ACL Administration for Community Living

IssueBRIEF

AoA Administration on Aging

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Older Americans Act Title III-C Nutrition Services Program: **Examining the Types of Foods Older Adults Consumed from Program Meals and Over 24 Hours**

Purpose

The purpose of this issue brief is to describe the types of foods that participants consumed as part of congregate and home-delivered meals and examine differences between participants and nonparticipants in foods consumed over 24 hours.

BACKGROUND

For older adults, adequate nutrition is essential for maintaining cognitive and physical functions, preventing and managing chronic diseases, and sustaining health and a good quality of life (Reppas et al. n.d.). The Administration on Aging (AoA), within the Administration for Community Living of the U.S. Department of Health and Human Services, administers the Older Americans Act (OAA) Title III-C Nutrition Services Program (NSP). The purposes of the NSP are to (1) reduce hunger and food insecurity; (2) promote socialization of older individuals; and (3) promote the health and well-being of older individuals by helping them access services that encourage proper nutrition, prevent disease, and promote health.

The program provides meals, nutrition education, nutrition risk screening, and nutrition counseling to older adults. Meals and services are provided in congregate meal sites located in a variety of settings, including community senior centers, senior cafes, schools, churches, farmers markets, and other community settings. In addition, the NSP provides home-delivered meals and services to homebound older adults. Congregate and home-delivered meals must adhere to the current *Dietary Guidelines for Americans* and provide a minimum of one-third of the Dietary Reference Intakes (Administration for Community Living 2017).

Previous research has shown that the meals provided through the NSP make substantial contributions to older adults' diets (Mabli et al. 2017). On average, older adults who participated in the NSP obtained about 40 percent of their daily intakes of calories from program meals, as well as 35 to 47 percent of daily intakes of nutrients from program meals. In addition, the program had positive effects on the overall quality of participants' diets, particularly among congregate meal participants. Despite these positive findings, participants' diets (like the diets of most Americans) were not fully consistent with the *Dietary Guidelines for Americans* recommendations for a healthy diet (Mabli et al. 2017). The Healthy Eating Index-2010 was used to measure the overall quality of participants' diets by assessing conformance to key recommendations of the 2010 *Dietary Guidelines for Americans* (U.S. Department of Agriculture [USDA] and U.S. Department of Health and Human Services 2010). Participants' diets were very consistent with the *Dietary Guidelines for Americans* recommendations for fruits, vegetables, and dairy, but at the same time, they exceeded recommended limits for sodium and empty calories (that provide little or no nutritional benefit).

Box 1. Food groups examined in the analysis

Milk and dairy:
Milk, cheese, and yogurt

Fruits:
Fresh, canned, frozen, or dried fruit, or 100% fruit juice

Vegetables:
Raw or cooked vegetables

Protein foods:
Meat, poultry, seafood, and eggs

Mixed dishes:
Meat, vegetable, and/or grain mixtures, including pasta, sandwiches, entree salads, and soups

Grains:
Pasta, rice, breads, rolls, tortillas, and cereals

Snacks and sweets:
Bakery products, crackers, chips, pretzels, crackers, candy, and ice cream

Beverages other than milk and 100% juice:
Coffee and tea, sweetened or diet soft drinks, water, sports drinks, and alcoholic beverages

Added fats, oils, condiments, and sauces:
Butter, mayonnaise, salad dressings, ketchup, mustard, gravy, and tomato-based sauces

This issue brief expands on the prior analysis that assessed the quality of participants' diets by examining the types of foods that participants included their diets. Specifically, it describes the types of foods that participants consumed as part of congregate and home-delivered meals and examines differences between participants and nonparticipants in foods consumed over 24 hours. The findings we present here can be helpful for targeting nutrition education efforts with participants and for the program staff who plan congregate and home-delivered meals.

METHODS

The data used in the analysis were collected as part of the Title III-C NSP Evaluation, which Mathematica Policy Research conducted under contract to the AoA. The evaluation consisted of a process evaluation of program administration and service delivery (Mabli et al. 2015), a program cost analysis (Ziegler et al. 2015), and an evaluation of the effect of the program on participants' outcomes, including food security, socialization, and diet quality (Mabli et al. 2017). To estimate the effect of receiving a congregate meal or home-delivered meal on these outcomes, the study team compared outcomes for participants and a matched comparison group of program-eligible nonparticipants. The purpose of the matched comparison group of eligible nonparticipants was to represent what would happen to participants in the absence of the program. In constructing the matched comparison groups for congregate meal participants and home-delivered meal participants, the study team used statistical methods to control for differences in the characteristics of participants and their respective group of nonparticipants that could affect both outcomes and program participation decisions.

Trained interviewers conducted 24-hour dietary recalls with both participants and nonparticipants. Interviewers used the Automated Self-Administered 24-hour hour dietary recall system (National Cancer Institute 2014) to collect detailed information about all foods and beverages consumed during a midnight-to-midnight recall period, including where each item was obtained (for example, from a store, restaurant, congregate meal site, or home-delivered meal).

To examine the types of foods older adults consumed, the study team classified foods reported in the dietary recalls into a set of major and minor food groups. The food groups were based on those USDA developed for analyzing dietary recall data collected in *What We Eat in America*, the dietary interview component of the National Health and Nutrition Examination Survey (USDA, Agricultural Research Service 2016). Each food was assigned to one of nine major food groups—Box 1 lists the name of each major food group and examples of foods included in each group. Foods in each major food group were then assigned to subgroups based on specific characteristics of the food. For example, subgroups for the milk and dairy group include fluid milk, cheese, and yogurt, with additional subgroups for fluid milk based on fat content (nonfat, low-fat, reduced-fat, or whole). Foods that included more than one component (for example, sandwiches, entree salads, mixed dishes with pasta or rice) counted as a single food choice.

The study team conducted two analyses to examine older adults' food consumption.

1. **Foods that congregate and home-delivered meal participants consumed as part of a program meal**. This analysis counted all foods consumed from a program meal, regardless of when the foods were consumed. For example, if a congregate meal participant consumed most of the meal as lunch and then consumed a piece of fruit from the meal later in the day, all of these foods were counted in this analysis. The analysis sample included 468 congregate meal participants and 433 home-delivered meal participants.
2. **All foods consumed over 24 hours among program participants and the comparison groups of nonparticipants.** This analysis counted all foods consumed over 24 hours, including foods that participants consumed as part of a program meal. The study team tested differences between each group of participants and nonparticipants for statistical significance at the 0.05 level. All estimates are presented as the percentage of older adults who consumed a food from the major food group or subgroup in any amount. The analysis sample included 468 congregate meal participants and 619 nonparticipants, and 433 home-delivered meal participants and 514 nonparticipants.

FINDINGS

Findings for each analysis are presented separately for congregate meal participants and nonparticipants and home-delivered meal participants and nonparticipants.

CONGREGATE MEAL PROGRAM

Types of foods consumed from congregate meals

Figure 1 shows the percentage of congregate meal participants who consumed at least one food from each major food group as part of a program meal. Key findings for each major food group are summarized below.

Milk and dairy. Just under half (46 percent) of congregate meal participants consumed milk and dairy as part of a program meal. Fluid milk was the most commonly consumed food in this group (45 percent). Congregate meal participants consumed reduced-fat (2%) milk most often as part of a program meal (26 percent), followed by low-fat (1%) milk (14 percent).

Fruit and 100% juice. More than half (53 percent) of congregate meal participants consumed fruit or 100% juice as part of a program meal. Congregate meal participants consumed canned fruit and fresh fruit as part of a program meal more frequently than 100% fruit juice (27 and 25 percent versus 6 percent) (Figure 2). Fruit cocktail, pineapple, pears, peaches, and nectarines were the most commonly consumed canned fruits. Pineapples, pears, fruit salads, and apples were the most commonly consumed fresh fruits.

Vegetables. Three-quarters of congregate meal participants consumed a vegetable as part of a program meal. Congregate meal participants consumed cooked vegetables more frequently than raw vegetables (56 versus 30 percent) (Figure 2). Congregate meal participants consumed a variety of cooked vegetables from program meals and most frequently reported mashed potatoes and white potato mixtures; other vegetables and combinations (such as cauliflower, Brussel sprouts, cabbage, and squash; and combinations such as peas and carrots); dark

FIGURE 1:
Types of foods congregate meal participants consumed as part of program meals

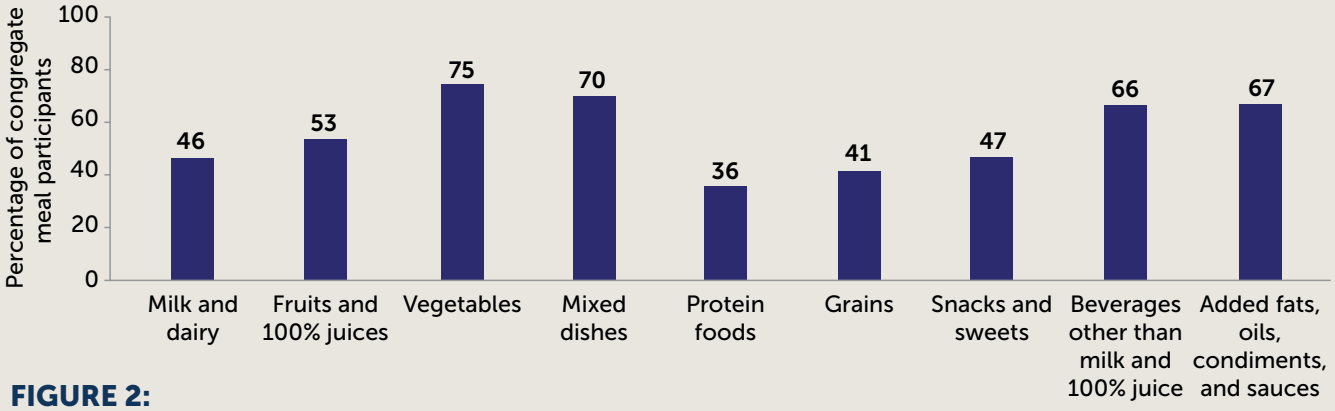
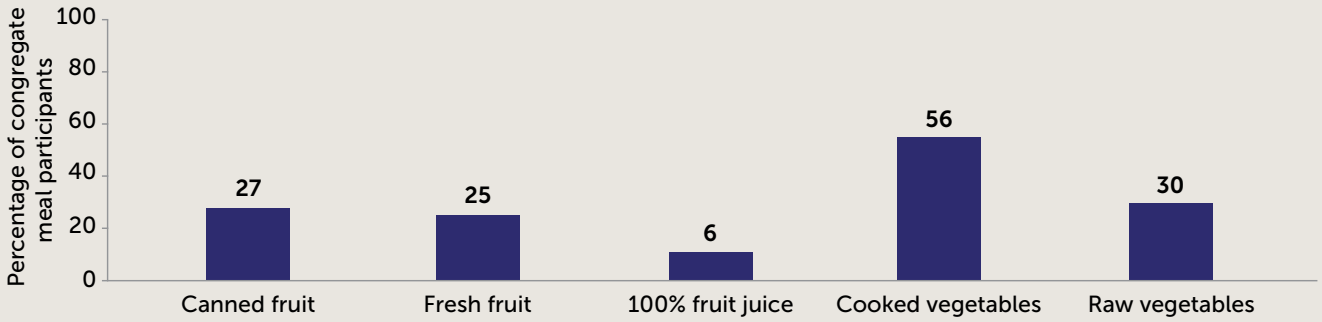


FIGURE 2:
Types of fruits and vegetables congregate meal participants consumed as part of program meals



Source: Administration on Aging Title III-C Nutrition Services Program 24-hour dietary recall (Day 1), 2015–2016, weighted data.
Note: Estimates are based on an unweighted sample size of 468 congregate meal participants.

green vegetables (such as spinach and broccoli); starchy vegetables (including green peas, lima beans, and corn). Lettuce and lettuce salads were the most commonly consumed raw vegetables, followed by mixed vegetable dishes (such as coleslaw and carrot salads).

Mixed dishes and protein foods. Nearly three-quarters (70 percent) of congregate meal participants consumed mixed dishes as part of a program meal. Mixed dishes with meat or poultry, including entree salads and other mixtures of meat and vegetables (such as meatloaf, chicken or turkey with noodles and vegetables, beef stew, or Salisbury steak) were the most commonly consumed mixed dishes (28 percent), followed by sandwiches (21 percent), soups (13 percent), and grain-based mixed dishes including lasagna and spaghetti with tomato sauce (11 percent). More than one-third (36 percent) of congregate meal participants also consumed separate protein foods, including poultry, red meats, cured meats, and seafood, as part of a program meal.

Grains. Forty-one percent of congregate meal participants consumed a separate grain item as part of a program meal. Breads, rolls, and tortillas were the most commonly consumed grain items among congregate meal participants (28 percent). Other grain items were consumed less frequently (4 to 5 percent) as part of a program meal and included rice and biscuits, muffins, and quick breads.

Snacks and sweets. Nearly half (47 percent) of congregate meal participants consumed snacks and sweets as part of a program meal. The most commonly consumed snacks and sweets obtained from program meals were cookies, brownies, cakes, and pies (16 to 17 percent).

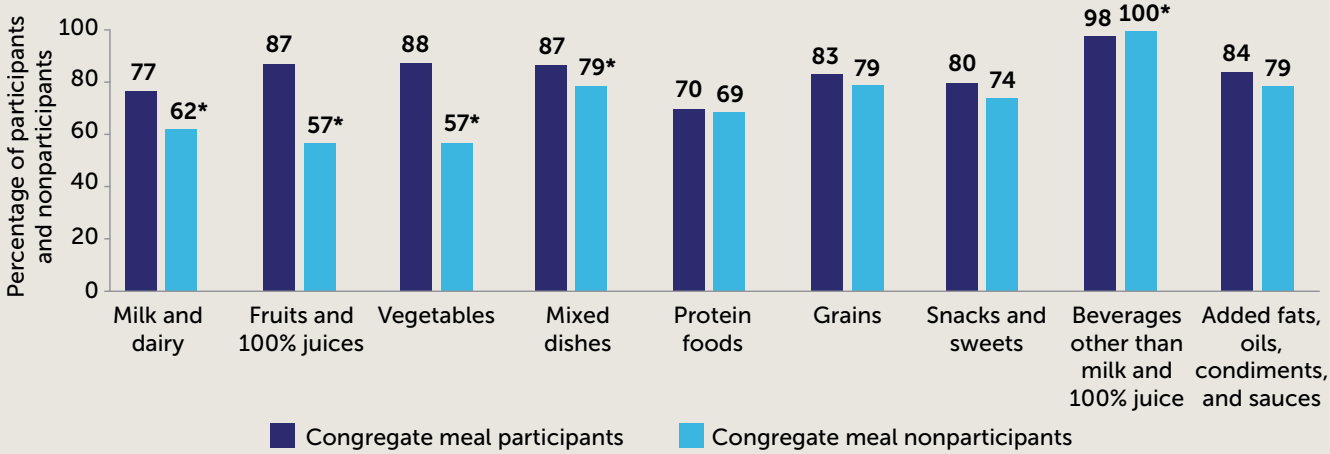
Beverages other than milk and 100% juice. Two-thirds of congregate meal participants consumed a beverage other than milk or 100% juice as part of a program meal. Coffee and tea (45 percent) and plain water (31 percent) were most frequently reported.

Added fats, oils, condiments, and sauces. About two-thirds (67 percent) of congregate meal participants consumed added fats, oils, condiments, and sauces as part of a program meal. Nearly half (46 percent) of congregate meal participants consumed added fats and oils such as salad dressing, vegetable oil, margarine, butter, mayonnaise and cream.

Differences between congregate meal participants and nonparticipants in the type of foods consumed over 24 hours

Figure 3 presents the percentages of congregate meal participants and nonparticipants who consumed at least one food from each major food group over 24 hours. Key findings on differences between congregate meal participants and nonparticipants are summarized below.

FIGURE 3:
Differences in the types of foods congregate meal participants and nonparticipants consumed over 24 hours



Source: Administration on Aging Title III-C Nutrition Services Program 24-hour dietary recall (Day 1), 2015–2016, weighted data.
Note: Estimates are based on an unweighted sample size of 468 congregate meal participants and 619 nonparticipants.
* Difference between participants and nonparticipants is significantly different from zero at the .05 level, two-tailed test.

Milk and dairy. Congregate meal participants were significantly more likely than nonparticipants to consume milk and dairy over 24 hours (77 versus 62 percent). This difference was driven by more common consumption of fluid milk among congregate meal participants (71 versus 49 percent). Congregate meal participants were more likely than nonparticipants to consume reduced-fat or low-fat milk and were less likely to consume whole milk (Figure 4).

Fruit and 100% juice. Congregate meal participants were significantly more likely than nonparticipants to consume fruit and 100% juice over 24 hours (87 versus 57 percent). This pattern of findings was observed for canned fruit, fresh fruit, and 100% fruit juice.

Vegetables. Over 24 hours, congregate meal participants were significantly more likely than nonparticipants to consume vegetables (88 versus 57 percent). Congregate meal participants were more likely than nonparticipants to consume both cooked and raw vegetables over 24 hours (71 versus 46 percent for cooked vegetables, and 40 versus 22 percent for raw vegetable).

Mixed dishes and protein foods. Congregate meal participants were more likely than nonparticipants to consume mixed dishes over 24 hours (87 versus 79 percent). The difference in the percentages of congregate meal participants and nonparticipants who consumed protein foods (which include discrete servings of eggs, poultry, and meat) was not significant (70 versus 69 percent).

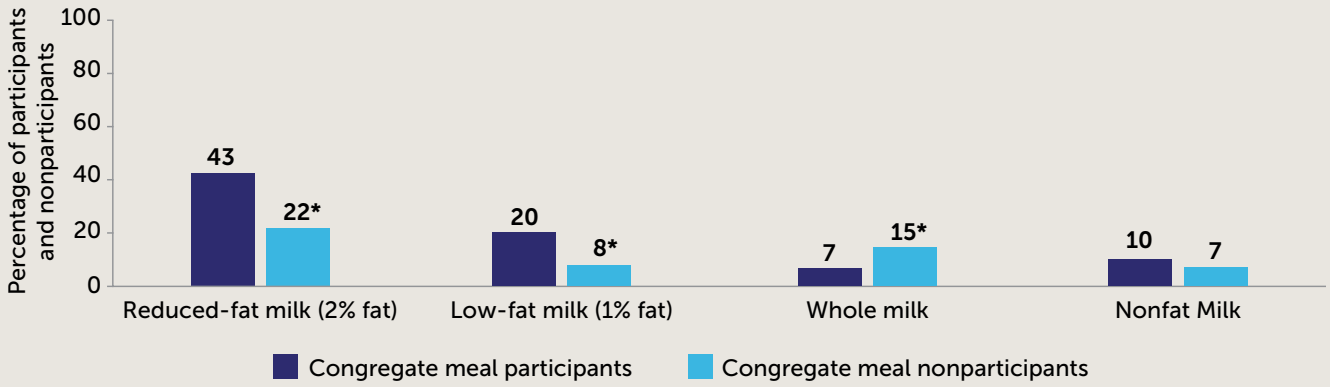
Grains. Roughly 80 percent of congregate meal participants and nonparticipants consumed at least one separate grain item over 24 hours (83 and 79 percent, respectively). The difference in the percentages of congregate meal participants and nonparticipants who consumed grains was not statistically significant.

Snacks and sweets. Over 24 hours, comparable proportions of congregate meal participants and nonparticipants consumed at least one snack or sweet (80 and 74 percent, respectively). Congregate meal participants were significantly more likely than nonparticipants to consume cookies and brownies (35 versus 20 percent) and cakes and pies (29 versus 12 percent) over 24 hours.

Beverages other than milk and 100% juice. Nearly all congregate meal participants and nonparticipants consumed beverages other than milk and 100% juice over 24 hours. Congregate meal participants were significantly less likely than nonparticipants to consume such beverages, though the magnitude of the difference was small (98 versus 100 percent). This difference was driven largely by the significantly smaller percentages of participants who consumed sweetened beverages (including soft drinks and fruit drinks) (19 versus 29 percent), diet beverages (5 percent versus 11 percent), and alcoholic beverages (4 versus 9 percent), relative to nonparticipants.

Added fats, oils, condiments, and sauces. More than three-quarters of congregate meal participants and nonparticipants consumed added

FIGURE 4:
Differences in the types of milk congregate meal participants and nonparticipants consumed over 24 hours



Source: Administration on Aging Title III-C Nutrition Services Program 24-hour dietary recall (Day 1), 2015–2016, weighted data.
Note: Estimates are based on an unweighted sample size of 468 congregate meal participants and 619 nonparticipants.
* Difference between participants and nonparticipants is significantly different from zero at the .05 level, two-tailed test.

fats, oils, condiments, and sauces over 24 hours (84 and 79 percent, respectively). The difference in the percentages of congregate meal participants and nonparticipants who consumed foods from this group was not statistically significant.

HOME-DELIVERED MEAL PROGRAM

Types of foods consumed from home-delivered meals

Figure 5 shows the percentage of home-delivered participants who consumed at least one food from each major food group as part of a program meal. Key findings for each major food group are summarized below.

Milk and dairy. Just under half (42 percent) of home-delivered meal participants consumed milk and dairy as part of a program meal. Fluid milk was the most commonly consumed food in this group (39 percent). Reduced-fat milk was reported most often (18 percent), followed by low-fat milk (17 percent).

Fruit and 100% juice. About half (51 percent) of home-delivered meal participants consumed fruit or 100% juice as part of a program meal. Canned fruit was consumed most frequently (27 percent), followed by fresh fruit (20 percent) (Figure 6). Fruit cocktail, pineapple, pears, peaches, and nectarines were the most commonly consumed canned fruits. Citrus fruit, apples, fruit salads, pineapples, and pears were the most commonly consumed fresh fruits. Eight percent of home-delivered meal participants consumed 100% fruit juice as part of a program meal.

Vegetables. Most home delivered meal participants (81 percent) consumed a vegetable as part of a program meal. Home-delivered meal participants consumed cooked vegetables more frequently than raw vegetables (73 versus 16 percent) (Figure 6). The most commonly reported cooked vegetables included other vegetables and combinations (such as cauliflower, Brussel sprouts, cabbage, and squash; and combinations such as peas and carrots); mashed potatoes and white potato mixtures; string beans;

FIGURE 5:
Types of foods home-delivered meal participants consumed as part of program meals

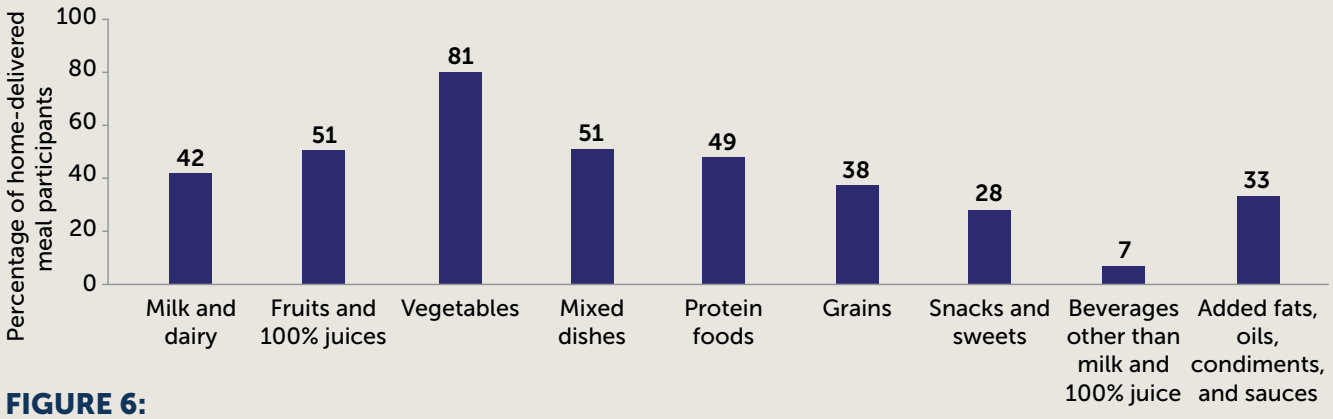
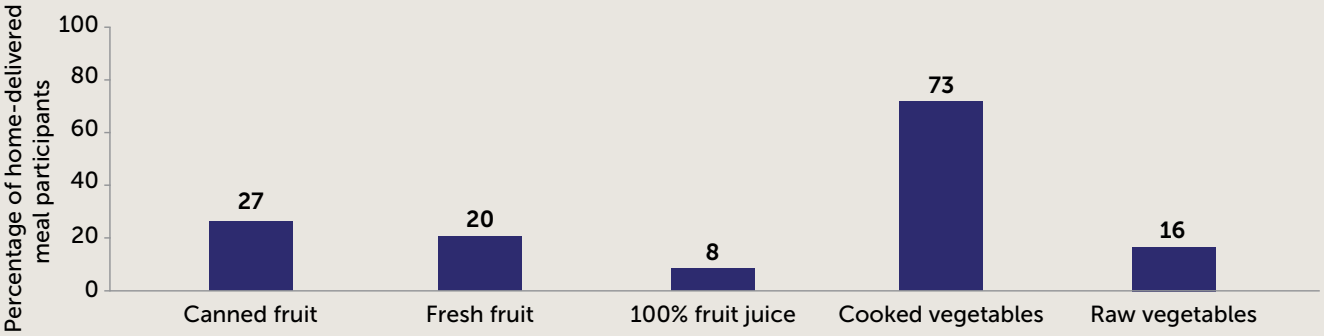


FIGURE 6:
Types of fruits and vegetables home-delivered meal participants consumed as part of program meals



Source: Administration on Aging Title III-C Nutrition Services Program 24-hour dietary recall (Day 1), 2015–2016, weighted data.
Note: Estimates are based on an unweighted sample size of 433 home-delivered meal participants.

and dark green vegetables (such as spinach and broccoli). Mixed vegetable dishes (such as coleslaw and carrot salads) and lettuce and lettuce salads were the most commonly consumed raw vegetables among home-delivered meal participants.

Mixed dishes and protein foods. About half (51 percent) of home-delivered meal participants consumed mixed dishes as part of a program meal. Mixed dishes with meat or poultry, including entree salads and other mixtures of meat and vegetables (such as meatloaf, chicken or turkey with noodles and vegetables, chili with meat, or Salisbury steak) were the most commonly consumed mixed dishes (16 percent), followed by grain-based mixed dishes including spaghetti and tomato sauce and lasagna (14 percent), sandwiches (12 percent) and soups (8 percent). Nearly half (49 percent) of home-delivered meal participants also consumed separate protein foods, including poultry, red meats, cured meats, and seafood, as part of a program meal.

Grains. Just under 40 percent of home-delivered meal participants consumed a separate grain item as part of a program meal. Breads, rolls, and tortillas were the most commonly consumed grain items (23 percent). Other grain items were consumed by home-delivered meal participants less frequently as part of program meals and included rice (10 percent) and biscuits, muffins, and quick breads (6 percent).

Snacks and sweets. More than one-quarter (28 percent) of home-delivered meal participants consumed snacks and sweets as part of a program meal. The most commonly consumed foods in this group were cakes and pies (9 percent), cookies and brownies (8 percent), and pudding (7 percent).

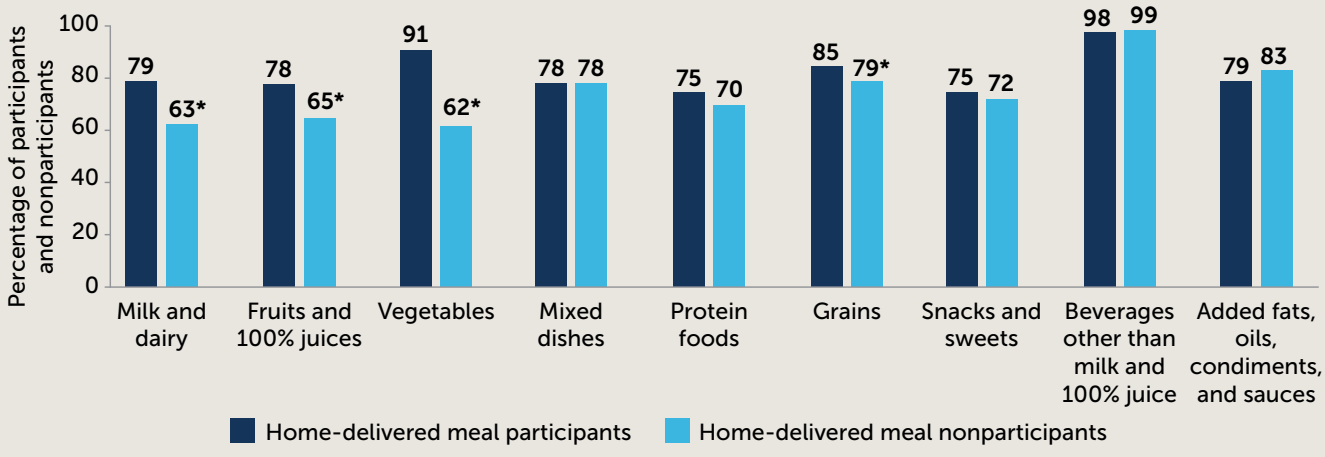
Beverages other than milk and 100% juice. Only 7 percent of home-delivered meal participants consumed beverages other than milk and 100% juice as part of a program meal. This indicates that home-delivered meals do not typically include these beverages.

Added fats, oils, condiments, and sauces. One-third of home-delivered meal participants consumed added fats, oils, condiments, and sauces as part of a program meal. About one-quarter (24 percent) of home-delivered meal participants consumed added fats and oils such as salad dressing, vegetable oil, margarine, butter, mayonnaise and cream.

Differences between home-delivered meal participants and nonparticipants in the type of foods consumed over 24 hours

Figure 7 presents the percentages of home-delivered meal participants and nonparticipants who consumed at least one food from each major food group over 24 hours. Key findings

FIGURE 7:
Differences in the types of foods home-delivered meal participants and nonparticipants consumed over 24 hours



Source: Administration on Aging Title III-C Nutrition Services Program 24-hour dietary recall (Day 1), 2015–2016, weighted data.
Note: Estimates are based on an unweighted sample size of 433 home-delivered meal participants and 514 nonparticipants.
* Difference between participants and nonparticipants is significantly different from zero at the .05 level, two-tailed test.

on differences between home-delivered meal participants and nonparticipants are summarized below.

Milk and dairy. Home-delivered meal participants were significantly more likely than nonparticipants to consume milk and dairy over 24 hours (79 versus 63 percent). Consumption of fluid milk was more common among home-delivered meal participants than nonparticipants (68 versus 51 percent). Home-delivered meal participants were more likely than nonparticipants to consume reduced-fat or low-fat milk and were less likely to consume whole milk (Figure 8).

Fruit and 100% juice. Home-delivered meal participants were significantly more likely than nonparticipants to consume fruit and 100% juice over 24 hours (78 versus 65 percent). This pattern of findings was observed for canned fruit and 100% juice, but the difference between home-delivered meal participants and nonparticipants was not statistically significant for fresh fruit.

Vegetables. Over 24 hours, home-delivered meal participants were significantly more likely than nonparticipants to consume vegetables (91 versus 62 percent). This difference was driven largely by the significantly higher percentage of home-delivered meal participants who consumed cooked vegetables relative to nonparticipants (81 percent versus 50 percent).

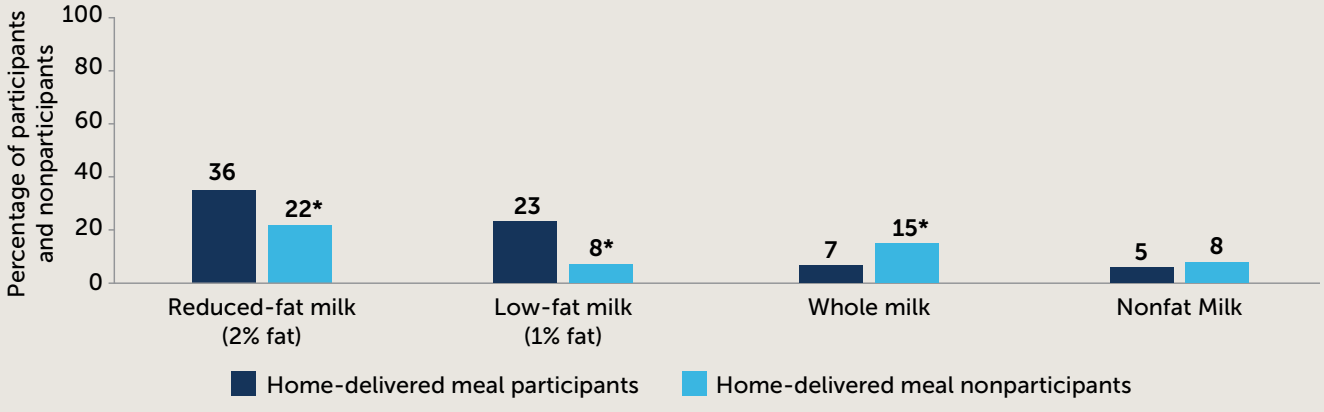
Mixed dishes and protein foods. Roughly three-quarters of home-delivered meal participants and nonparticipants consumed mixed dishes over 24 hours (78 percent for both groups) and comparable proportions also consumed protein foods (which include discrete servings of eggs, poultry, and meat) (75 and 70 percent). The differences in the percentages of participants and nonparticipants who consumed mixed dishes or protein foods were not statistically significant.

Grains. More than three-quarters of home-delivered meal participants and nonparticipants consumed at least one separate grain item over 24 hours. Home-delivered meal participants were significantly more likely than nonparticipants to consume separate grain items (85 versus 79 percent).

Snacks and sweets. Over 24 hours, comparable proportions of home-delivered meal participants and nonparticipants consumed at least one snack or sweet (75 and 72 percent, respectively). Home-delivered meal participants were significantly less likely than nonparticipants to consume ice cream and frozen dairy desserts (8 versus 15 percent).

Beverages other than milk and 100% juice. Nearly all home-delivered meal participants and nonparticipants consumed beverages other than milk and 100% juice over 24 hours (98 and 99 percent, respectively). The difference in the percentages of home-delivered meal participants

FIGURE 8:
Differences in the types of milk home-delivered meal participants and nonparticipants consumed over 24 hours



Source: Administration on Aging Title III-C Nutrition Services Program 24-hour dietary recall (Day 1), 2015–2016, weighted data.
Note: Estimates are based on an unweighted sample size of 433 home-delivered meal participants and 514 nonparticipants.
* Difference between participants and nonparticipants is significantly different from zero at the .05 level, two-tailed test

and nonparticipants who consumed foods from this group was not statistically significant.

Added fats, oils, condiments, and sauces. More than three-quarters of home-delivered meal participants and nonparticipants consumed added fats, oils, condiments, and sauces over 24 hours (79 and 83 percent, respectively). The difference in the percentages of home-delivered meal participants and nonparticipants who consumed foods from this group was not statistically significant.

DISCUSSION

Congregate and home-delivered meal participants consumed a variety of foods from program meals, and there were several significant differences in foods consumed over 24 hours by program participants and nonparticipants. Congregate and home-delivered meals were an important source of fruits and vegetables in participants' diets. Over 24 hours, both congregate and home-delivered meal participants were more likely than nonparticipants to consume fruits and vegetables, as well as milk and dairy. In addition, the findings indicate that more than half of participants who consumed any fruits, vegetables, or milk and dairy over 24 hours obtained these items as part of a program meal. Daily consumption of these foods is consistent with the Dietary Guidelines for Americans.

Although the differences between participants and nonparticipants in the proportions who consumed snacks and sweets or added fats, oils, condiments, and sauces were not statistically significant, large proportions of older adults consumed these foods over 24 hours. The findings indicate that most congregate meal participants who consumed any added fats, oils, condiments, or sauces over 24 hours obtained them from program meals, whereas most home-delivered meal participants obtained these foods outside of program meals. The Dietary Guidelines for Americans recommend limiting consumption of these types of foods because they can contribute to excessive intakes of calories, saturated fat, sodium, and added sugars.

This analysis did not examine the amounts of foods consumed, yet it does provide important insight into the types of foods participants consumed from congregate and home-delivered meals and differences between participants and nonparticipants in the types of foods they consumed over 24 hours. Findings from these analyses can help programs tailor nutrition education efforts with participants to improve their daily food choices and better align their diets with the Dietary Guidelines for Americans. Programs can also use this information to modify the types of foods offered in congregate and home-delivered meals to ensure they are consistent with the Dietary Guidelines for Americans. For example, reduced-fat (2%) milk was the most common type of milk that congregate and home-delivered meal participants consumed as part of a program meal and over 24 hours. The Dietary Guidelines for Americans recommend consuming nonfat or low-fat (1%) dairy to limit intakes of saturated fat, so educating participants and programs on milk choices would be useful. Encouraging congregate meal sites to limit snacks and sweets and added fats, oils, condiments, and sauces could also help improve the quality of participants' diets.

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