



***, **, * Difference between participants and nonparticipants is significantly different from zero at the 0.01, 0.05, or 0.10 level.

Source: AoA NSP 24-hour dietary recall (Day 1 and Day 2), 2015-2016, weighted data, Table IV.7.

Effects of CM and HDM Participation on Overall Diet Quality

- **CM participants had significantly higher HEI-2010 scores than nonparticipants for:**
  - Total HEI-2010 score (66 versus 59 percent)
  - Total fruit (97 versus 72 percent)
  - Dairy (69 versus 57 percent)
  - Total vegetables (90 versus 78 percent)
  - Refined grains (78 versus 60 percent)
- **HDM participants had significantly higher HEI-2010 scores than nonparticipants for:**
  - Dairy (72 versus 58 percent)
  - Refined grains (74 versus 64 percent)

Note: All differences between participants and nonparticipants were significantly different from zero at the 0.10 level or lower.

Source: AoA NSP 24-hour dietary recall (Day 1), 2015-2016, weighted data, Table IV.8.

Conclusion

Summary of Evaluations' Findings for Key Outcomes

Outcome	2016 Evaluation	1995 Evaluation
Congregate meal program		
Participants had greater food security than nonparticipants	✓	Not measured
Participants had higher levels of socialization than nonparticipants	✓	✓
Participants had higher diet quality than nonparticipants. Program meals made substantial contribution to participants' diets	✓	✓
Home-delivered meal program		
Participants had similar food security as nonparticipants	No effect	Not measured
Participants had similar levels of socialization than nonparticipants	Mixed	✓
Participants had higher diet quality than nonparticipants. Program meals made substantial contribution to participants' diets	✓	✓

Implications for Future Research: CM Participants

- Food security
  - Determinants of food insecurity and food coping strategies
  - Characteristics and challenges in making ends meet
- Socialization
  - Role of CM sites' provision of socialization activities and the number of activities that sites offer
- Diet quality
  - Food choices and key sources of nutrients to identify specific foods to target through nutrition education

Implications for Future Research: HDM Participants

- Food security
  - Reasons why participants receive varying amounts of program meals and how their food needs are assessed
- Socialization
  - Characteristics of the participants who reported limited engagement from the delivery person
  - Differences in program staff engagement for participants that receive varying amounts of program meals
- Diet quality
  - Comparison of food choices between CM and HDM participants

Thank You!

- Mathematica extends our sincere thanks to all of the SUA, AAA, and LSP staff who completed study surveys, provided data for the meal cost analysis, and helped facilitate a successful outcomes survey
- Heather Menne (AoA/ACL Project Officer)
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- Liz Gearan (Evaluation Co-Principal Investigator)
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Evaluation Reports

- Process study report
  - www.acl.gov/sites/default/files/programs/2017-02/NSP-Process-Evaluation-Report.pdf
- Cost study report
  - www.acl.gov/sites/default/files/programs/2017-02/NSP-Meal-Cost-Analysis.pdf
- First outcomes evaluation report
  - www.acl.gov/sites/default/files/programs/2017-07/AoA_outcomesevaluation_final.pdf
- Second outcomes evaluation report (anticipated summer 2018)
  - Present participants' healthcare utilization and behavior characteristics
  - Estimate effect of participation on hospital admissions and readmissions, emergency department visits, primary care physician visits, home health episodes, admittance to a skilled nursing facility, admittance to a nursing home, and total Medicare costs

Extra Slides

Other Data Sources Linked to Outcomes Survey Data

- American Community Survey data
  - Used to obtain characteristics of respondents' neighborhoods
- Geographic food access data
  - Based on respondents' residential street addresses and more than 200,000 food retailer locations
- NSP process and cost data
  - Linked to assess differences in impacts by program characteristics and meal cost
- Medicare administrative records (ongoing)
  - Linked to define patterns of health care behavior and utilization based on beneficiaries' claims

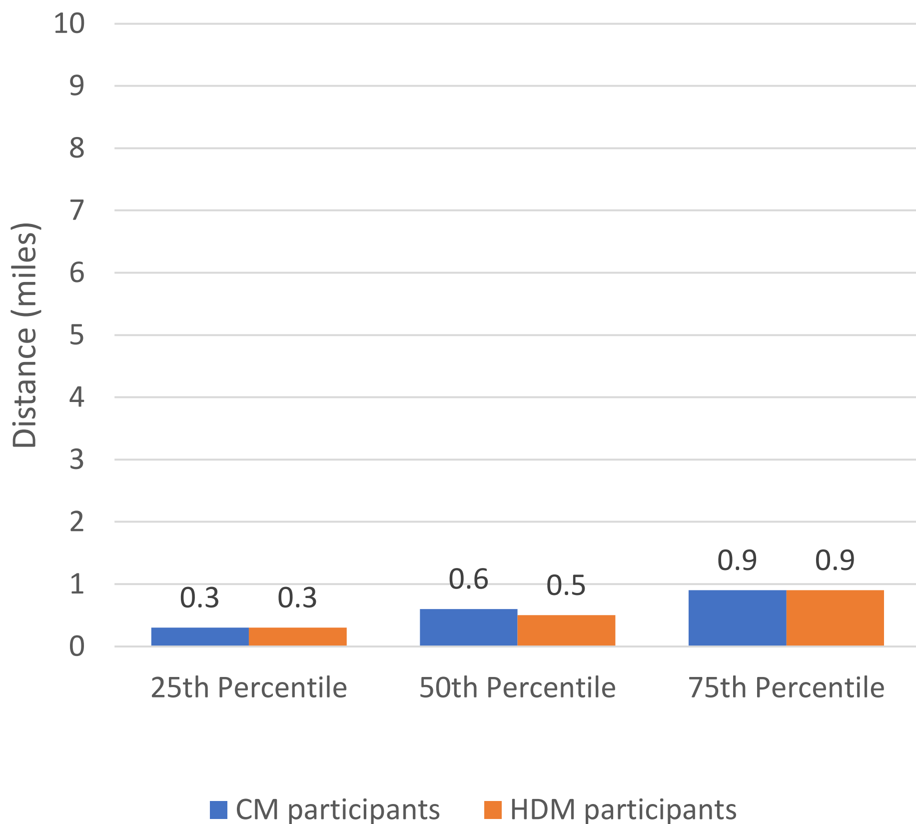
Sample Sizes and Response Rates

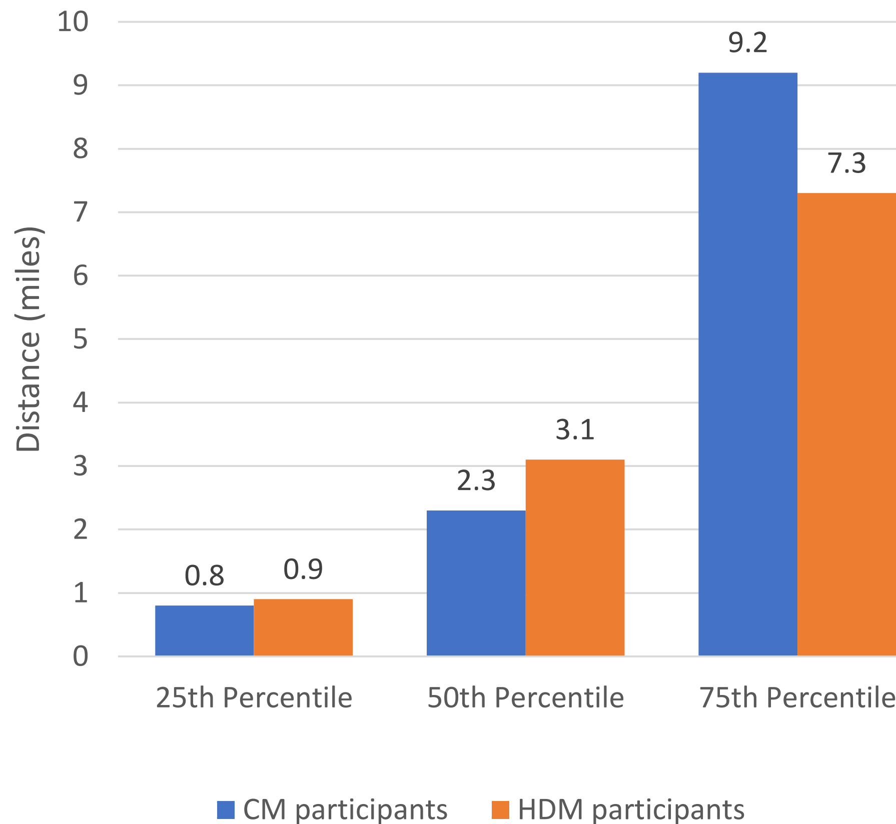
Respondent type	Baseline survey sample size	Baseline survey response rate	Follow-up survey sample size	Follow-up survey response rate
Congregate meal				
Participant	614	78%	431	72%
Nonparticipant	638	79%	509	81%
Home-delivered meal				
Participant	523	54%	323	64%
Nonparticipant	526	78%	430	82%

Note: Completion rates are presented for nonparticipants.

Geographic Access to Food

Distance to Nearest Supermarket, Superstore, or Large Grocery Store





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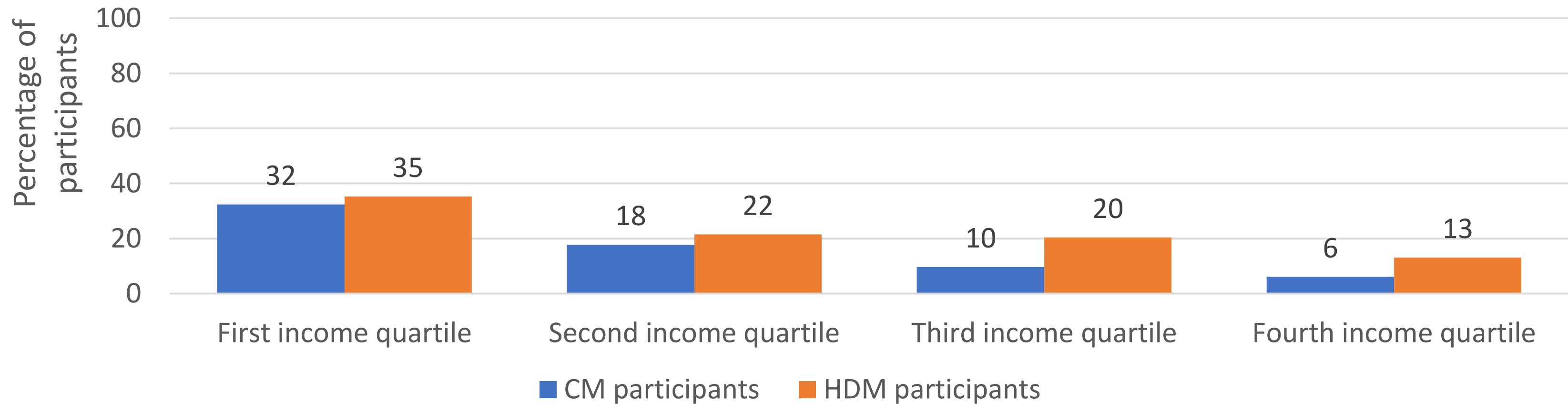
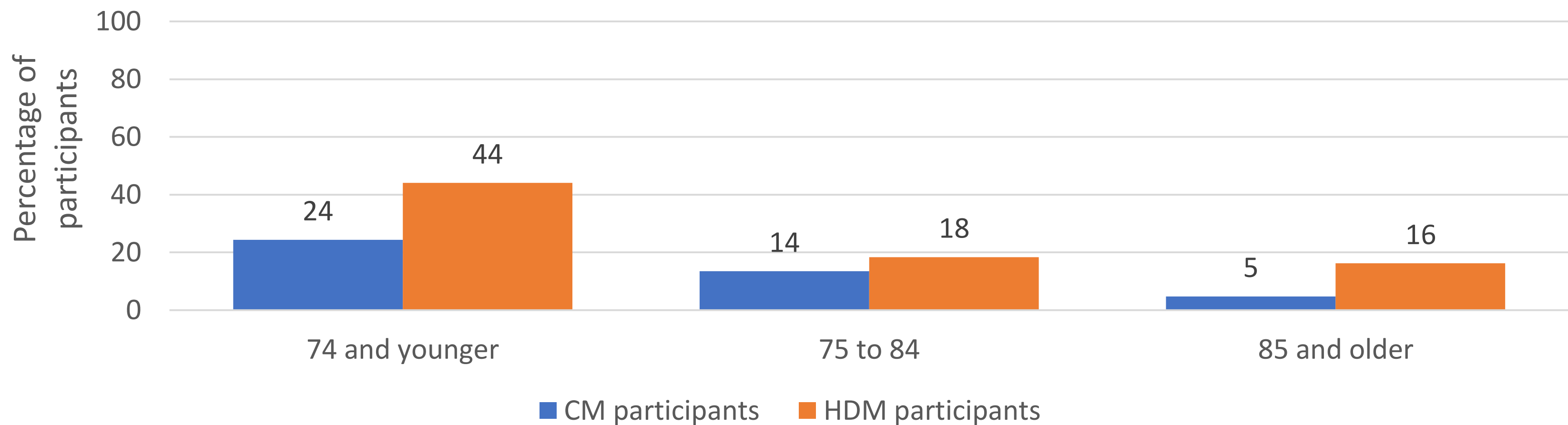
Source: AoA NSP outcomes survey, weighted data, Table III.23.

Food Insecurity by Income and Age





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Source: AoA NSP outcomes survey, weighted data, Tables III.27 and III.28.

Effects of CM Program Participation on Socialization Outcomes

Outcome	Participants	Nonparticipants	Difference
R-UCLA loneliness score (average)	4.1	4.1	0.0
PHQ-2 depression screener questions			
Percentage affirmed 2 out of 6	18.1	24.3	-6.2*
Percentage affirmed 3 out of 6	6.5	9.3	-2.8
Percentage affirmed 4 out of 6	2.3	6.5	-4.2**
Number of questions affirmed	0.6	0.8	-0.2**
Satisfaction with socialization opportunities			
Percentage that were satisfied	94.0	85.8	8.2***
Percentage that were very satisfied	67.5	55.5	12.0***

***, **, * Difference between participants and nonparticipants is significantly different from zero at the 0.01, 0.05, or 0.10 level.

Source: AoA NSP outcomes survey, 2015-2016, weighted data, Table IV.4.

Effects of HDM Program Participation on Socialization Outcomes

Outcome	Participants	Nonparticipants	Difference
R-UCLA loneliness score (average)	4.5	4.3	0.2*
PHQ-2 depression screener questions			
Percentage affirmed 2 out of 6	18.0	15.1	2.9
Percentage affirmed 3 out of 6	29.2	27.6	1.6
Percentage affirmed 4 out of 6	11.5	11.6	-0.1
Number of questions affirmed	11.1	1.1	0.1
Satisfaction with socialization opportunities			
Percentage that were satisfied	82.3	85.7	-3.3
Percentage that were very satisfied	44.5	53.4	-8.9**

***, **, * Difference between participants and nonparticipants is significantly different from zero at the 0.01, 0.05, or 0.10 level.

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Source: AoA NSP outcomes survey, 2015-2016, weighted data, Table IV.5.

Healthy Eating Index-2010 Components and Standards for Scoring

Component	Maximum score	Standard for maximum score	Standard for minimum score
Adequacy components (higher score indicates higher consumption)			
Total fruit	5	≥ 0.8 cup equiv. / 1,000 kcal	No fruit
Whole fruit	5	≥ 0.4 cup equiv. / 1,000 kcal	No whole fruit
Total vegetables	5	≥ 1.1 cup equiv. / 1,000 kcal	No vegetables
Greens and beans	5	≥ 0.2 cup equiv. / 1,000 kcal	No dark green vegetables, beans, or peas
Whole grains	10	≥ 1.5 ounce equiv. / 1,000 kcal	No whole grains
Dairy	10	≥ 1.3 cup equiv. / 1,000 kcal	No dairy
Total protein foods	5	≥ 2.5 ounce equiv. / 1,000 kcal	No protein foods
Seafood and plant proteins	5	≥ 0.8 ounce equiv. / 1,000 kcal	No seafood or plant proteins
Fatty acids	10	(PUFAs + MUFAs) / SF > 2.5	(PUFAs + MUFAs) / SF < 1.2
Moderation components (higher score indicates lower consumption)			
Refined grains	10	≤ 1.8 ounce equiv. / 1,000 kcal	≥ 4.3 ounce equiv. / 1,000 kcal
Sodium	10	≤ 1.1 gram / 1,000 kcal	≥ 2.0 grams / 1,000 kcal
Empty calories	20	≤ 19% of energy	≥ 50% of energy
Total Score	100		

Comparison with Findings from 1995 Evaluation

- **Demographic composition of participants has remained stable over time**
  - 9 percent of HDM participants were Hispanic (vs. 5 percent in 1995)
  - 60 percent of CM participants lived alone (vs. 57 percent in 1995)
- **Participants continue to have significant economic needs**
  - 31 percent of CM participants had income below poverty (vs. 34 percent in 1995)
  - 35 percent of HDM participants had income below poverty (vs. 48 percent in 1995)
- **Most participants continue to be satisfied with program services**
  - Satisfaction with taste, appearance, and variety of food remains high (>95 percent)
- **Participants continue to have significant chronic health conditions**
  - Increase in percentages of participants had doctor-diagnosed chronic health conditions related to high cholesterol, diabetes, and breathing or lung problems
- **Number of years of participation has remained generally similar**
  - HDM participants have participated for longer than in 1995
  - CM participation has remained the same over time