Study of Nutrition and Activity in Child Care Settings

Summary of Findings

October 2021

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List of Exhibits

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TABLE OF ACRONYMS

AAP	American Academy of Pediatrics
AI	adequate intake
AMDR	acceptable macronutrient distribution range
AR	at-risk afterschool
BMI	body mass index
CACFP	Child and Adult Care Food Program
CC	child care (as in child care center)
CHIP	Children's Health Insurance Program
CCD	child care day
CDC	Centers for Disease Control and Prevention
DGA	Dietary Guidelines for Americans
DRI	Dietary Reference Intake
EAR	estimated average requirement
EER	Estimated Energy Requirement
FDCH	family day care home
FNS	Food and Nutrition Service
FPL	Federal Poverty Level
HEI	Healthy Eating Index
HS	Head Start
IOM	Institute of Medicine
NCI	National Cancer Institute
NHANES	National Health and Nutrition Examination Survey
NSLP	National School Lunch Program
OSH	outside-of-school hours
SBP	School Breakfast Program
SNACS	Study of Nutrition and Activity in Child Care Settings
SNAP	Supplemental Nutrition Assistance Program
SNMCS	School Nutrition and Meal Cost Study
SoFAS	solid fats and added sugars
UL	Tolerable upper intake level
USDA	U.S. Department of Agriculture
WIC	Special Supplemental Nutrition Program for Women, Infants, and Children

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OVERVIEW OF MAJOR FINDINGS

Introduction

The Child and Adult Care Food Program (CACFP) is administered by the U.S. Department of Agriculture's (USDA) Food and Nutrition Service (FNS). CACFP plays a critical role in supporting the health and wellness of children by providing reimbursements to child care programs for nutritious meals and snacks served to eligible children. CACFP-participating programs across the country provided care for more than four million children per day and served nearly two billion meals in 2017.

This report presents the major findings of the Study of Nutrition and Activity in Child Care Settings (SNACS). SNACS is the first comprehensive assessment of the wellness policies and practices of CACFP-participating programs, the nutritional quality of CACFP-reimbursed meals and snacks, the cost and revenues of those meals and snacks, the 24-hour dietary intake of CACFP-participating children on a day spent in care and on a day not in care, and plate waste in CACFP child care programs. To address these questions, SNACS collected data in Program Year (PY) 2016-2017 from nationally representative samples of CACFP-participating programs and children through surveys, interviews, on-site observations, and food diaries.

SNACS provides findings for early child care programs, which serve children who are younger than school age, most commonly ages 3-5 years but also infants (under age one) and toddlers (ages 1-2 years). On days when children attend early child care programs, they often eat the majority of their meals there, such that program nutrition and wellness practices play a central role in children's development and well-being. Early child care programs in CACFP include child care centers, Head Start programs, and family day care homes. SNACS also assessed before and after school programs, which supplement the nutrition that children (typically ages 6-12 years) receive during the school day.

Key findings for early child care programs are presented below. The rest of the Summary of Findings provides detailed summaries of the early care program findings, in addition to key findings for before and after school programs and for the care of infants in early child care programs.

Physical Activity Observed in Early Child Care Programs

Caring for Our Children guidelines recommend 60-90 minutes of outdoor physical activity time where toddlers and preschoolers can be moderately or vigorously active during the child care day.[1]

- Nearly all observed early child care programs (99 percent) offered time for physical activity during the day. The mean total observed time allocated for physical activity was 96 minutes per 8-hour day, specifically an average of 60 minutes outdoors and 36 minutes indoors.
- The most commonly observed potential barrier to children's opportunity to participate in outdoor physical activity was staff not joining children in active play (observed in 61 percent of programs). Programs with this barrier had 27 fewer minutes of physical activity opportunities per day than those in which staff joined children in active play, after accounting for program characteristics.
- The next most commonly observed potential barriers to outdoor activities were staff restricting active play as a disciplinary action (24 percent of programs), followed by inclement weather (12 percent of programs). Early child care programs where outdoor play was restricted due to inclement weather on the observed day provided 66 fewer minutes of physical activity opportunities than those without such restrictions—the largest decrease associated with any barrier tested.

Meals Served to 3-5 Year Olds in Early Child Care Programs

To qualify for reimbursement through CACFP, meals and snacks must meet specific meal component requirements and be served in minimum portion size amounts. The four meal component requirements at the time of this study were milk, fruit or vegetable, grains or bread, and meat or meat alternate (such as cheese, eggs, peanut butter, or tofu).

The great majority of breakfasts, lunches, and afternoon snacks served to 3-5 year olds met all CACFP component requirements during the week for which data were collected. Specifically, 88 percent of lunches included all four required components (milk, fruit/vegetable, grains/bread, and a meat/meat alternate) and 97 percent of breakfasts and afternoon snacks included all required components (three for breakfast and two for snacks).

Based on the 2011 Institute of Medicine Report *Child and Adult Care Food Program: Aligning Dietary Guidance for All*, children should obtain 21 percent of their daily recommended intake at breakfast, 28 percent at lunch, and 11.5 percent at snacks (assuming 2 snacks per day).[2] The average meals and snacks served in early child care programs exceeded these meal level benchmarks for calories and for most USDA Food Pattern Food Groups.

- Lunches, breakfast and afternoon snacks exceeded the meal level benchmarks for calories.
- Lunches provided more than the meal level benchmarks for vegetables, grains and bread, dairy and protein foods, but not for fruit.
- Breakfasts and afternoon snacks exceeded the meal level benchmarks for fruit, grains, and dairy.

Early child care program meals substantially exceeded meal level benchmarks based on the Dietary Guidelines for Americans (DGA) 2015-2020 for calories for other uses (that is, empty calories, including those from solid fats and added sugars).

- Lunches contributed more than three quarters of the daily limit on calories for other uses, mainly driven by calories from solid fats.
- Breakfasts contributed more than half (56 percent) of the daily limit of calories for other uses.
- Afternoon snacks contributed a mean of 39 percent of the daily limit of calories for other uses.

Finally, SNACS used the Healthy Eating Index (HEI) to assess the nutritional quality of meals and snacks served in early child care programs. The HEI measures compliance with the DGAs, with a maximum total score of 100.

- Mean total HEI scores were 73, 67, and 66 for lunches, breakfasts, and afternoon snacks, respectively, served in early child care programs.
- By comparison, the mean HEI score for the diet consumed by Americans ages 2-5 years in 2013-2014 was 60, suggesting that CACFP meals were healthier than the average young child's diet.

Meal Costs and Revenues in Early Child Care Programs

SNACS provides the first national estimates of the meal costs and revenues associated with delivering CACFP in early child care programs. For these estimates, SNACS collected data on food costs and labor costs.

- The median total cost for food and labor was: $4.19 per breakfast; $4.85 per lunch; and $2.94 per supper.
- There was a wide range of total costs across programs for all three types of meals, with most of the variation in labor costs, compared to food costs.

USDA provides subsidies in the form of reimbursements for meals and snacks and donated foods (or a cash equivalent) for lunches and suppers.

- The total USDA subsidy exceeded the food cost, with the subsidy ranging from 112 percent of the food cost (for snacks) to 157 percent (for lunch).
- On the other hand, the USDA subsidy was between 18 and 51 percent of the combined food and labor cost, indicating it did not cover the total costs to produce CACFP meals and costs.

Dietary Intakes in Early Child Care Programs

SNACS assessed child dietary intakes on child care days using observations off child care meals and food diaries completed by parents for foods consumed outside of care on child care days and non-child care days. Three to 5 year olds consumed (on average) three-fifths or more of the minimum CACFP requirement for each meal component.

- They consumed more than the minimum for grains/bread at breakfast, lunch and snacks.
- They also consumed more than the minimum for fruit/vegetable at lunch, and 94 percent of the minimum at snacks.
- They consumed less than the minimum of the following components: milk at breakfast and lunch, fruit or vegetables at breakfast, and meat or meat alternate at lunch.

CACFP meals and snacks contributed substantially to daily food and nutrient intakes among 3-5 year olds on child care days.

- CACFP meals and snacks contributed 40 percent of calories on child care days.
- Contributions for USDA Food Pattern Food Groups varied considerably, with CACFP meals and snacks disproportionately contributing to the whole grains and dairy groups (67 and 55 percent respectively), and contributing least toward calories from solid fats and added sugars (32 and 31 percent respectively).

The diets of children in early child care programs were higher in quality (that is, better aligned with the DGAs) on child care days than on non-child care days, as measured by HEI scores.

- Children ages 2 to 12 years old in these programs had overall HEI scores of 65 for their intakes on child care days and 61 on non-child care days (out of a maximum of 100).
- Children's intakes on both child care and non-child care days had perfect or near-perfect alignment with the DGAs for total fruit, whole fruit, dairy, and total protein foods. Intakes of vegetables, whole grains, and fatty acids were least aligned with the DGAs.
- Intakes on child care days scored significantly higher than intakes on non-child care days for total vegetables, whole grains, dairy, added sugar, and saturated fat.

Plate Waste among 3-5 Year Olds in Early Child Care Programs

Plate waste is the percentage of food served to or taken by a child that was not consumed during the meal.

- Plate waste was highest for vegetables (42 percent) and lowest for meat/meat alternates (20 percent) at lunch.
- Plate waste at breakfast was highest for meat/meat alternates (33 percent) and lowest for combination entrées (23 percent).
- Mean caloric waste was lowest for afternoon snacks (22 percent wasted). Mean caloric waste was slightly lower at lunch than at breakfast (26 percent and 29 percent wasted, respectively).

Conclusions

For over 4 million children in participating child care programs each day, CACFP promoted wellness through its support for nutrition and physical activity. SNACS provides a comprehensive and essential baseline for understanding nutrition and physical activity in the CACFP.

- Almost all early child care programs (99 percent) provided at least one opportunity for physical activity, with an average of 96 minutes per 8-hour day.
- Most lunches (88 percent), breakfasts (97 percent) and afternoon snacks (97 percent) served to 3-5 year olds in early child care programs included all required CACFP meal components.
- The Healthy Eating Index (Total HEI), a measure of diet quality, indicated that breakfasts, lunches, and afternoon snacks served in early child care programs participating in CACFP had two-thirds or more of the ideal score of 100, and thus had room for improvement to align with the DGAs. Specifically, HEI scores for lunches served to children ages 3-5 years were highest (over 90) for fruits, vegetables, dairy, protein foods, and added sugars; between 50 and 90 for whole grains, refined grains, and saturated fats; and lowest (under 50) for fatty acids and sodium.
- CACFP meals and snacks provided 40 percent of children's caloric intake and a similar proportion of children's intakes of recommended food groups and nutrients.
- CACFP reimbursed between 18 and 51 percent of the combined food and labor cost to provide meals and snacks in early child care programs.
- These cost findings align with survey results. Among the potential ways to increase CACFP participation among early child care programs, programs most often reported that increased reimbursements would boost participation. In addition, over half of child care centers and Head Start programs reported that they experienced challenges to participating in CACFP because meal reimbursement was inadequate.
- Children in early child care programs wasted about one-quarter of calories served at breakfast, lunch, and afternoon snack, similar to the share of calories wasted in elementary schools at breakfast and lunch reported in the School Nutrition and Meal Cost Study.[3]
- Despite food waste, children consumed a diet of higher nutritional quality on a day in care than out of care. Specifically, HEI scores for intake of total vegetables, whole grains, and dairy were significantly higher on child care days than non-child care days. Three to 5 year olds also consumed significantly fewer added sugars and saturated fats when they were in child care compared to a day when they were not.
- Regarding infant milk consumption, over two-thirds of infants under 12 months of age consumed only infant formula while in childcare on a single target day. Twenty-three percent consumed only breastmilk, and seven percent consumed a combination of both.
- Early care programs served a variety of foods to infants to complement the milk feeding. More than half of infants ages 6 to 11 months consumed grains (70 percent), vegetables (70 percent), and fruits (62 percent) at least once during a single child care day. Fewer consumed mixed dishes (36 percent), sweet and salty foods (25 percent), and single meat and protein foods (20 percent).

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INTRODUCTION

The Child and Adult Care Food Program (CACFP) is administered by the U.S. Department of Agriculture's (USDA) Food and Nutrition Service (FNS). CACFP plays a critical role in supporting the health and wellness of children by providing reimbursements to child care programs for nutritious meals and snacks served to eligible children.

This report summarizes the purpose, approach, and findings of the Study of Nutrition and Activity in Child Care Settings (SNACS), which was, in part, congressionally mandated and is the first nationally representative comprehensive assessment of the wellness policies and practices of CACFP-participating programs, the nutritional quality of CACFP-reimbursed meals and snacks, the cost and revenues of those meals and snacks, and the 24-hour dietary intake of CACFP-participating children on a day spent in care and on a day not in care. SNACS is the first national study of nutrition and wellness practices in CACFP in more than 20 years.

CACFP operates in several types of child care settings. SNACS included a nationally representative sample of child care programs participating in CACFP: child care centers, Head Start programs, family day care homes, at-risk afterschool programs, and outside-of-school hours programs. In this report, child care centers, Head Start programs, and family day care homes are referred to collectively as "early child care programs," and at-risk afterschool and outside-of-school hours programs are collectively referred to as "before and after school programs."

Early child care programs serve children who are younger than school age, most commonly ages 3-5 years but also infants (under age one) and toddlers (ages 1-2 years). The amount of time that children spend when they attend these programs varies, but most programs provide full-day care to some or all participants. Therefore, on days when children attend early child care programs, they often eat the majority of their meals there, such that program nutrition and wellness practices play a central role in children's diet, development, and well-being. In contrast, ***before and after school programs*** typically serve children ages 6-12 years, but may serve up through age 18 years; provide care for a few hours; and, by design, supplement the

nutrition that children receive during the school day. Therefore, this report focuses on the findings of SNACS for early child care programs, with selected results for before and after school programs. The report also presents the SNACS findings on the physical activity and nutrition of infants while in child care, including opportunities for activity and sedentary time, solid foods and juice served, and milk consumption.

CACFP Background

CACFP-participating programs across the country provided care for more than four million children per day and served nearly two billion meals in 2017.[4] At least half of children participating in CACFP lived in families with low-income (at or below 185 percent of the Federal Poverty Level) and therefore were at higher risk of inadequate nutrition.[5] In early child care programs, CACFP provides reimbursement for two meals (breakfast, lunch, or supper) and one snack, or one meal and two snacks each day. Before and after school programs in CACFP typically provide snack or supper (and sometimes provide breakfast or lunch) when children are not attending school, thus playing an important supporting role to the National School Lunch Program and the School Breakfast Program. Meals and snacks reimbursed under CACFP must comply with the requirements established by USDA-FNS, including required meal components and minimum portion sizes of these components (collectively referred to as "meal pattern requirements[6]").

Child care programs operated by public agencies, non-profit organizations, and family day care homes are eligible to participate in CACFP. For-profit organizations or sole proprietorships are also eligible to participate if they serve children from low-income families. Once approved by their State's Child Nutrition Agency, early child care programs and before and after school programs can be reimbursed by CACFP for eligible meals served to children. Family day care homes that participate in CACFP must have a sponsoring organization (also known as a sponsor), responsible for program oversight and processing the homes' claims for reimbursement. Other types of programs can participate either through a sponsor or independently. By definition, family day care homes operate in the owner's home, while all other types of programs operate in a child care center or other non-residential facility. A single site may operate more than one participating program type, such as both an early child care program and a before and after school program or both a child care center and a Head Start program.

There are notable differences among the various types of CACFP-participating programs. Child care centers and family day care homes can serve children of any age and income, and they must follow CACFP regulations and State child care rules.[7] In contrast, Head Start programs serve only children younger than age six years whose family income is below the Federal Poverty Level (FPL). Head Start programs must participate in CACFP, and they must follow Head Start regulations as well as CACFP regulations and State child care rules. Outside-of-school hours programs may operate anywhere, and the program is reimbursed for meals based on the children's income eligibility. At-risk afterschool programs must be "area eligible," meaning they are located in the attendance area of a school where 50 percent or more of students are eligible for free or reduced-price meals (i.e., at or below 185 percent of the FPL). All meals and snacks in at-risk afterschool programs are reimbursed at the free meals rate. At-risk afterschool programs can serve children up to age 18 years, whereas outside-of-school hours programs generally serve children up to age 12 years.

Study Overview

In Section 223 of the Healthy, Hunger-Free Kids Act of 2010, Congress directed the USDA to conduct a nationally representative study of nutrition and wellness practices and policies in early child care and before and after school programs participating in CACFP. To continue FNS's long-standing commitment to program evaluation, FNS sponsored SNACS to address the research questions of interest to Congress and to stakeholders at the national, State, and local levels.

Research Objectives

SNACS had four objectives:

1. Assess nutrition and wellness policies/practices and meal quality for infants and children in CACFP child care settings.
2. Describe food and nutrient intakes of infants and children in CACFP child care programs and outside of child care.
3. Determine the meal costs and revenues in CACFP child care programs.
4. Describe and assess plate waste in CACFP child care programs.

Program Taxonomy

Early child care program:

- child care center;
- Head Start program; or
- family day care home

Before and after school program:

- at-risk afterschool program or
- outside-of-school hours program

Appendix A provides a table showing how the research questions for each objective map to the analysis tables in subsequent appendices.

Data Sources

The study team collected data from January to September 2017.[8] Exhibit 1 lists the respondents, modes, and sample sizes for each of the data collection instruments.

Exhibit 1. Data Collection for SNACS: Topics, Respondents, Modes, and Program Types

Instruments/Topics	Respondents	Mode	Program Types	Early Child Care Program Sample Size	Before and After School Program Sample Size
Nutrition and Wellness					
Provider Survey • Program characteristics • Meal and snacks policies and practices • Food preparation practices • Wellness policies • Infant feeding and wellness policies and practices	Sponsors, directors, food preparers, or other program staff	Self-reported, Web	All[a]	772 programs	313 programs
Menu Survey • Child menus (five days of meals—breakfast, lunch, supper, and snacks) • Infant menus (five days) • Details of foods prepared	Food preparers or program directors	Self-reported, hard copy	All	Child menus: 701 programs Infant menus: 220 programs	290 programs

Instruments/Topics	Respondents	Mode	Program Types	Early Child Care Program Sample Size	Before and After School Program Sample Size
Environmental Observation Form (includes physical activity observation)	Field data collectors	Observation, hard copy	All except FDCHs	227 programs	88 programs
Meal Observation Form (food served, consumed, and wasted)	Field data collectors	Observation, hard copy	All except FDCHs	227 programs (1,722 children)	88 programs (571 children)
Classroom Waste Form (food left over. not on individual children's plates)	Food preparers or child care staff, field data collectors	Observation, hard copy	All except FDCHs	220 programs (1,692 children)	82 programs (567 children)
Infant Food Intake	Infant care staff, program director or food preparer	Self-reported, hard copy	Child care centers	50 programs (115 infants)	Not applicable
Child Standing Height and Weight Form	Field data collectors	Observation, hard copy	All except FDCHs	225 programs (1,576 children)	87 programs (588 children)
Child Food Diary (child care day, non-child care day food diary)	Parents reporting on children	Self-reported, hard copy	All except FDCHs	228 programs (1,669 children)	87 programs (577 children)
Parent Survey	Parents reporting on children and their households	Telephone	All except FDCHs	224 programs (1,279 parents)	88 programs (434 parents)
Costs and Revenues[b]					
Program-level staff cost for foodservice and other CACFP activities	Program directors or child care staff (completed by field data collectors)	In-person interview, hard copy	All except FDCHs	246 programs	154 programs
CACFP expenses and revenues	Sponsors or independent program directors (completed by field data collectors)	In-person interview, hard copy			
Sponsor CACFP staff and support staff costs	Sponsors (completed by field data collectors)	In-person interview, hard copy			
Food prices and USDA foods value	Sponsors or independent program directors (completed by field data collectors)	In-person interview, hard copy			
Meal and snack counts (program and sponsor levels)	Program directors or child care staff, and sponsors (self-administered)	Self-administered, hard copy			

[a] Child care program types: child care centers, Head Start programs, family day care homes (FDCH), at-risk after school programs, and outside-of-school hours programs.

[b] Instruments for cost and revenue data collection: Center Director Cost Interview, Center Foodservice Cost Interview, Sponsor Cost Interview, Meal and Snack Counts Booklet, and Self-Administered Cost Questionnaire. Some topics were covered by multiple instruments. See Appendix A for details.

This report notes when differences between estimates were statistically significant at the 95 percent confidence level or higher. Appendix A describes the samples, data collection instruments and procedures, and analysis methods in more detail. Readers should refer to the supporting analysis tables in the remaining appendices for information about the level of significance for differences and the precision of specific individual estimates.

Characteristics of CACFP Programs

Exhibit 2 shows the weighted percentages of select characteristics of early child care programs and before and after school programs participating in CACFP. Characteristics of each analysis sample are provided in Appendix A.

Exhibit 2. Characteristics of CACFP-Participating Programs

	Percentage of Early Child Care Programs (Weighted)	Percentage of Before and After School Programs (Weighted)
Program Type		
Child care center	25	--
Head Start program	9	--
Family day care home	66	--
At-risk afterschool program	--	89
Outside-of-school hours program	--	11
Program Size[a]		
Small (1-39 enrolled)	64	27
Medium (40-79 enrolled)	12	31
Large (80 or more enrolled)	12	34
Unknown/Missing	13	8
Sponsored or Independent Status[b]		
Corporate sponsored	11	3
Other sponsored	51	60
Sponsored with ownership unknown	27	21
Independent	11	16
Metropolitan Status		
Metropolitan	80	89
Non-metropolitan	20	11
Program Area Percentage of Minority Children[c]		
0% to less than 31%	33	22
31% to less than 65%	29	25
65% to 100%	38	53
Program Area Poverty Rate[d]		
Less than 40%	34	26
40% to less than 60%	38	35
60% to 100%	28	39
Unweighted Number of Programs	**701**	**290**

Source: Study of Nutrition and Activity in Child Care Settings (SNACS) Menu Survey and Provider Survey, Winter through Summer 2017.
Notes:
Tabulations are weighted to be nationally representative of all early child care programs and before and after school programs participating in the Child and Adult Care Food Program (CACFP). Table includes only programs for which the analysis variables were available.
Estimates are based on counts of weighted programs, not providers. For this reason, providers with more than one early child care program or more than one before and after school program may be double-counted.
Estimates displayed in this table may differ from similar estimates in other tables in Appendix A that were generated with a different sample. Differences in estimates are due to differences in the eligible target population between the samples or because of sampling variability.
[a] Program size is based on self-report where available and on administrative data from the States where self-report was not available.
[b] Programs that are corporate sponsored are sponsored programs that were identified as part of a corporation in the provider survey. "Other sponsored" programs are sponsored programs that are not corporate sponsored. Corporate, sponsored, and independent subgroup statuses are based on self-report where available and on administrative data from the States where self-report was not available.
[c] Program area's percentage of minority children is defined as the percentage of children ages 0-11 years in the ZIP code who are non-White or Hispanic, using data from the American Community Survey 2012-2016.
[d] Program area's poverty rate is defined as the percentage of children ages 0-11 years in the ZIP code at or below 185% of the Federal Poverty Level using data from the American Community Survey 2012-2016.
Early child care programs include child care centers, Head Start programs, and family day care homes. Early child care programs may also provide care to older children. Before and after school programs include outside-of-school hours programs and at-risk afterschool programs.

Organization of the Report

The next six sections summarize SNACS findings for early child care programs, including program policies and practices, opportunities for physical activity, characteristics of meals served, cost and revenue of CACFP operations, child and family characteristics of participants (including children's weight status), and dietary intakes and plate waste. While the report focuses primarily on early child care programs, results for before and after school programs are included for meals served, meal costs and revenues, and dietary intakes. Infant findings are presented last and are based on a special set of sources and methods appropriate to this age group.

Accompanying appendices provide technical details on the data and methods (Appendix A); the complete set of analysis tables supporting and supplementing the summary, including the before and after school care findings (Appendices B to H); and data collection instruments (Appendix I).

All findings represent CACFP as it operated prior to programs' mandatory implementation of the revised CACFP meal pattern and related nutrition standards in October 2017. Because the proposed rule was issued on January 15, 2015,[9] however, some programs may have voluntarily implemented changes to meet the expected requirements prior to the data collection for SNACS.

POLICIES AND PRACTICES IN EARLY CHILD CARE PROGRAMS

CACFP-participating early child care programs have an opportunity to support healthy behaviors among young children through the meals they serve and the food and wellness environments they provide. Their policies and practices regarding nutrition planning and physical activity have the potential to affect the well-being of all children in their care but may be especially important to children from low-income families who are at higher risk of obesity and food insecurity.[10,11,12] Furthermore, CACFP policies and practices can help promote good early dietary habits that may contribute to reduced risk of developing chronic disease later in life.[13,14,15,16,17]

There are differences in management structure that make it important to examine the policies and practices across a national sample representing the diversity of CACFP-participating programs. For example, it is often the sponsor that determines the wellness policies and practices for sponsored child care centers and Head Start programs. The sponsor may also plan the menus, purchase the food, and prepare and deliver the meals. Independent child care centers and Head Start programs establish their own wellness policies and food service practices, including menu planning, meal preparation, and food purchasing. Similarly, family day care homes also typically conduct these activities, though they do so under the oversight of their sponsor. Unlike child care centers and Head Start programs, family day care homes often plan menus, shop for food, and prepare meals jointly for child care and the owners' families.

Child care centers, Head Start programs, and family day care homes also differ in their operating schedules and approaches to providing care. In Head Start programs, children usually attend for a set "school day" whereas child care centers and family day care homes are more likely to offer flexible schedules including full-day and part-day options. Family day care homes generally serve fewer children than child care centers and Head Start programs, which often have multiple classrooms grouped by age.

All programs that participated in SNACS were asked to complete the provider survey, which

asked about their wellness policies, menu planners, food preparation policies and practices, and food purchasing practices. This section focuses on major findings from the provider survey data for early child care programs (child care centers, Head Start programs, and family day care homes). See Appendix B for the detailed results.

Food Preparation Policies and Practices

Providers who participated in SNACS reported on the characteristics of their menu planners, where meals are prepared, and approaches to food allergies and other dietary needs. Programs may vary in how they meet the CACFP meal requirements due to differences in their operational environments and years of experience. For example, programs with food service staff and full-service kitchens may prepare meals in-house, while programs without these resources must rely more on outside services or a sponsor to meet the nutritional needs of the children in their care. In addition, programs may vary in the food service training and education of their staff to plan CACFP meals and snacks, and this variation may affect the nutritional quality and variety of the foods they serve.

Characteristics of Menu Planners

Menu planning is vital to ensuring that the food served at CACFP programs is healthy, varied, and consistent with meal patterns and best practices. Menu planners may be family day care home owners, child care program directors, food service or nutrition directors, or food service workers.

- While most programs (60 percent) had menu planners with over 10 years of experience, there was significant variation by program type. Over three-fifths (64 percent) of family day care homes had menu planners with 10 or more years of experience, while 44 percent of menu planners for child care centers and Head Start programs had this level of experience.
- Ten percent of menu planners were dietitians or nutritionists. However, menu planners at Head Start programs were significantly more likely to be dietitians or nutritionists than were menu planners at child care centers or family day care homes (62 percent compared to 18 percent and less than one percent, respectively).

Where Meals are Prepared

The foods served in CACFP programs may be influenced by where the meals are prepared.

- Almost all programs (93 percent) prepared at least some food onsite. There were notable differences by program type. Over 99 percent family day care homes prepared meals onsite, as opposed to 80 percent of child care centers and 73 percent of Head Start programs.[18]
- Overall, 15 percent of child care centers and Head Start programs used an offsite caterer, vendor, or independent foodservice company for some meal preparation.
- Similarly, 16 percent of Head Start programs and 10 percent of child care centers used offsite central kitchens operated by the sponsor or child care program. This finding underscores the important role the CACFP sponsor can have in providing food for children in child care centers and Head Start programs.

Policies and Practices Related to Food Allergies and Other Dietary Needs

Providers responded to questions regarding their policies and practices for documenting and serving food to children with allergies and dietary restrictions.

- Overall, half (50 percent) of programs had written policies on managing food allergies and special dietary needs, and more than a third (35 percent) had informal policies (spoken, but not written).
  - The great majority of Head Start programs (91 percent) reported having written policies, as did 77 percent of child care centers.
  - One-third (35 percent) of family day care homes had written policies. Family day care homes were much more likely than child care centers and Head Start programs to have informal policies (45 percent, as opposed to 21 percent and six percent, respectively).
- Most programs (87 percent) reported that they required parents to provide documentation about their children's allergies or special dietary needs.
- More than three quarters of programs (83 percent) reported providing alternative foods or beverages to children with allergies or special dietary needs, with nearly all Head Start programs (98 percent) reporting this practice. Head Start programs were significantly more likely to provide alternative foods or beverages than child care centers (88 percent) or family day care homes (79 percent).
- Providers answered questions regarding whether they required or allowed children with allergies or special dietary needs to eat at different meal times or locations or to eat food from home. Very few programs had policies *requiring* such children to bring food from home (five percent) but about a fifth (22 percent) of the programs *allowed* them to bring food from home.
- Few programs required children with allergies or special dietary needs to eat at different meal times (one percent) or eat at a different table or in a different room (six percent).

Providers' Food Purchasing Practices

Program operational concerns and physical resources play a role in where the programs purchase their food. For example, child care centers and Head Start programs serve more children than family day care homes, so they need to obtain food in greater quantities than do family day care homes. Programs with limited on-site kitchen space may order more of their food from offsite vendors or receive more food from their sponsors. SNACS provides insight into the patterns of food purchasing among early child care programs. The results show that early child care programs use a wider variety of retail and wholesale food sources than schools, which generally receive their food from wholesale sources, food processors, or catering firms (according to prior studies).[19]

- Most programs reported purchasing food at grocery stores (87 percent) and wholesale stores (59 percent). Family day care homes were more likely to shop at grocery stores and wholesale stores than were child care centers and Head Start programs (see Table B.14 in Appendix B).
- One-third of child care centers (38 percent) and over half of Head Start programs (57 percent) obtained foods from vendors such as catering firms or food service companies, but no family day care homes used this source. (These foods may have been ready-to-serve meals, prepared foods, or ingredients.)

- Overall, more than a quarter of early child care programs (26 percent) shopped at farmers markets. Family day care homes were more likely to shop at farmers markets than child care centers and Head Start programs (34 percent compared to 10 percent and three percent, respectively).

Barriers to CACFP Participation and Providing Meals that Meet the Dietary Guidelines for Americans

The CACFP meal pattern at the time of data collection was based on the 2015-2020 Dietary Guidelines for Americans (DGAs). SNACS sought to gain insights into the barriers to the provision of healthier foods and to CACFP participation among child care programs.

Barriers to Purchasing and Serving Healthier Foods

Most early child care programs (64 percent) indicated that they experienced barriers to purchasing and serving healthier foods.

- The most common barriers reported were the cost of healthier foods (54 percent), accommodating the preferences of children in the program (32 percent), and the time needed to prepare healthier meals and snacks (27 percent).
- Child care centers reported the cost of healthier foods as a barrier more often than did Head Start programs or family day care homes (62 percent, 49 percent, and 51 percent respectively), but this was the most frequently reported barrier for Head Start programs and family day care homes.
- Child care centers (18 percent) and Head Start programs (23 percent) were much more likely than family day care homes (four percent) to report that insufficient kitchen space and equipment was a barrier to providing healthier meals and snacks.
- One-third (34 percent) of child care centers and Head Start programs reported that preparation time was a barrier to providing healthier meals and snacks, significantly more often than did family day care homes (23 percent).
- Over one-third (36 percent) of early child care programs reported that they experienced no barriers to purchasing and serving healthier foods.
- Family day care homes were more likely than child care centers to report no barriers to purchasing and serving healthier foods (38 percent compared to 30 percent, respectively).

Challenges to CACFP Participation

- The most commonly reported major challenge experienced by programs (65 percent) was that "meal reimbursement is not enough to cover food expenses," with 26 percent saying this was a major challenge and 39 percent saying it was a minor challenge. (See Cost and Revenue for data from child care centers and Head Start programs on food and labor costs and their relationship to USDA subsidies.)
- Child care centers reported that the level of meal reimbursement was "not a challenge" more often than family day care homes (42 percent and 32 percent, respectively). This was the most reported challenge for both program types.
- Almost half of child care centers (47 percent) and Head Start programs (41 percent) reported that a major or minor challenge was that "monitoring by the State or sponsor is time consuming." Family day care homes reported this challenge less often (25 percent).

Changes that May Help Increase CACFP Participation among Early Child Care Programs

Programs provided insights into how FNS and State Child Nutrition Agencies might increase CACFP participation among their peers that do not already participate.

- Over two-thirds (71 percent) of early child care programs reported that an increase in the meal reimbursement rate would help increase CACFP participation among early child care programs.
- About two-fifths (42 percent) of programs reported that more nutrition training for child care program staff would increase CACFP participation.
- Other potential changes to increase CACFP participation reported by 30 percent or more of early child care programs included more support to complete paperwork, assistance with writing menus, and electronic enrollment and paperwork options.

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OPPORTUNITIES FOR PHYSICAL ACTIVITY AND SEDENTARY TIME IN EARLY CHILD CARE PROGRAMS

Physical activity contributes to children's development, ability to focus attention, and physical and psychological health.[20,21] Children who attend early child care programs spend most of their weekdays in child care, so child care represents a substantial opportunity for children to engage in physical activity.[22] This summary highlights findings for observed opportunities for physical activity for all children in CACFP child care centers and Head Start programs, with additional findings for more program types and provider-reported physical activity policies available in Appendix C.

The study team conducted a one-day environmental observation in selected child care centers and Head Start programs. (See Appendix A for characteristics of the environmental observation sample.) A trained interviewer observed designated indoor and outdoor play spaces for physical activity to record characteristics of those spaces, and followed a selected classroom throughout the day, noting the time and duration of any opportunities for children to be physically active and times when the class was sedentary. The total number of minutes and occasions of physical activity were standardized to an 8-hour day to facilitate comparisons across program types. The interviewers also noted the presence of any facilitators (e.g., staff joining children in play) and barriers (e.g., inclement weather, no space to play, staff restricting active play for disciplinary measures) to children's physical activity both indoors and outdoors.

Observed Duration and Number of Opportunities for Physical Activity

The amount of time that child care providers allow children to be outdoors can influence the amount of time that children are physically active. In cases where outdoor physical activity is not feasible, providers may need to support opportunities for physical activity indoors. The Caring for Our Children guidelines recommend two or more opportunities for outdoor physical activity and 60 to 90 minutes during which

children can be moderately to vigorously active during the child care day.[23]

- Nearly all (99 percent) early child care programs offered at least one opportunity for physical activity during the day. [24]
- Most (87 percent) early child care programs offered at least one outdoor physical activity opportunity; child care centers were significantly more likely to offer at least one outdoor physical activity opportunity than were Head Start programs (91 percent versus 77 percent).
- The mean total time allocated to physical activity in early child care programs was 96 minutes per 8-hour day, with no difference between child care centers and Head Start programs. Programs provided a mean of 60 minutes of physical activity opportunities outdoors and 36 minutes indoors, standardized to an 8-hour day.
- Including both indoor and outdoor opportunities for physical activity, early child care programs offered a mean of five opportunities (adjusted to an 8-hour day); most were indoors (3.3, adjusted to an 8-hour day).

Observed Space for Physical Activity and Play

The type of space dedicated to physical activity can factor into children's opportunities for movement.[25,26]

- Most (97 percent) early child care programs had an on-site outdoor playground or play space.
- One third (34 percent) had an indoor gym or play space for vigorous physical activities that could be used in inclement weather.

Observed Sedentary Time and Screen Time

AAP guidelines suggest limiting screen time to prevent negative effects on young children's health and development.[27] For SNACS, trained interviewers observed children's sedentary time, including screen time.

- The total amount of observed sedentary time (time with over 50 percent of children sitting or lying down) was 270 minutes per 8-hour day, or 34 minutes per hour. After removing time for meals, snacks, and naps, observed sedentary time was 124 minutes, or 15 minutes per hour. There was no significant difference in observed sedentary time between Head Start programs and child care centers.
- Slightly under half of early child care programs (43 percent) exposed children to at least some screen time (including TV, videos, computers, tablets, or other screens) during the child care day; observations did not distinguish between screen time for entertainment or educational purposes. The percentage of child care centers and Head Start programs with observed screen time on the child care day did not significantly differ.
  - Among programs with screen time, observers found no evidence of restrictions (such as signs or monitoring by staff) on the amount of screen time in over half (54 percent) of programs, with no significant difference between child care centers and Head Start programs in apparent restrictions.
  - Screens were on for a mean of 62 minutes per 8-hour day (or eight minutes per hour) among programs using screens. There were no significant differences between child care centers and Head Start programs in observed amounts of screen time.

- When considering all programs, including those that did not provide any screen time, children in early child care programs were exposed to a mean of 27 minutes of screen time per 8-hour day and three minutes of screen time per hour.

Observed Barriers to Physical Activity

Observers noted the presence of each potential barrier to indoor and outdoor physical activity, based on a list of known barriers from the prior literature, such as inclement weather, availability of dedicated play spaces, and lack of staff participation in active play. The study team used regression models to estimate the difference in physical activity opportunities associated with these barriers, controlling for program characteristics such as size, location, and population served.

- The most commonly observed potential barrier to children's opportunity to participate in outdoor physical activity was staff not joining children in active play (observed in 61 percent of programs). Regression analyses indicated that, adjusting for program characteristics, programs with this barrier had 27 fewer minutes of physical activity opportunities than those in which staff joined children in active play.
- The next most commonly observed potential barrier to outdoor activity was staff restricting active play as a disciplinary action (24 percent of programs), followed by inclement weather (12 percent of programs). Lack of outdoor play space was the least common potential barrier, observed in three percent of programs.
- Even though inclement weather was observed in only 12 percent of programs, it was significantly associated with the greatest decrement in physical activity opportunity minutes among all the potential barriers considered in regression models. Early child care programs where outdoor play was restricted due to inclement weather on the observed day provided 66 fewer minutes of physical activity opportunities than those without such restrictions.
- Indoors, the most commonly noted barrier was lack of dedicated indoor play space (66 percent of programs). This was followed by staff not joining in indoor active play (37 percent of programs) and staff restricting indoor active play for disciplinary action (19 percent of programs). However, none of these barriers was associated with a significant reduction in physical activity opportunity minutes.

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MEAL QUALITY IN MEALS SERVED TO 3-5 YEAR OLDS IN EARLY CHILD CARE PROGRAMS

Overall, the diets of US children fail to adhere to the recommendations of the Dietary Guidelines for Americans (DGAs), contributing to increased risk of chronic disease over time.[28] Most US children spend some time in early child care programs, and children often eat the majority of their meals and snacks for the day while in child care, underscoring the importance of providing high quality, nutrient dense meals in these settings. CACFP seeks to promote access to nutritious foods at participating programs by establishing meal pattern requirements, other regulations, and resources for planning and serving nutritious foods that are part of a healthy diet.[29]

The meal quality findings in this section are based on menu surveys completed by 664 early child care programs serving 3-5 year olds. The menu survey collected detailed information for all meals and snacks served to children during the child care day of a specified five-day target week, including any foods that may not contribute to the CACFP meal plan or unplanned foods not on the posted menus.

To estimate portion sizes, SNACS used a method adapted from two earlier USDA studies[30,31] in which observations of serving sizes in a subset of 221 child care programs were used to estimate the amounts of foods and beverages served across all programs. These subset observation data were used to impute portion sizes for the foods reported in the menu survey for each CACFP age group. The details of this process are described in Appendix A.

The remainder of this section details: the most commonly served CACFP meals; compliance with CACFP requirements; and an overview of the meal quality for lunch, afternoon snack, and breakfast. The results include data from all types of early child care programs (including child care centers, Head Start programs, and family day care homes) on the meals and snacks served to 3-5 year-olds, the most common age group in these programs. Appendix D provides supporting tables for the analysis of meals served to additional age groups.

Most Commonly Served CACFP Meals to 3-5 Year Olds

Child care programs that participate in CACFP receive reimbursement for up to three meals or snacks per day served to eligible children.[32]

- Most programs served lunches (97 percent of programs), breakfasts (89 percent), and afternoon snacks (88 percent).
- A smaller share of programs served morning snacks (38 percent of programs), suppers (23 percent), and evening snacks (seven percent).

Compliance with CACFP Meal Components for Breakfasts, Lunches, and Afternoon Snacks Served to 3-5 Year Olds

To qualify for reimbursement through CACFP, meals and snacks must meet meal component and portion size requirements. Data for SNACS were collected during the winter, spring, and summer of 2017. The implementation of updated meal patterns was required by October 1, 2017, though the planned changes were available to the public in 2016. While some providers may have voluntarily started making changes to their meals (e.g., no longer serving grain-based desserts) by the time of data collection, the updated meal patterns were not yet required. Therefore, data collected and analyzed in SNACS were compared to the meal patterns in place at the time of data collection, and do not reflect the fall 2017 updates to the meal pattern.

To meet CACFP meal standards, lunches must include four components, shown in Exhibit 3.[33] Breakfast must include three components, and snacks must include any two of the four components. CACFP regulations require that the minimum portions be available to serve to children (Exhibit 3), but many programs do not serve the minimum initially. Instead, they serve smaller portions initially and provide additional food as requested by the child. SNACS did not measure all food available to be served (e.g., in the family style bowl), only the amounts of food actually served to children, as recommended in CACFP guidance to support responsive feeding. Therefore, findings on portion size compliance are not presented here; these findings focus on compliance with serving of the required components.

Exhibit 3. CACFP Child Care Meal Pattern

Food Component	Minimum Portion Size, Ages 3-5 Years	Minimum Portion Size, Ages 6-12 Years
Breakfast *(All three components required for a reimbursable meal)*		
1 milk	¾ cup	1 cup
1 fruit/vegetable	½ cup	½ cup
1 grains/bread	½ serving	1 serving
Lunch or Supper *(All four components required for a reimbursable meal)*		
1 milk	¾ cup	1 cup
2 fruits/vegetables	½ cup	¾ cup
1 grains/bread	½ serving	1 serving
1 meat/meat alternate	1 ½ oz.	2 oz.
Snack *(Two of four components required for a reimbursable meal)*		
1 milk	½ cup	1 cup
1 fruit/vegetable	½ cup	¾ cup
1 grains/bread	½ serving	1 serving
1 meat/meat alternate	½ oz.	1 oz.

Note: This meal pattern applies to both early child care programs (which sometimes serve children over age five) and before and after school programs (which sometimes serve children under age six).

Required Meal Components Served

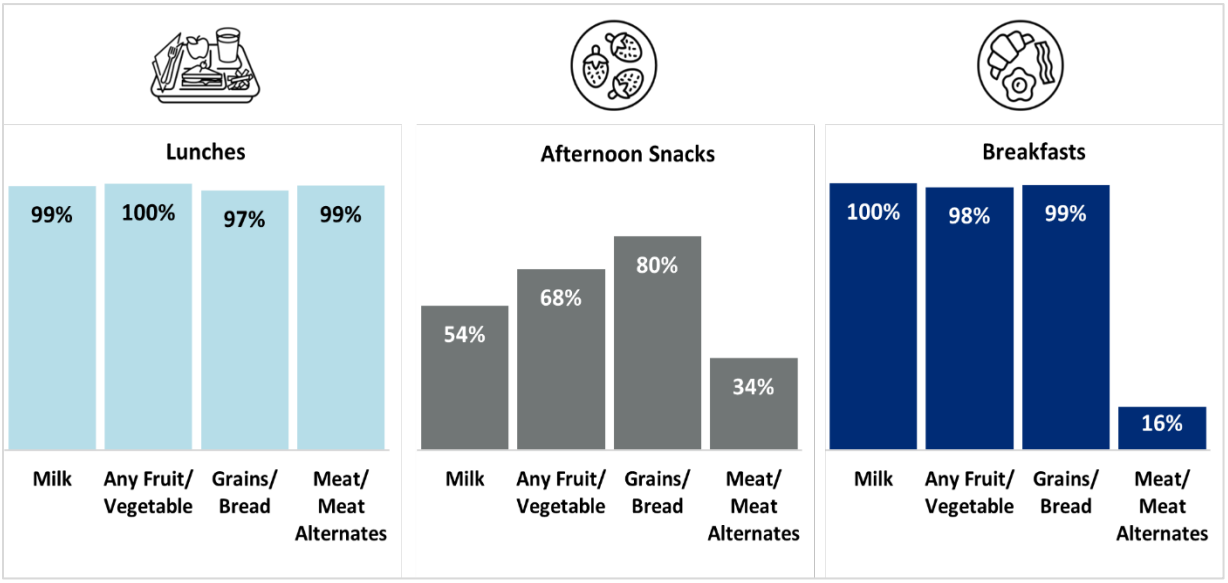
The study team analyzed the extent to which programs served the required meal components at each meal and snack. The great majority of breakfasts, lunches, and afternoon snacks served to 3-5 year-olds met all the CACFP meal pattern component requirements:

- 88 percent of lunches included all required components.
- 97 percent of breakfasts and afternoon snacks included all required components.

When looking separately at the percentage of meals and snacks including each individual CACFP meal pattern component, the results align with the high levels of overall compliance:

- Nearly all lunches served to 3-5 year-olds included each required meal component, and nearly all breakfasts included the three required meal components (see Exhibit 4).
- Although not required, 81 percent of lunches included both fruit and vegetables to meet the fruit or vegetable component requirement.
- Only two of the four components are required in an eligible snack. The most commonly served component at afternoon snack was grains/bread, followed by a fruit or vegetable. Meat/meat alternates (such as cheese, eggs, peanut butter, and tofu) were the least frequently served.
- Although the CACFP meal pattern does not require a meat/meat alternate such as meat, egg, or cheese to be served at breakfast, 16 percent of breakfasts served in early child care programs included this component.

Exhibit 4. Mean Percentage of CACFP Lunches, Afternoon Snacks, and Breakfasts Served to 3-5 Year Olds in Early Child Care Programs Including Each Meal Component



Source: Study of Nutrition and Activity in Child Care Settings (SNACS), Menu Survey, Winter through Summer, 2017. See Table D.2.3 in Appendix D.

Early Child Care Program Lunches Served to 3-5 Year Olds

In addition to assessing compliance with CACFP meal pattern requirements, SNACS examined how well the meals served by CACFP-participating programs aligned with the 2015 DGA recommendations and best practices. Results presented below provide insight into the foods and important nutrients available in lunches served to 3-5 year olds in child care centers, Head Start programs, and family day care homes.

HEI Scores for Lunches Served to 3-5 Year Olds

SNACS used the Healthy Eating Index (HEI-2015) to measure how well lunches served in early child care programs comply with the recommendations of the DGA. Because maximum scores for each component vary, component score findings are presented as a percentage of the maximum possible score to facilitate comparisons. HEI scores in this report represent the quality of all meals served in early child care programs in the aggregate rather than averages of HEI scores for individual programs.[34]

- The overall HEI score for all lunches served to 3-5 year olds was 73 out of a possible 100, indicating some gaps in the alignment of lunches with the DGAs.
- Lunches received maximum or near maximum scores for seven of the nine adequacy components, including total fruit, whole fruit, dairy, total protein, total vegetables, seafood and plant proteins, and greens and beans, indicating concentrations of these components that align with the DGA (Exhibit 5).
- The score for the whole grains component was 68 percent of the maximum, suggesting an opportunity for including more whole grains in lunches.

Background: The Healthy Eating Index

The Healthy Eating Index is a measure of dietary quality that can be used to assess compliance with the DGAs.[35] It is independent of quantity: the HEI represents, for a given number of calories, the extent to which food components proportionally align with DGA recommendations.

The HEI uses 13 individual scored components (nine adequacy and four moderation components) added together for a maximum possible score of 100.

Adequacy components are those that are encouraged by the DGAs. These include total fruits, whole fruits, total vegetables, greens and beans, whole grains, dairy, total protein foods, seafood and plant proteins, and fatty acids.

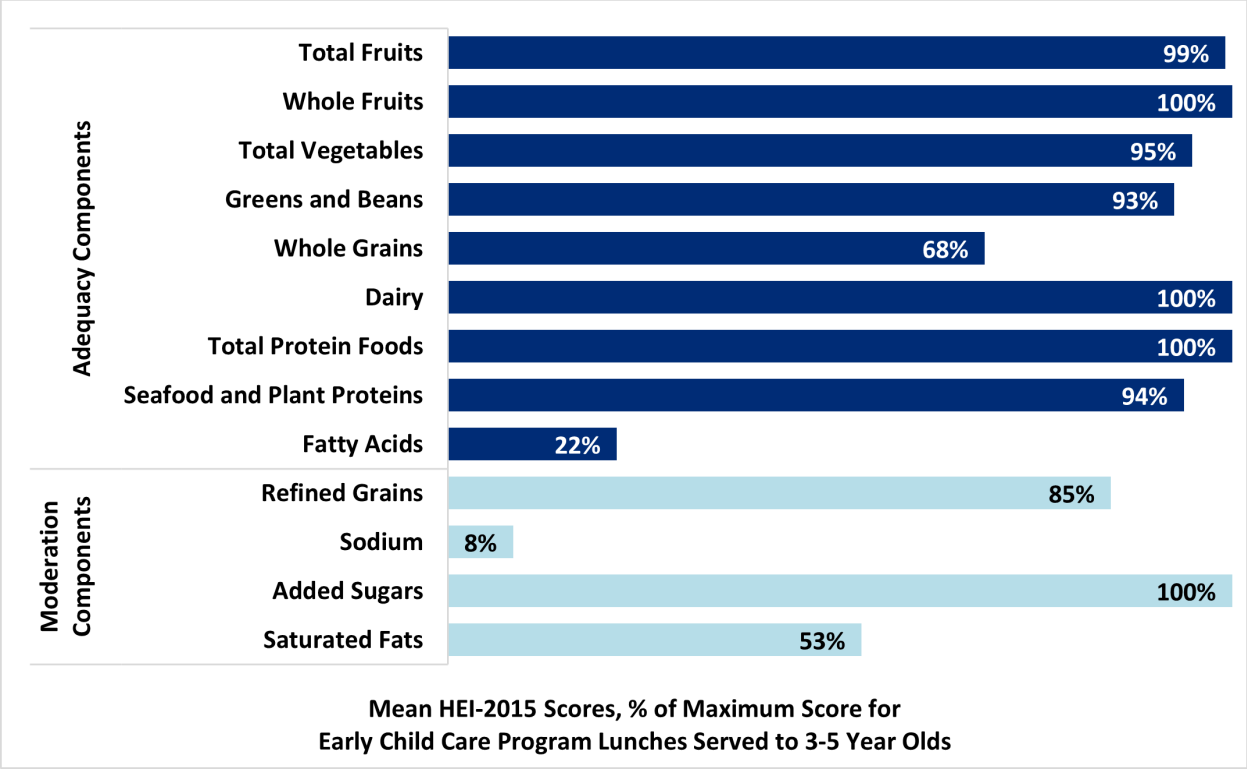
Moderation components are those that should be limited, as recommended by the DGA. These include refined grains, sodium, added sugars, and saturated fats.

Individual components have a maximum score of 5 or 10. The closer to the maximum score each component is, the better aligned the diet or meal is with the DGA recommendation for that component.[36]

The mean HEI score for Americans ages 2-5 years in 2013-2014 was 60.[37]

- The low score of 22 percent of the maximum for fatty acids in lunches indicates that the ratio of poly- and mono-unsaturated fatty acids to saturated fatty acids was less than optimal. If lunches included more foods that contain the former types of fatty acids instead of those containing saturated fats, the alignment of lunches with the DGAs would improve.
- Early child care lunches scored well for two moderation components: added sugars at 100 percent, and refined grains with a high score of 85 percent of the maximum. These scores indicated that lunches were generally low in these components in line with the DGA.
- Lower scores for two moderation components indicate higher than recommended amounts in CACFP lunches of saturated fat and sodium (53 and eight percent of maximum score, respectively).

Exhibit 5. HEI Component Scores of Early Child Care Program Lunches Served to 3-5 Year Olds



Source: Study of Nutrition and Activity in Child Care Settings (SNACS), Menu Survey, Winter through Summer, 2017. See Table D.2.24 in Appendix D.

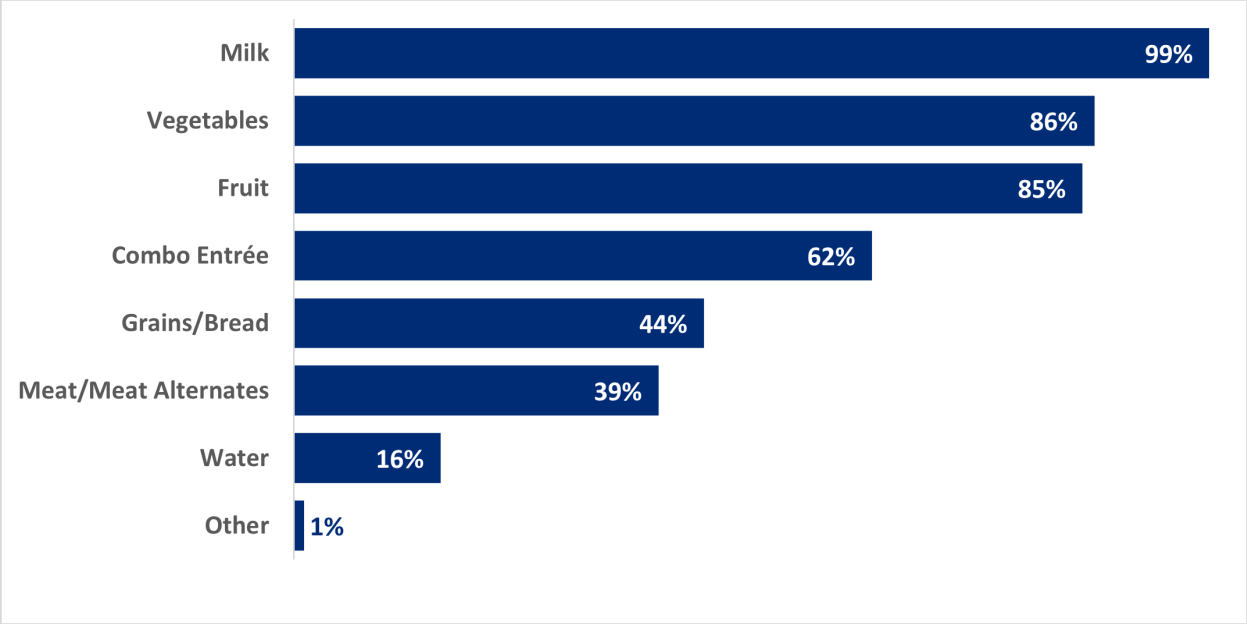
Most Frequently Served Foods to 3-5 Year Olds in Lunches

For analysis of the most frequently served foods, the SNACS team classified all foods served in early child care lunches into the eight major food groups in Exhibit 6, using methods based on prior studies.[14,38] Combination entrées are foods that combine two or more of the required CACFP meal components. Percentages for meat/meat alternates and grains/bread exclude these foods if they are part of a combination entrée. Nested within each major food group are more specific subgroups of the types of foods served, called minor food groups. The foods served most frequently were defined as food categories served in five percent or more of meals and two percent or more snacks.

The foods served most frequently across all program types are summarized below:

- Almost all lunches served to 3-5 year olds included milk (99 percent).
- A high percentage of lunches included fruit and vegetables (85 and 86 percent, respectively).
- The majority of lunches (62 percent) included combination entrées that included two or more CACFP meal components.
- Fewer lunches included a meat/meat alternate or grain/bread that was separate from a combination entrée (39 and 44 percent, respectively).

Exhibit 6. Mean Percentage of Lunch Menus Serving Major Food Groups to 3-5 Year Olds in Early Child Care Programs



Source: Study of Nutrition and Activity in Child Care Settings (SNACS), Menu Survey, Winter through Summer, 2017. See Table D.3.9 in Appendix D. "Other" foods include desserts and snack foods.

The following are the key findings on minor food groups most often served at lunch.

- The most common types of milk served were 1% and skim unflavored (included in 75 and 18 percent of lunches, respectively).
- Two-thirds of lunches (67 percent) included cooked vegetables, and one quarter (25 percent) included raw vegetables.
  - The most frequently served cooked vegetables were string beans and corn (each included in 11 percent of lunches).
  - Carrots were the most frequently served raw vegetables (in eight percent of lunches).
- Half (50 percent) of all lunches included fresh fruit, while about a third (35 percent) included canned fruit. Fresh apples were the most commonly served fruit.
- The most frequently served combination entrées were mixtures with grains, meat/meat alternates, and/or vegetables, such as (e.g., spaghetti with sauce) in 19 percent of lunches. Sandwiches with plain meat, poultry, or fish and Mexican-style entrées were served in 10 and seven percent of lunches, respectively.

Contributions of Lunches Served to USDA Food Pattern Food Group Recommendations

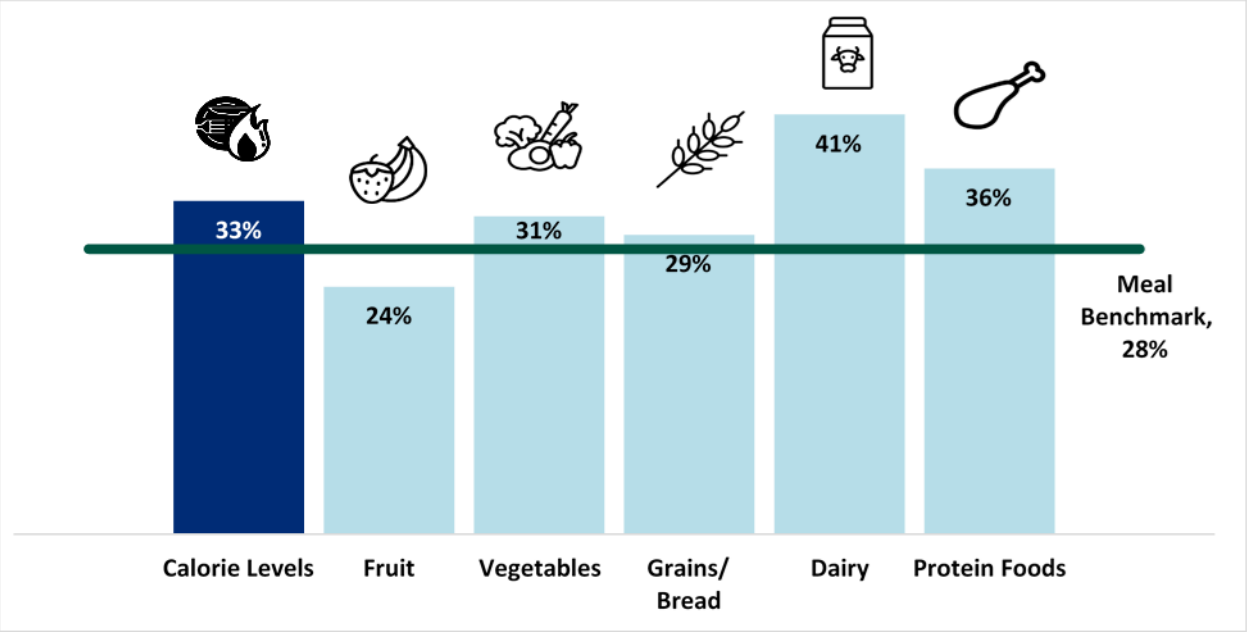
To assess the contribution of CACFP meals to USDA Food Pattern recommendations, menus reported in the menu survey were compared with recommended amounts of food from each food group. This set of food patterns provides recommended amounts of foods from food groups and subgroups that align with each of 12 daily calorie levels to promote a healthy diet for individuals two years old and older. It suggests daily recommended amounts for six food groups (fruit, vegetables, grains, dairy, protein foods, and oils), and weekly recommended amounts for subgroups within the vegetables, grains, and protein groups. Recommended amounts used for meals served to 3-5 year olds in SNACS were based on a 1,400 calorie level.[39] Unlike the major and minor food groups presented above, the USDA Food Pattern Food Groups do not treat combination entrées, water and other foods as separate categories.

The study team used meal level benchmarks based on the 2011 Institute of Medicine (IOM) Report *Child and Adult Care Food Program: Aligning Dietary Guidance for All*. This report recommended meal level allocations of 21 percent, 28 percent, and 11.5 percent for breakfast, lunch, and each of two snacks, respectively (assuming two snacks per day). The team applied the recommended meal level benchmark of 28 percent of daily food group recommendations to lunch (as seen in Exhibit 7) to assess whether the meal contributed more or less than this percentage.[40]

Highlights of the comparison of lunches served in early child care programs to the relevant USDA Food Pattern Food Group recommendations are as follows:

- Lunches served to 3-5 year olds provided 33 percent of the daily calorie level of 1,400 calories (five percentage points higher than the meal level benchmark for lunch). Lunches provided more than the meal level benchmarks for vegetables, grains and bread, dairy and protein foods, but not for fruit (Exhibit 7).

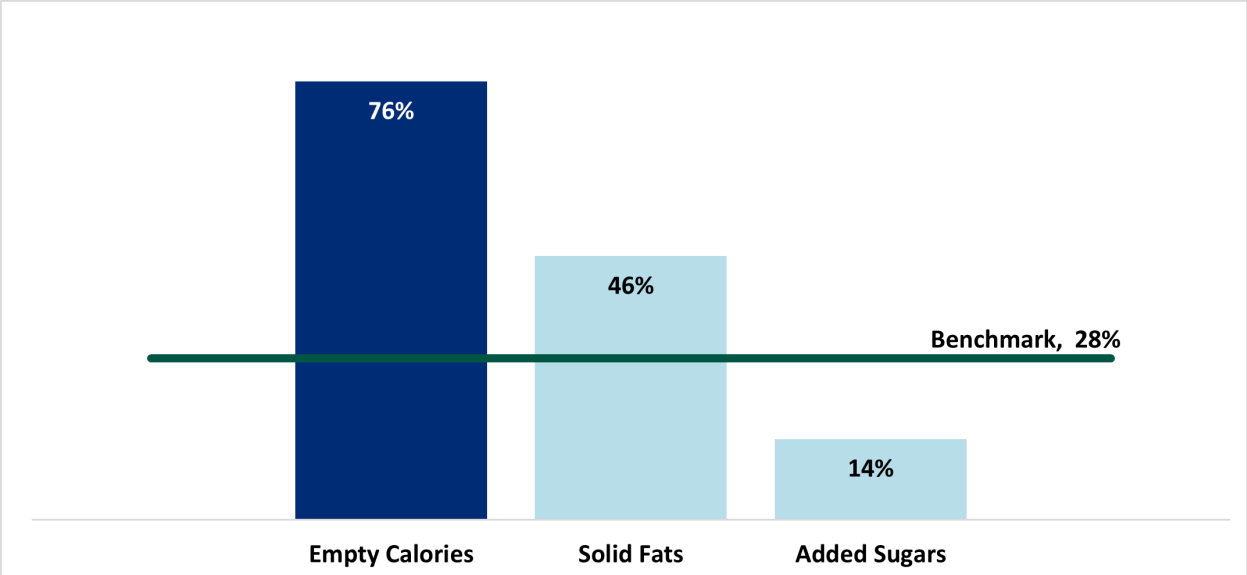
Exhibit 7. Mean Percentage Contribution of Early Child Care Program Lunches for 3-5 Year Olds to the DGA Daily Recommendation



Source: Study of Nutrition and Activity in Child Care Settings (SNACS), Menu Survey, Winter through Summer, 2017. See Table D.2.11 in Appendix D. Notes: The DGAs recommend, for a 1400kcal diet, 1.5 cups of Fruits, 1.5 cups of Vegetables, 5 ounces of Grains/Breads, 2.5 cups of Dairy, and 4 ounces of Protein Foods daily. Meal benchmark represents the recommended percentage contribution of lunch to daily meal pattern, adapted from Table 6-3 in the 2011 IOM Report, *Child and Adult Care Food Program: Aligning Dietary Guidance for All*. 28% of the daily recommendation equates to 392 total kcal, 0.42 cups of Fruit, 0.42 cups of Vegetables, 1.4 ounces of Grains/Breads, 0.7 cups of Dairy, and 1.12 ounces of Protein Foods.

- Lunches served to 3-5 year olds contributed on average 76 percent of the daily limit on calories for other uses (i.e., empty calories, including those from solid fats and added sugars), or a mean daily amount of 84 calories, far exceeding the 28 percent benchmark (Exhibit 8).
- The percentage contribution of calories from solid fats was almost half (46 percent) of the daily limit of 140 calories (based on the guidance of fewer than 10 percent of calories from solid fats) and exceeded the meal level benchmark.
- The percentage contribution of calories from added sugars in lunches served to 3-5 year olds was much lower at 14 percent of the daily limit and well below the meal level benchmark.[41]

Exhibit 8. Mean Percentage Contribution of Early Child Care Program Lunches for 3-5 Year Olds to the DGA Limit for Calories for Other Uses (Empty Calories)

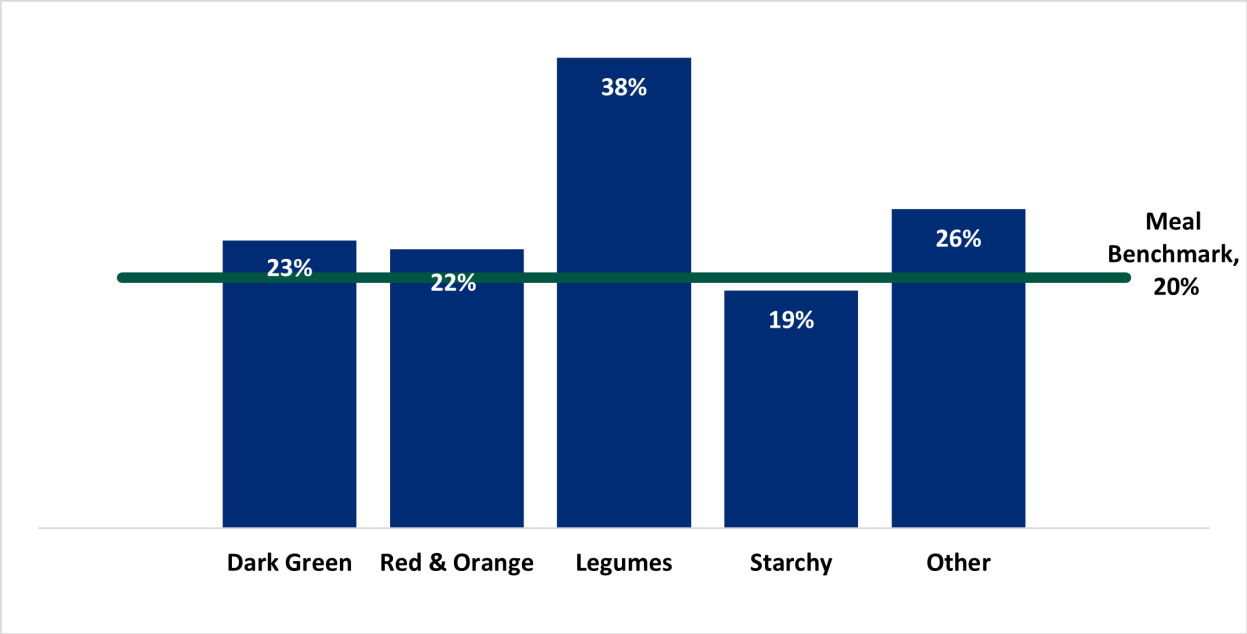


Source: Study of Nutrition and Activity in Child Care Settings (SNACS), Menu Survey, Winter through Summer, 2017. See Table D.2.11 in Appendix D. Notes: The DGAs recommend, for a 1400kcal diet, limiting daily empty calories to 112 kcal, calories from solid fat to 140 kcal, and calories from added sugars to 140 kcal. Meal benchmark represents the recommended percentage contribution of lunch to daily meal pattern, adapted from Table 6-3 in the 2011 IOM Report, Child and Adult Care Food Program: Aligning Dietary Guidance for All. 28% of the daily recommendation equates to 31.36 kcal from empty calories, 39.2 kcal from solid fat, and 39.2 kcal from added sugars.

The USDA Food Pattern Food Groups establish weekly (rather than daily) recommendations for vegetable subgroups of dark green, red and orange, legumes, starchy, and other vegetables. The meal level benchmark for these subgroups is 28 percent of the recommended amounts for a seven-day week. To allow for a five-day target week, the weekly meal level benchmark for recommended amounts of vegetable subgroups was adjusted for lunches from 28 percent for seven days to 20 percent for five days.

- Across all program types, lunches on average met or nearly met the relative weekly USDA Food Pattern Food Group for all vegetable subgroups, with legumes as the highest contributing vegetable subgroup (Exhibit 9).
- Lunches served in Head Start programs included a significantly higher weekly percentage of dark green vegetables than child care centers or family day care homes (Table D.2.17, Appendix D). Child care centers included a significantly higher weekly percentage of starchy vegetables in lunches served than Head Start programs or family day care homes.

Exhibit 9. Mean Percentage Contribution of Early Child Care Program Lunches for 3-5 Year Olds to the 2015 DGA Weekly Recommendations for Vegetable Subgroups



Source: Study of Nutrition and Activity in Child Care Settings (SNACS), Menu Survey, Winter through Summer, 2017. See Table D.2.17 in Appendix D. Notes: The DGAs recommend, for a 1400kcal diet, 1 cup of dark greens, 3 cups of red and orange vegetables, 0.5 cups of legumes, 3.5 cups of starchy vegetables, and 2.5 cups of other vegetables weekly. Meal benchmark represents the recommended percentage contribution of lunch to daily meal pattern, adapted from Table 6-3 in the 2011 IOM Report, Child and Adult Care Food Program: Aligning Dietary Guidance for All, and then adjusted to a 5-day week. 20% of the weekly recommendation equates to 0.2 cups of Dark Greens, 0.6 cups of Red and Orange Vegetables, 0.1 cups of Legumes, 0.7 cups of Starchy Vegetables, and 0.5 cups of Other Vegetables.

Energy and Nutrient Content of Lunches Served to 3-5 Year Olds

Lunches served to 3-5 year olds in early child care programs across all program types had a mean calorie level of 457, with 31 percent of calories from fat, 11 percent from saturated fat, 48 percent from carbohydrates and 22 percent from protein.

Lunches differed by program type in calories, total sugar, minerals, and dietary fiber provided:

- Lunches in family day care homes were significantly lower in calories than those served in child care centers or Head Start programs (444 calories versus 483 and 475, respectively) and were also lower in total sugar, sodium, calcium, and other minerals (iron, magnesium, phosphorus, potassium, and zinc).
- Lunches served in Head Start programs were higher in dietary fiber per 1000 calories than those served in child care centers or family day care homes (12 versus 11 grams per 1000 kcal).

Number of Options in Lunches Served to 3-5 Year Olds

The number of options served for each food group in lunches was limited.

- Almost all lunches (94 percent) included one type of combination entrée or meat/meat alternate.
- Most lunches included one vegetable (68 percent) and most lunches included one fruit (80 percent), while very few (one percent) included juice.

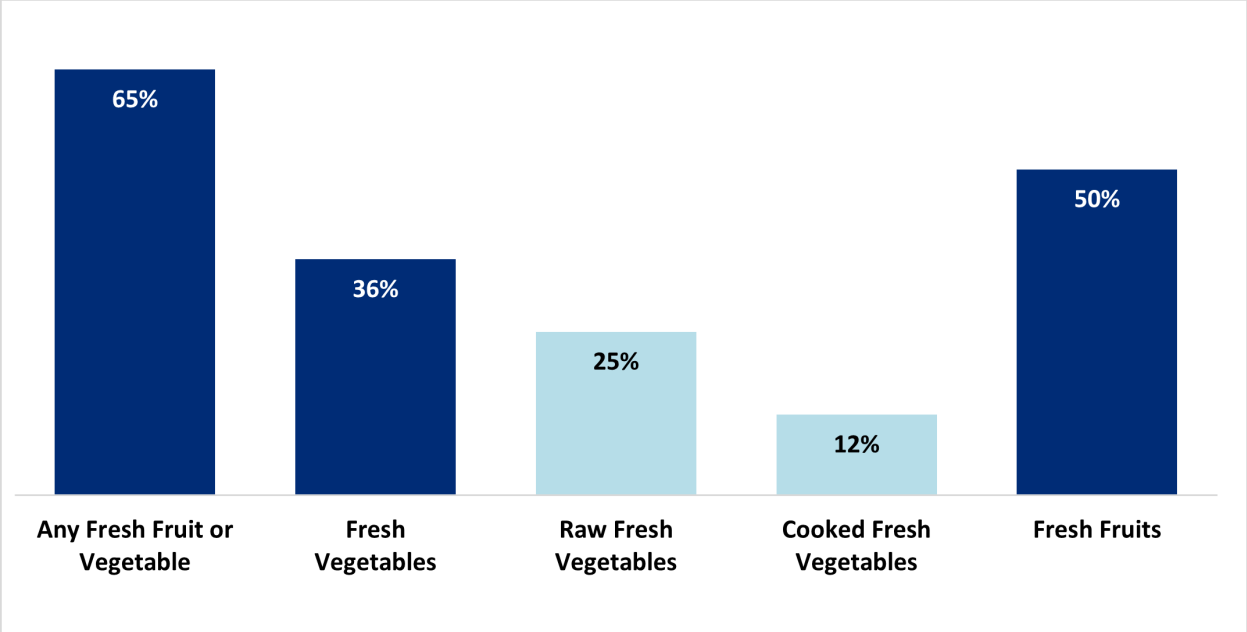
- Almost all (96 percent) lunches included one type of milk.
- Approximately 44 percent of lunches included one separate grains/bread outside of the combination entrée, such as a slice of bread or a roll, and under two percent of lunches served two separate grains/breads.
- The majority of lunches (83 percent) included no "other menu items" such as desserts or snack foods.
- There were very few instances where there was more than one main entrée choice in meals served. The median number of different types of combination entrées/meat/meat alternates served in lunches during the week was five, indicating a different main menu item such as a combination entrée or meat/meat alternate was served each day of the target week. The median number of different vegetables and the median number of different fruits served per week were each four.

Availability of Fresh Fruits and Vegetables in Lunches Served to 3-5 Year Olds

Fresh fruits and vegetables featured prominently in lunches served in early child care programs.

- The majority of lunches (65 percent) served included either a fresh fruit or vegetable (Exhibit 10).
- Half of lunches included fresh fruit.
- More than a third of lunches included fresh vegetables (36 percent), most of which were raw (in 25percent of lunches), versus cooked (in 12 percent of lunches).

Exhibit 10. Mean Percentage of Early Child Care Program Lunches Including Fresh Fruit or Vegetables



Source: Study of Nutrition and Activity in Child Care Settings (SNACS), Menu Survey, Winter through Summer, 2017. See Table D.4.2 in Appendix D.

Early Child Care Program Afternoon Snacks Served to 3-5 Year Olds

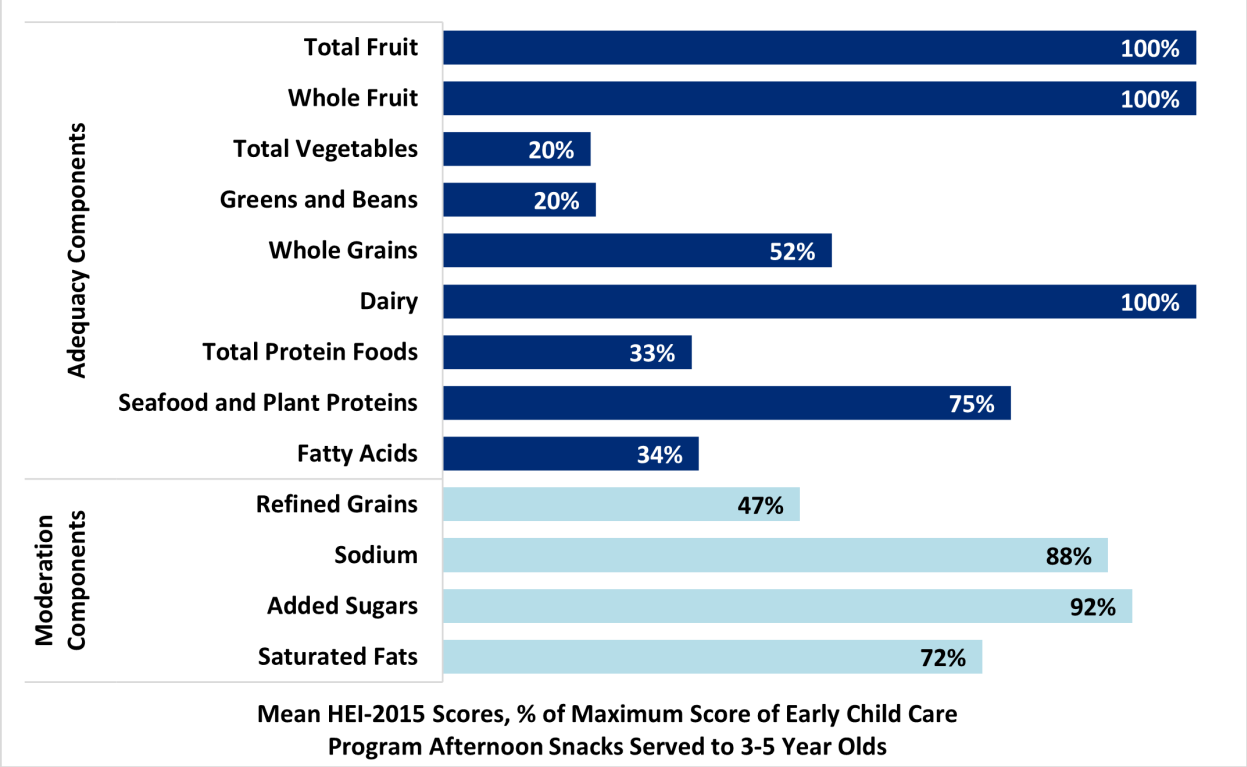
This section provides an overview of afternoon snacks served to 3-5 year olds in early child care programs. The CACFP meal pattern requires that snacks provide two of the four meal components; thus, snacks are not expected to meet as many of children's nutritional requirements as breakfasts, lunches, and suppers. (See Appendix D for results for afternoon snacks by program type.)

HEI Scores for Afternoon Snacks Served to 3-5 Year Olds

The overall HEI score for snacks served in early child care programs was 66 out of a maximum of 100.

- Three of the adequacy components—total fruit, whole fruit, and dairy—received maximum component scores indicating high concentrations of these foods in early child care program snacks and alignment with DGA recommendations (Exhibit 11). Seafood and plant proteins was slightly lower with 75 percent of the maximum score.
- Greens and beans (including legumes), total vegetables, total protein foods, and fatty acids all had scores that ranged from 20-34 percent of maximum, indicating concentrations of these components in CACFP snacks were low.
- The moderation component scores for afternoon snacks were highest for added sugars and sodium, indicating low concentrations of these components in CACFP snacks.
- Saturated fats and refined grains each had a lower percentage of maximum scores, indicating concentrations higher than DGA recommendations.

Exhibit 11. HEI Scores for Components of Early Child Care Program Afternoon Snacks Served to 3-5 Year Olds



Source: Study of Nutrition and Activity in Child Care Settings (SNACS), Menu Survey, Winter through Summer, 2017. See Table D.2.28 in Appendix D.

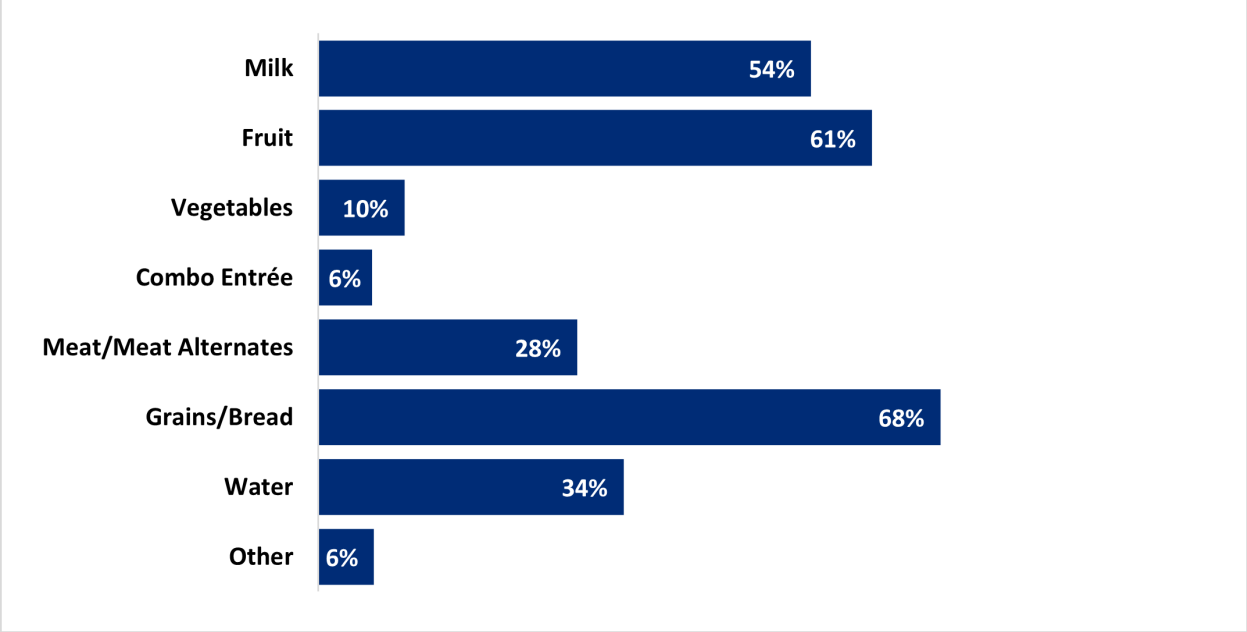
Most Frequently Served Foods to 3-5 Year Olds in Afternoon Snacks

Three categories of foods were served in more than half of afternoon snacks for 3-5 year olds: milk (54 percent), fruit (61 percent), and grains/bread (68 percent) (Exhibit 12).

Other categories were less commonly served. Combination entrées were served in six percent of afternoon snacks, while vegetables were served separately from combination entrees in about 10 percent of afternoon snacks. Separate meat/meat alternates not included in combination entrées (such as cheese, nuts, and yogurt) were served in 28 percent of afternoon snacks. Six percent of afternoon snacks included an item from the dessert/other menu item category, and these were most commonly cookies (Exhibit 12).

There was typically only one food available for each food group served.

Exhibit 12. Mean Percentage of Afternoon Snack Menus Serving Major Food Groups to 3-5 Year Olds in Early Child Care Programs



Source: Study of Nutrition and Activity in Child Care Settings (SNACS), Menu Survey, Winter through Summer, 2017. See Table D.3.13 in Appendix D. "Other" foods include desserts and snack foods.

- The most commonly served grains/bread items were crackers, croutons, and pretzels (included in 48 percent of afternoon snacks), followed by breads, rolls, bagels, and other plain breads (included in seven percent of afternoon snacks).
- Nearly a third of afternoon snacks (32 percent) included fresh fruit, with apples and bananas most often served. Canned fruit was offered in eight percent of snacks.
- About one in five snacks (19 percent) included 100% juice. The most common types served were apple and juice blends.
- Unflavored 1% and skim milk (39 and 10 percent of snacks, respectively) were the most commonly served types of milk.
- The most common type of meat/meat alternates served was "other protein" (19 percent of snacks) such as cheese, nuts, nut butters, seeds, or mixtures, followed by yogurt in nine percent of snacks.

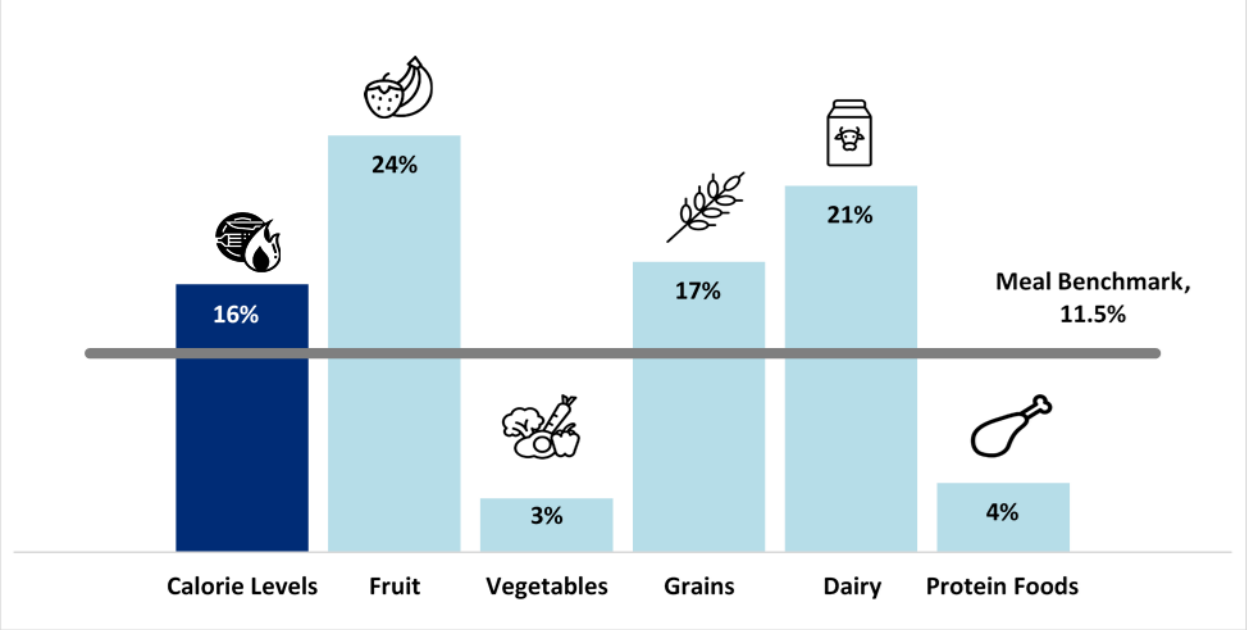
- Most vegetables served in snacks were raw (seven percent). These included "other" vegetables such as celery and cucumber (four percent) and red/orange vegetables, such as carrots (two percent).
- Six percent of afternoon snacks included combination entrées, mostly peanut butter or cheese sandwiches.

Contributions of Afternoon Snacks Served to 3-5 Year Olds to USDA Food Pattern Food Group Recommendations

As described on pages 31-34, to determine whether afternoon snacks included the expected amount of each USDA food group at the 1,400 calorie level, the study team applied a meal level benchmark of 11.5 percent of daily food group recommendations for snacks served to 3-5 year olds to determine recommended amounts for food groups. This comparison yielded the following results:

- Afternoon snacks served across all program types provided a mean of 16 percent of the daily calorie level and exceeded the 11.5 percent snack level recommended amounts for calories, fruit, grains, and dairy (Exhibit 13).
- Afternoon snacks did not contribute substantially to the daily recommended amounts for vegetables and protein foods (Exhibit 13).
- Afternoon snacks contributed a mean of 39 percent of the daily limit of calories for other uses (empty calories), far exceeding the 11.5 percent meal level benchmark for snacks. Calories from solid fats accounted for 18 percent, and calories from added sugars accounted for 13 percent, of the daily limit.

Exhibit 13. Mean Percentage Contribution of Early Child Care Program Afternoon Snacks for 3-5 Year Olds to the DGA Daily Recommendation



Source: Study of Nutrition and Activity in Child Care Settings (SNACS), Menu Survey, Winter through Summer, 2017. See Table D.2.15 in Appendix D. Notes: The DGAs recommend, for a 1400kcal diet, 1.5 cups of Fruits, 1.5 cups of Vegetables, 5 ounces of Grains/Breads, 2.5 cups of Dairy, and 4 ounces of Protein Foods daily. Meal benchmark represents the recommended percentage contribution of a snack to daily meal pattern, adapted from Table 6-3 in the 2011 IOM Report, Child and Adult Care Food Program: Aligning Dietary Guidance for All. 11.5% of the daily recommendation equates to 161 total kcal, 0.17 cups of Fruit, 0.17 cups of Vegetables, 0.58 ounces of Grains/Breads, 0.29 cups of Dairy, and 0.46 ounces of Protein Foods.

Energy and Nutrient Content of Afternoon Snacks Served to 3-5 Year Olds

- Afternoon snacks across all program types had a mean calorie level of 216, with 27 percent of calories from fat, 9 percent from saturated, 61 percent from carbohydrates, and 14 percent from protein.

Early Child Care Program Breakfasts Served to 3-5 Year Olds

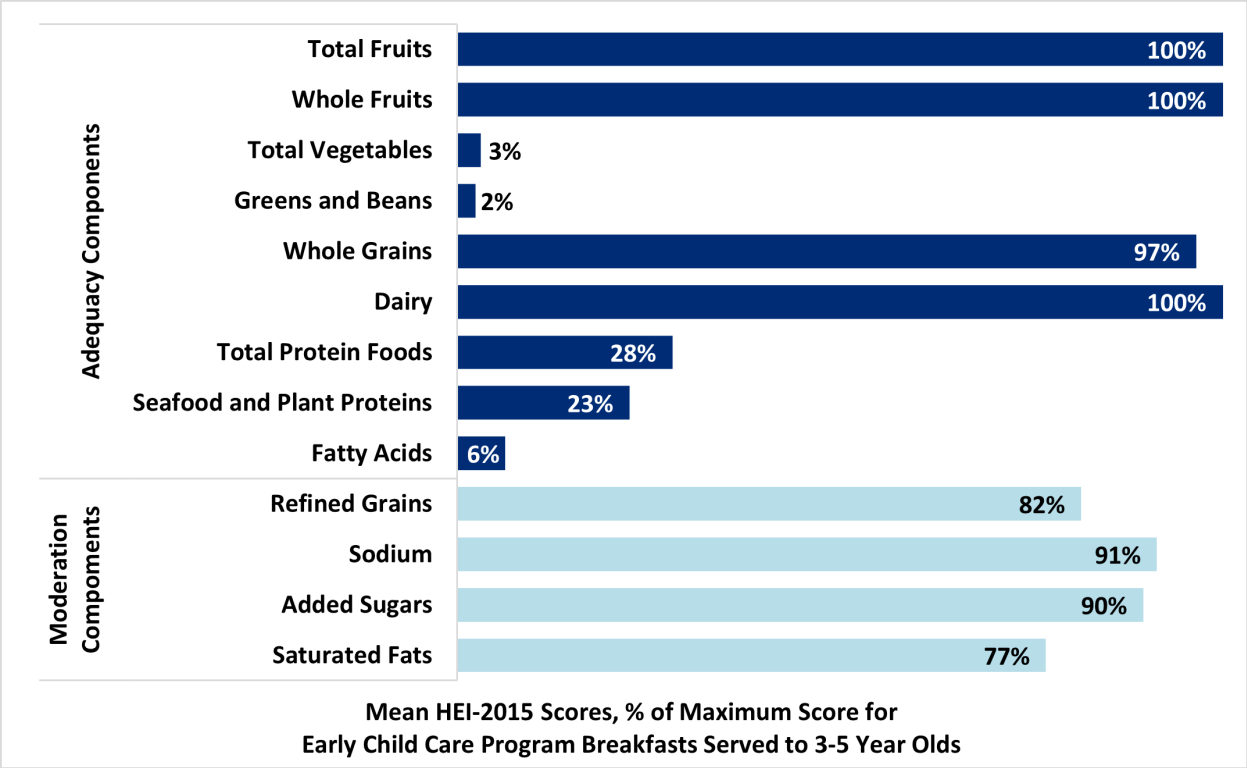
This section provides an overview of breakfasts served in early child care program to 3-5 year olds.

HEI Scores for Breakfasts Served to 3-5 Year Olds

The overall HEI score for breakfasts served in early child care programs was 67 out of a maximum of 100, indicating breakfasts were not perfectly aligned with the DGAs.

- Breakfasts served received maximum or near maximum scores for four of the nine adequacy components, including total fruit, whole fruit, dairy, and whole grains, indicating high concentrations of these foods in early child care program breakfasts and alignment with DGA recommendations (Exhibit 14).
- Total protein foods and the seafood and plant proteins group scored much lower with 28 and 23 percent of maximum scores, respectively, which is not surprising given that meat/meat alternates are not a required CACFP breakfast component.
- Total vegetables and the greens and beans group had very low scores of three and two percent of maximum, respectively, indicating much lower concentrations of these components than recommended in the DGAs. Although the CACFP meal pattern requires serving a fruit and/or vegetable component at breakfast; fruits were most often served, while vegetables were almost never served (see page 38).
- The moderation component scores were highest for sodium and added sugars (91 and 90 percent of maximum scores, respectively), indicating low concentrations of these components and closer alignment to the DGA.
- Refined grains and saturated fats each had lower component scores, at 82 and 77 percent of maximum scores, indicating concentrations higher than DGA recommendations in breakfasts served.

Exhibit 14. HEI Scores for Components of Early Child Care Program Breakfasts Served to 3-5 Year Olds



Source: Study of Nutrition and Activity in Child Care Settings (SNACS), Menu Survey, Winter through Summer, 2017. See Table D.2.23 in Appendix D.

Most Frequently Served Foods in Breakfasts Served to 3-5 Year Olds

Most breakfasts served the three required major food components of milk, fruit, and grains/bread (Exhibit 15).

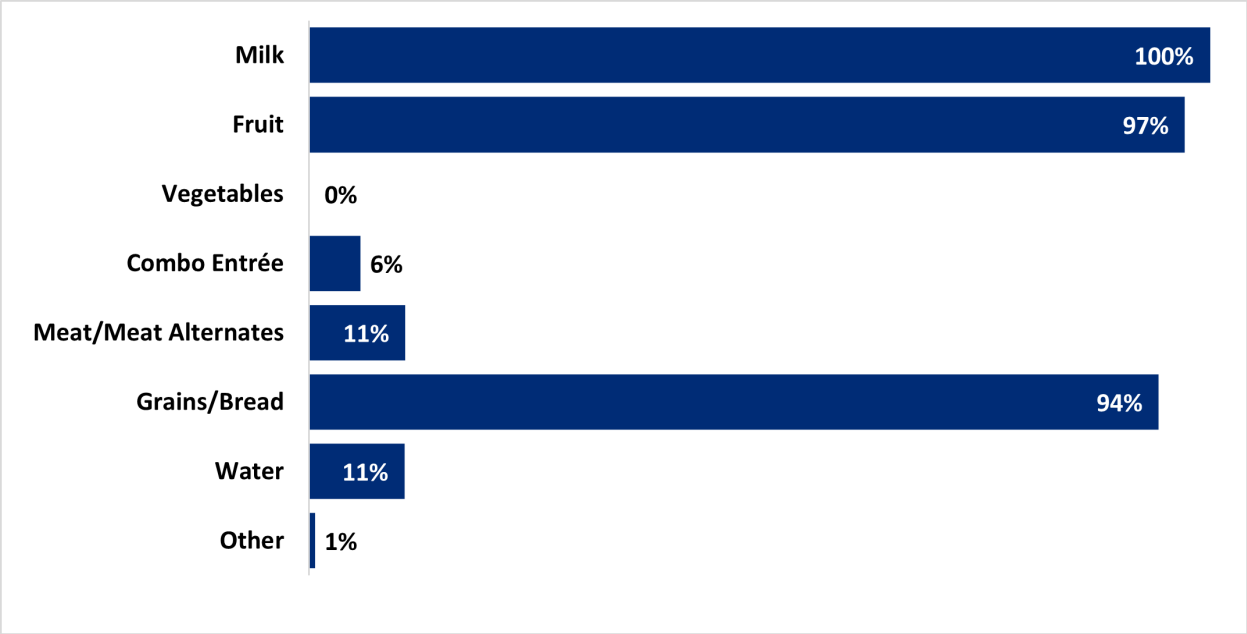
- Although not a required meal component, meat/meat alternates were served in over 10 percent of breakfasts. Vegetables were almost never served in early child care program breakfasts.

Within these major food components:

- Unflavored 1% milk was the most frequently served type of milk (76 percent of breakfasts), followed by unflavored skim milk (18 percent).
- Fresh fruit was served in 65 percent of breakfasts, most commonly bananas, apples, and strawberries. Canned fruit was less prevalent (22 percent of breakfasts). The most common canned fruits were apple sauce, peaches, and pears.
- 100% juice, usually orange or apple, appeared on 11 percent of breakfast menus.
- The most common types of grains/bread served were cold cereal (32 percent), followed by pancakes/waffles/French toast (22 percent) and plain breads including rolls and bagels (19 percent).

There were few choices offered at breakfast. The majority of breakfasts included one milk (97 percent), one fruit (85 percent), and one grains/bread (91 percent). Over the course of the week, the median number of food types indicated some variety, with four types of fruit and three to four types of grains/bread. However, usually a single type of milk was served.

Exhibit 15. Mean Percentage of Breakfast Menus Serving Major Food Groups to 3-5 Year Olds in Early Child Care Programs



Source: Study of Nutrition and Activity in Child Care Settings (SNACS), Menu Survey, Winter through Summer, 2017. See Table D.3.8 in Appendix D. "Other" foods include desserts and snack foods.

Contributions of Breakfasts Served to 3-5 Year Olds to USDA Food Pattern Food Group Recommendations

As described on pages 31-34, meal and snack level benchmarks were used to establish meal level recommended amounts to compare meals and snacks served in early child care programs to an expected percentage of the daily USDA Food Pattern Food Group contribution. The meal level benchmark for breakfasts served to 3-5 year olds was 21 percent of recommended daily amounts.[42]

- Breakfasts served across all program types provided a mean of 304 calories or 22 percent of the daily calorie benchmark of 1,400 calories and exceeded the 21 percent breakfast level recommended amounts for calories, fruit, grains, and dairy.
- Breakfasts contributed almost a third (32 percent) of the recommended daily USDA Food Pattern Food Group amount for fruit while contributing five percent of the daily amount for protein foods, and less than one percent of the daily contribution for vegetables.

- Head Start programs served higher mean amounts of dairy at breakfast than child care centers or family day care homes. Although protein contributions were low across all program types, the mean amount of protein foods served at breakfast in child care centers was significantly less than amounts served in Head Start programs or family day care homes (Table D.2.10, Appendix D).
- Breakfasts contributed more than half (56 percent) of the daily limit of calories for other uses (empty calories) far exceeding the 21 percent meal level benchmark for breakfast. Calories from solid fats and calories from added sugars served at breakfast contributed 26 percent and 19 percent toward the daily limit, respectively.
- Similar to afternoon snacks, breakfasts served in family day care homes provided more calories from solid fats but fewer calories from added sugars than child care centers or Head Start programs (Table D.2.10, Appendix D).

Energy and Nutrient Content of Breakfasts Served to 3-5 Year Olds

- Breakfasts served in early child care programs across all program types had a mean calorie level of 304, with 22 percent of calories from total fat, nine percent of calories from saturated fat, 65 percent of calories from carbohydrates, and 16 percent of calories from protein. (Table D.1.1, Appendix D)
- There were no significant differences in total calories provided by breakfast by program type. However, the percentages of calories from total fat, saturated fat, and protein in breakfasts were lower in child care centers than in Head Start programs or family day care homes, and child care center breakfasts were higher in the percentage of carbohydrate and calories from added sugars than in the other two program types. (Table D.1.1, Appendix D)

Summary of Meals Served to 3-5 Year Olds in Early Child Care Programs

The Healthy Eating Index (HEI), a measure of diet quality, indicated that breakfasts, lunches, and afternoon snacks served in early child care programs participating in CACFP had two-thirds or more of the ideal score of 100, indicating room for improvement to align with the DGAs. By comparison, the mean HEI score for dietary intake for Americans ages 2-5 years in 2017-2018 was 61, suggesting that CACFP meals were healthier than the average young child's diet.

Importantly, close to 90 percent or more of breakfasts, lunches, and snacks served in early child care programs met CACFP meal component requirements. Overall, meals and snacks served in Head Start programs were significantly more aligned with the CACFP meal pattern components than in child care centers and family day care homes. Breakfasts served in Head Start Programs were also significantly more likely to include meat/meat alternates than breakfasts served to 3-5 year olds in child care centers or family day care homes.

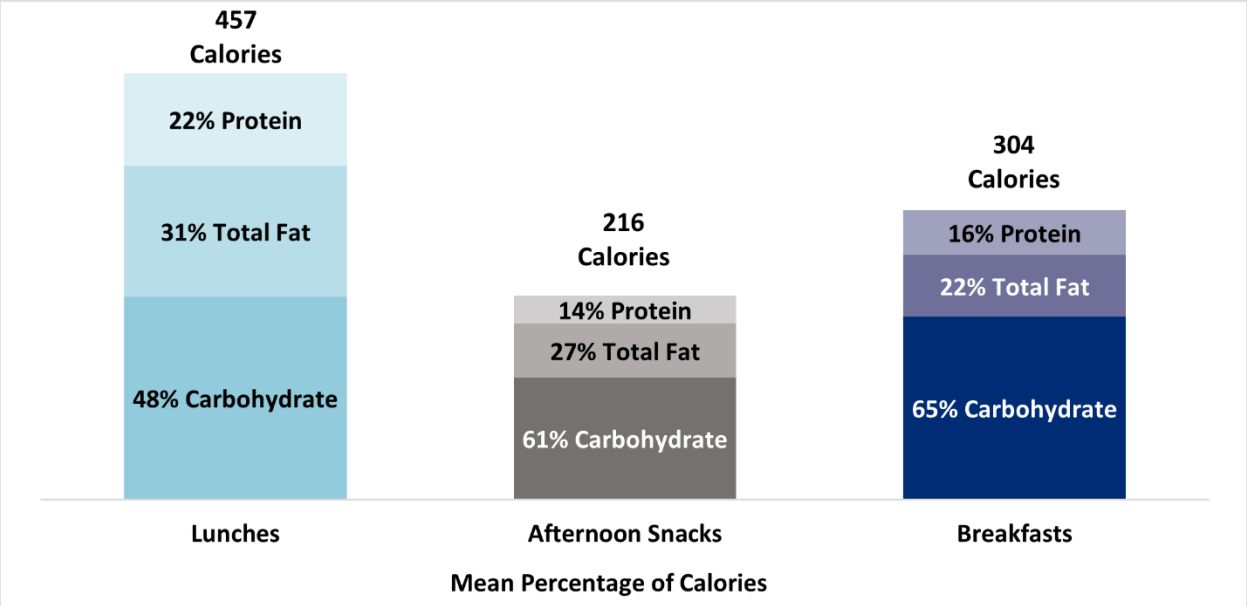
The total calories served in the average lunches, breakfasts, and afternoon snacks exceeded the meal level benchmarks based on the USDA Food Pattern recommendations for a 1400 calorie diet. The macronutrient composition of these calories (percentages from carbohydrate, fat and protein) varied by meal type, with carbohydrates making up the majority of calories in breakfasts and snacks (Exhibit 16).

Finally, average breakfasts, lunches, and snacks exceeded the meal level recommended amounts for grains/bread and dairy based on USDA Food Patterns. In addition, lunches exceeded the recommended amounts for vegetables and protein foods, whereas average breakfasts and snacks exceeded recommendations for fruit. These results were similar to those for the HEI adequacy and moderation scores, which indicated very close alignment with the DGAs

for total fruits, whole fruits, and dairy for all three meal types. While lunches were in close alignment for protein foods and vegetables, afternoon snacks and breakfast were far less aligned with the DGA recommendations. All meal types had low concentrations of added sugars, but lunches contained substantially more sodium than the DGAs recommend.

Lunches contributed excessive calories towards the daily energy recommendation. Thus, future focus on maximizing intake of adequacy components, continuing to limit added sugars, and improving scores for refined grains and saturated fats may improve meal quality.

Exhibit 16. Macronutrient Composition of Calories in Lunches, Afternoon Snacks, and Breakfasts Served to 3-5 Year Olds in Early Child Care Programs



Source: Study of Nutrition and Activity in Child Care Settings (SNACS), Menu Survey, Winter through Summer, 2017. See Tables D.1.1, D.1.2, and D.1.6 in Appendix D. Note: The meal level benchmarks based on the USDA Food Pattern recommendations for a 1400 calorie diet were 21% or 294 calories for breakfast, 28% or 392 calories for lunch, and 11.5% or 161 calories for snacks. For reference, the Dietary Reference Intakes specify the following Acceptable Macronutrient Distribution Ranges (AMDR): protein within 5-20 percent of energy intake for 3 year olds or 10-30 percent for 4 and 5 year olds; total fat within 30-40 percent of energy intake for 3 year olds or 25-35 percent for 4 and 5 year olds; and carbohydrates within 45-65 percent of intake for 3 to 5 year olds.[43]

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COSTS AND REVENUES OF MEALS AND SNACKS IN EARLY CHILD CARE PROGRAMS

SNACS provides the first national estimates on the meal costs and revenues associated with delivering CACFP in early child care programs, specifically in child care centers and Head Start programs.[44] Information on CACFP costs and revenues among before and after school programs can be found in Meals Served, Cost, and Dietary Intakes in Before and After School Programs. Supporting tables appear in Appendix E.

The two primary types of costs that CACFP programs incur are food costs and labor costs. Food costs include purchases of bulk foodstuffs and ready-to-serve meals. Labor costs include wages and salaries paid to staff for the hours spent preparing, serving, and cleaning up after meals, and for administrative and other tasks to operate CACFP.

To estimate the cost per meal, the study team collected detailed data on food and labor costs, as well as meal counts, from a sample of child care centers and Head Start programs that included independent programs and sponsored programs.

The study team interviewed key informants who were most knowledgeable about various aspects of CACFP operations, including directors and staff of CACFP programs and their sponsoring organizations. The data collection included in-person interviews and self-administered surveys (see Exhibit 1 and Appendix A for details).

Looking Ahead

SNACS provides estimates of the costs of providing CACFP meals in early child care settings during SY 2016-17. Changes to the CACFP nutrition standards to align with the DGA went into effect in October 2017. **Therefore, the cost estimates from SNACS provide a baseline for CACFP meal costs prior to the revised standards going into effect.**

The study team obtained data on: program and sponsor staff time spent on each CACFP-related task; wages and fringe rates for these staff; food purchase receipts and fees paid to vendors for prepared meals; financial reports; and meal counts. The analysis in this report focuses on

food and labor costs because of the limitations of available data on other costs.[45]

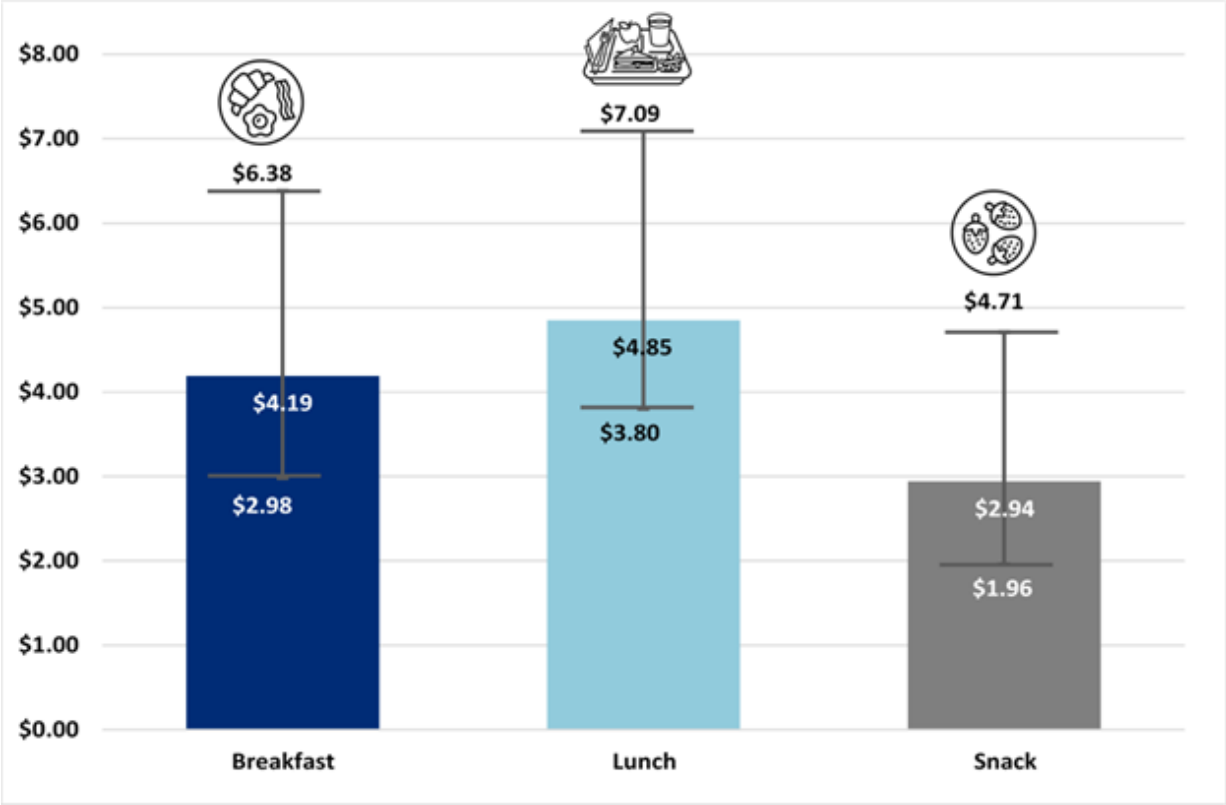
These data, with information from the nutrition study's menu survey and meal observation booklet, were used to build measures of food and labor costs per meal for each type of meal or snack.[46] Appendix A describes in detail the sample, data sources, and analysis methods supporting the estimates of CACFP costs and revenues in this report.

Total Cost per Meal (Food and Labor)

The median total cost of food and labor was $2.94 per snack, $4.19 per breakfast, and $4.85 per lunch (Exhibit 17).

- The finding that per-meal costs of lunch and breakfast were greater than for snack was expected given that lunches and breakfasts have more required meal components than snacks.
- There was a wide range of total costs among programs for all three types of meals (see Exhibit 17). Most of the variation was in labor costs; food costs were relatively more consistent.

Exhibit 17. Median Total Cost per Breakfast, Lunch and Snack in Early Child Care Programs



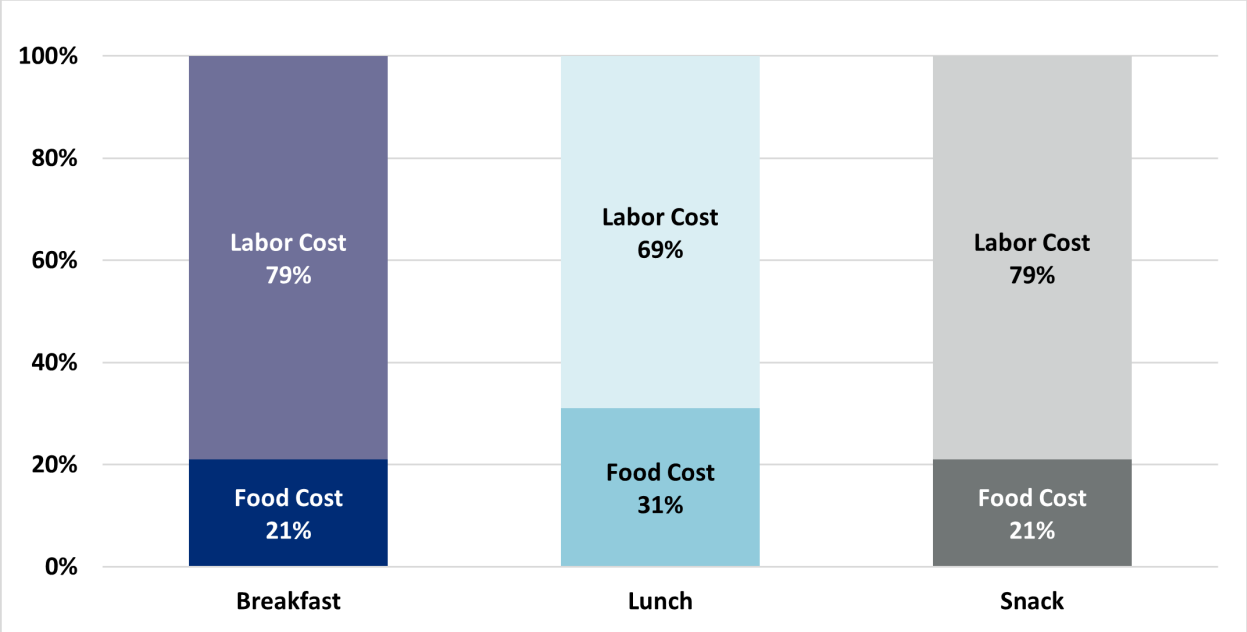
Source: Study of Nutrition and Activity in Child Care Settings (SNACS), Menu Survey, Center Director Cost Interview, Center Foodservice Cost Interview, Sponsor Cost Interview, Meal and Snack Counts Booklet, Self-Administered Cost Questionnaire, Winter through Summer, 2017. See Tables E.10, E.11, and E.13 in Appendix E.
Note: Lines extending above and below median total cost per meal indicate the range from the 25th percentile to the 75th percentile of the total cost per meal.

Cost Composition

Labor costs for CACFP meals and snacks were substantially greater than food costs.

- As shown in Exhibit 18, the median labor cost per breakfast and snack was 79 percent of the total cost per meal. For lunch, the median labor cost was 69 percent of total costs.
- Programs spent more on food for lunch than for breakfast, while their labor costs for these meals were more similar.
  - The median food cost was $0.82 per breakfast, $1.51 per lunch, and $0.56 per snack.
  - The median labor cost was $3.18 per breakfast, $3.35 per lunch, and $2.25 per snack.

Exhibit 18. Food and Labor Cost Percentages of Total Cost per Breakfast, Lunch and Snack in Early Child Care Programs



Source: Study of Nutrition and Activity in Child Care Settings (SNACS), Menu Survey, Center Director Cost Interview, Center Foodservice Cost Interview, Sponsor Cost Interview, Meal and Snack Counts Booklet, Self-Administered Cost Questionnaire, Winter through Summer, 2017. See Table E.4 in Appendix E.

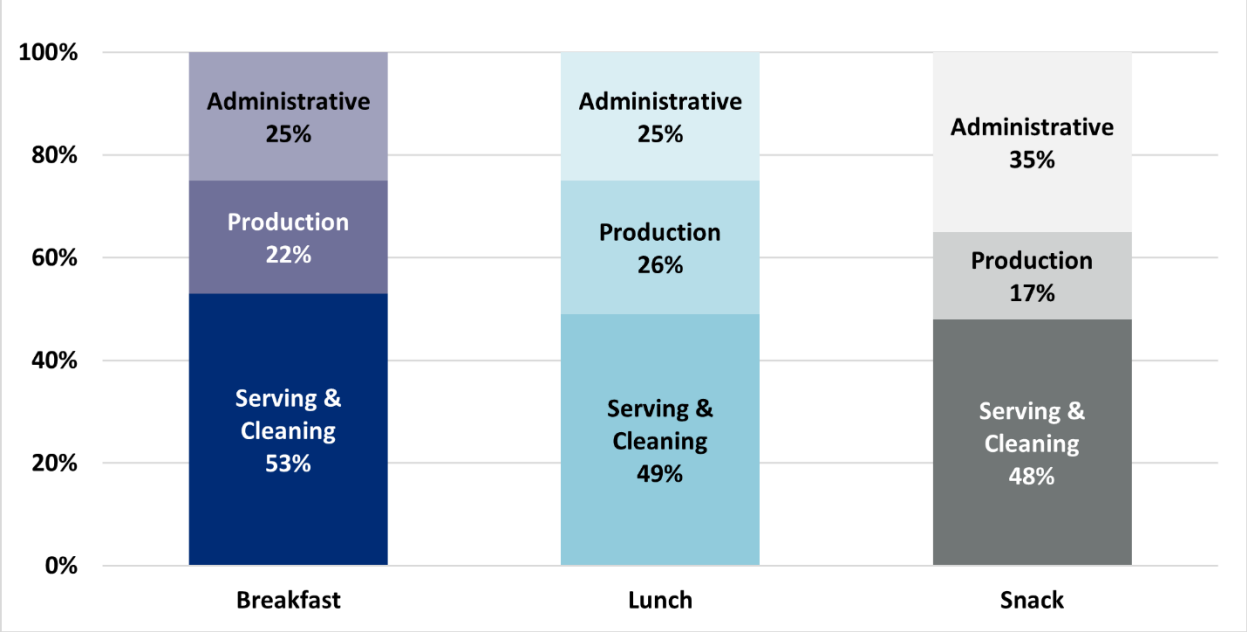
The study team calculated three components of labor costs: 1) *meal production labor* (preparing food to be served), 2) *serving and cleaning labor* (serving food to children, supervising them during meals, and cleaning up after meals), and 3) *administrative labor*. All CACFP activities not related to producing and serving/cleaning meals and snacks were classified as administrative. These included menu planning, food purchasing, determining eligibility for free and reduced-price meals, submitting reimbursement claims, cleaning/maintenance and security of space and equipment used exclusively for CACFP operations, and transport and storage of CACFP food supplies.

Administrative labor could occur at the program level, sponsor level, or both. *Meal production labor* could also occur at either level depending on whether the meals were prepared by program staff or by the sponsor at a central kitchen that produced meals served at multiple program locations. As noted in Policies and Practices in Early Child Care Programs, 16 percent of Head Start programs and 10 percent of child care centers used offsite central kitchens operated by the sponsor or child care program. *Serving and cleaning labor* occurred only at the program level. Some programs had staff whose main job was food service, while others relied in part or entirely on classroom teachers and other child care staff to perform this task. Few programs had staff whose sole job was food service.

Examining costs by component showed the following.

- Around half of all labor costs for breakfast, lunch, and snack went towards serving and cleaning meals (Exhibit 19).
- Production costs ranged from 17 to 26 percent, and administrative costs from 25 to 35 percent, depending on the type of meal.

Exhibit 19. Composition of Labor Cost per Breakfast, Lunch, and Snack in Early Child Care Program Meals and Snacks



Source: Study of Nutrition and Activity in Child Care Settings (SNACS), Menu Survey, Center Director Cost Interview, Center Foodservice Cost Interview, Sponsor Cost Interview, Meal and Snack Counts Booklet, Self-Administered Cost Questionnaire, Winter through Summer, 2017. See Table E.6 in Appendix E.

As noted above, few child care programs had designated food service staff. For staff who carried out CACFP tasks and other child care duties, it was challenging to separate the cost of labor related specifically to meal service and cleaning from their other duties. For example, as part of serving a meal, child care staff may talk to children about how to serve themselves, table manners or other cultural practices linked to food. Thus, meal serving and cleaning labor costs served multiple purposes, while CACFP meal production and administrative labor costs were more exclusively associated with operating CACFP.

Relationship of USDA Subsidies to Costs

USDA Subsidies per Meal/Snack

USDA provides subsidies for CACFP meals in the form of reimbursements for meals and snacks, and donated USDA Foods or an additional $0.23 per lunch or supper as cash-in-lieu of USDA Foods. To estimate the size of the USDA Foods subsidy, SNACS used the amount of cash-in-lieu of USDA Foods to which the program was entitled for each lunch and supper, regardless of whether the program received USDA foods or cash-in-lieu of USDA foods.[47]

Exhibit 20 lists the subsidy amounts by meal type in effect from July 2016 through June 2017. All children in Head Start programs are automatically eligible for free meals, so these programs received the free reimbursement rate for all meals. Child care centers received a blended rate of free, reduced-price, and paid meal reimbursements, based on the proportions of children individually determined eligible for free or reduced-price meals.

USDA reimbursements were by far the most common reported source of revenues for CACFP meals. Financial records on the specific sources of non-USDA revenues were limited, so the percentages of programs reporting revenues other than USDA subsidy may understate the prevalence of these sources.[48]

USDA Revenue for CACFP Meals

USDA reimbursements include free, reduced-price, and paid meal reimbursement rates.

USDA subsidy is the USDA reimbursement plus cash-in-lieu of USDA Foods for applicable meals.

- Almost all independent programs and sponsors (96 percent) reported receiving USDA reimbursements.[49]
- Only four percent of early child care programs reported either a dollar amount for donated USDA Foods or indicated they received donated USDA Foods. Far more often, early child care programs received cash-in-lieu of USDA Foods as part of their USDA subsidy.[50]
- Outside of the USDA subsidy, six percent or less of programs reported each of the other, non-USDA forms of revenue: child payments specifically for food (two percent); adult payments for food only (two percent); and other CACFP/foodservice revenues (including vending, contributions and gifts, board of education supplement, interest, and refunds) (six percent).

Exhibit 20. USDA Subsidies for CACFP Meals and Snacks

	USDA Subsidy for CACFP Meals			
	USDA Reimbursement			Cash-in-Lieu of USDA Foods
	Free	Reduced-Price	Paid	
Breakfast	$1.71	$1.41	$0.29	n/a
Lunch & Supper	$3.16	$2.76	$0.30	$0.23
Snack	$0.86	$0.43	$0.07	n/a

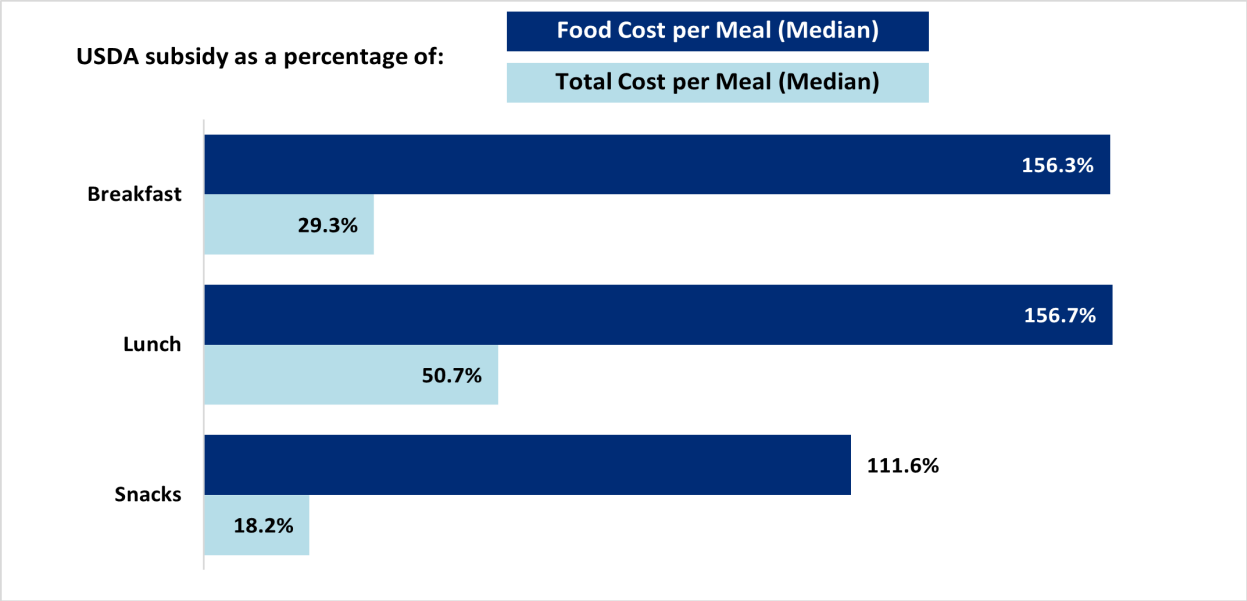
Source: USDA-FNS, Service Payment Rates, and Administrative Reimbursement Rates for Sponsoring Organizations of Day Care Homes (July 1, 2016 – June 30, 2017). https://www.fns.usda.gov/cacfp/fr-080516.

USDA Subsidy as a Percentage of Costs

The CACFP reimbursement is a Federal subsidy designed to offset some of the costs incurred by programs to serve CACFP meals and snacks. A key question for SNACS was the relationship of USDA subsidies to the costs of meals and snacks. Exhibit 21 shows the median applicable USDA subsidy as a percentage of the food cost per meal and the median total cost (food plus labor) per meal. As described in the previous section, the applicable subsidy was either the blended rate for child care centers or the free rate for Head Start programs. The lunch subsidy included the additional $0.23 for cash-in-lieu of USDA Foods. A percentage higher than 100 indicates that the subsidy exceeded the cost; a percentage under 100 indicates not all costs were covered by the subsidy.

- On average, the USDA subsidy covered 12 to 57 percent more than the *food cost* of a breakfast, lunch, or snack.
- On the other hand, the USDA subsidy was between 18 and 51 percent of the *combined food and labor cost*, indicating it did not cover the total costs to produce CACFP meals and costs.
- Head Start programs were able to cover more of their costs because all of their meals were reimbursed at the free rate. For child care centers, the subsidy per meal was less unless all children individually qualified for free meals. Programs bear the portion of meal costs not covered by the USDA subsidy, and covering these costs may have been more of a challenge for child care centers than for Head Start programs.
- These findings align with survey results. Among the potential ways to increase CACFP participation among early child care programs, child care centers and Head Start programs most often reported that increased reimbursements would boost participation. In addition, over half of child care centers and Head Start programs reported that they experienced challenges to participating in CACFP because meal reimbursement was inadequate.[51]

Exhibit 21. USDA Subsidy as a Percentage of Food Costs and Total Costs of Breakfast, Lunch and Snacks in Early Child Care Programs



Source: Study of Nutrition and Activity in Child Care Settings (SNACS), Menu Survey, Center Director Cost Interview, Center Foodservice Cost Interview, Sponsor Cost Interview, Meal and Snack Counts Booklet, Self-Administered Cost Questionnaire, Winter through Summer, 2017. See Table E.16 in Appendix E.

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CHILD AND FAMILY CHARACTERISTICS OF 3-5 YEAR OLDS IN EARLY CHILD CARE PROGRAMS

CACFP is designed to address nutritional inadequacy in young children at risk for poor nutrition, but few national studies are available about the children attending CACFP programs. SNACS is the first nationally representative study of children who participate in CACFP in over 20 years.

Parents of children in SNACS consented to several data collection efforts about their children, including meal observations, height and weight measurements, and child food diaries. All child level findings presented in this section are derived from child care centers and Head Start programs.

Demographic Characteristics of 3-5 Year Olds in Early Child Care Programs

Parents answered questions about household and child demographics through a phone interview. Results presented in this section focus on the responses for parents of 3-5 year olds, the largest population of children in SNACS.

Race/Ethnicity

- Children's race/ethnicity was relatively evenly distributed among White non-Hispanic (32 percent), Hispanic (31 percent), and Black non-Hispanic (26 percent). Parents reported other race/ethnicity for 10 percent of the sampled children.

Household Poverty Level

Parents responded to questions about income and household size, which were used to calculate the family's status in relationship to the Federal Poverty Level (FPL). Children in child care centers with household income at or below 185 percent of the FPL qualify for free or reduced-price meals, as do all children in Head Start programs. Moreover, children in Head Start programs attend free of charge if they live in households at or below 100 percent of the FPL.

- The majority of children (58 percent) lived in households at or below 185 percent of the FPL and 27 percent lived in households above 185 percent of the FPL. For the

remaining 15 percent, the parent either did not know or declined to answer the related questions.

- The percentage of child care center families living above 185 percent of the FPL was more than double that of Head Start families (32 percent versus 14 percent). More Head Start families lived at or below 185 percent of the FPL than did child care center families (70 percent versus 53 percent).

Federal Assistance Program Participation

- The most common other assistance program in which families participated was Medicaid (50 percent), closely followed by 47 percent participating in the Children's Health Insurance Program (CHIP). Overall, 42 percent of families received aid under the Supplemental Nutrition Assistance Program (SNAP), and 31 percent received benefits from the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). This variation in participation reflects, at least in part, the differences among the programs' eligibility requirements,
- Across all four of the above assistance programs, a consistent pattern emerged: a greater percentage of families in Head Start programs participated in Federal assistance programs than did families in child care centers (though the differences were not always significant. See Table F.6 in Appendix F.).

Food Security Status of 3-5 Year Olds in Early Child Care Programs

Parents answered the two-item food security screener.[52] If the parent answered in the affirmative to either question, the household was considered at risk for food insecurity. If the parent responded in the negative to both, then the household was considered "food secure."

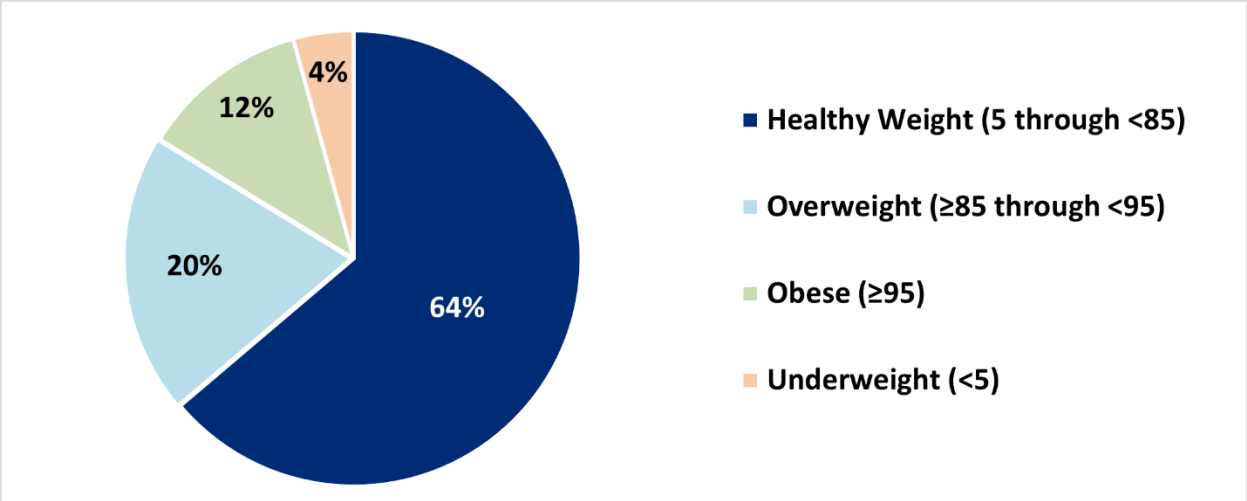
- Overall, 74 percent of children were in food secure households, and 25 percent were in households at risk for food insecurity.
- There were no significant differences in household food security by program type, despite the significant differences in the percentage of children living under 185 percent of the FPL.

Weight Status of 3-5 Year Olds in Early Child Care Programs

Interviewers measured the height and weight of assenting children during onsite data collection. After applying the Centers for Disease Control and Prevention (CDC) methods for cleaning and coding the data, the team calculated each child's body mass index (BMI) as a function of age and gender.[53] Children whose BMI-for-age percentile was greater than or equal to the 95th percentile were classified as obese. Children with a BMI-for-age percentile greater than or equal to the 85th percentile up to the 95th percentile were classified as overweight. Children under the fifth percentile were classified as underweight. All other children were considered as having a healthy weight.

- Overall, 20 percent of the children ages 3 to 5 years were classified as overweight (not including obese), 12 percent as obese, four percent as underweight, and 64 percent at a healthy weight (Exhibit 22).
- The percentage of children classified as obese was comparable to, but slightly lower than, the 14 percent of 2-5 year-olds classified as obese by the 2015-2016 National Health and Nutrition Examination Survey (NHANES).
- The percentage of children classified as underweight was slightly higher than the two percent found in 2015-2016 NHANES, but still within the expected distribution of a normal population.

Exhibit 22. Percentage of 3-5 Year Olds in Early Child Care Programs by Weight Status Based on BMI-for-Age Percentile



Source: Study of Nutrition and Activity in Child Care Settings (SNACS), Height and Weight Form. See Table F.3 in Appendix F.

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CHILD DIETARY INTAKES AND PLATE WASTE

Eating behaviors established in early childhood years can potentially influence health outcomes throughout life. Although introducing new foods to some children may initially result in rejection and plate waste, research on the development of taste preferences shows that repeated exposure to a variety of foods is associated with higher consumption of nutritious foods, not only among infants and toddlers but also young children.[54] Given the essential role of dietary intake in the early childhood years and the need to improve dietary quality, early child care programs provide an ideal setting to instill healthy food preferences and intakes.[55]

SNACS offers insights into the role of child care meals in participants' diets and the overall quality of those diets. Results below reflect data collected from children and parents at child care centers and Head Start programs that participated in onsite meal observations. To assess children's dietary intakes during a child care day, the study team collected and combined meal observations during the child care day with food diaries completed by parents for the rest of the child care day to assess children's 24-hour child care day intake. The study team also used a 24-hour non-child care day diary to assess non-child care day dietary intake. The meal observations also provided data on plate waste, or food on children's plates that was not eaten. The focus in this section is on children in early child care programs. Results for children in before and after school programs are presented in Meals Served, Cost, and Dietary Intakes in Before and After School Programs. Detailed tables supporting this section appear in Appendix G.

Dietary Intakes

The SNACS team used single-day intake records (one child care day and one non-child care day for each child) to assess the nutritional quality of children's dietary intakes as indicated by Healthy Eating Index (HEI) scores. In addition, the National Cancer Institute (NCI) Method was used to estimate usual daily intakes and assess compliance with age-related benchmarks, including Dietary Reference Intake (DRI) nutrient recommendations and Estimated Energy Requirements (EER). The NCI Method requires a second intake day record for at least a subsample of participants; these analyses therefore additionally incorporate a second day

of intakes for a child care day (10 percent child subsample) or a non-child care day (separate 10 percent child sub-sample). The NCI Method does not support statistical comparisons across different intake days for the same child. Therefore, the study team also estimated single-day mean intakes to test for child care day/non-child care day differences. In addition to the 24-hour intake analyses, this section provides an analysis of the contribution of child care meals to daily 24-hour intakes and the percentage of the minimum CACFP meal pattern components consumed by 3-5 year olds for breakfasts, lunches, and afternoon snacks. The NCI Method and other methods used for these analyses are described in greater detail in Appendix A.

HEI Scores for 24-Hour Intakes of 2-12 Year Olds in Early Child Care

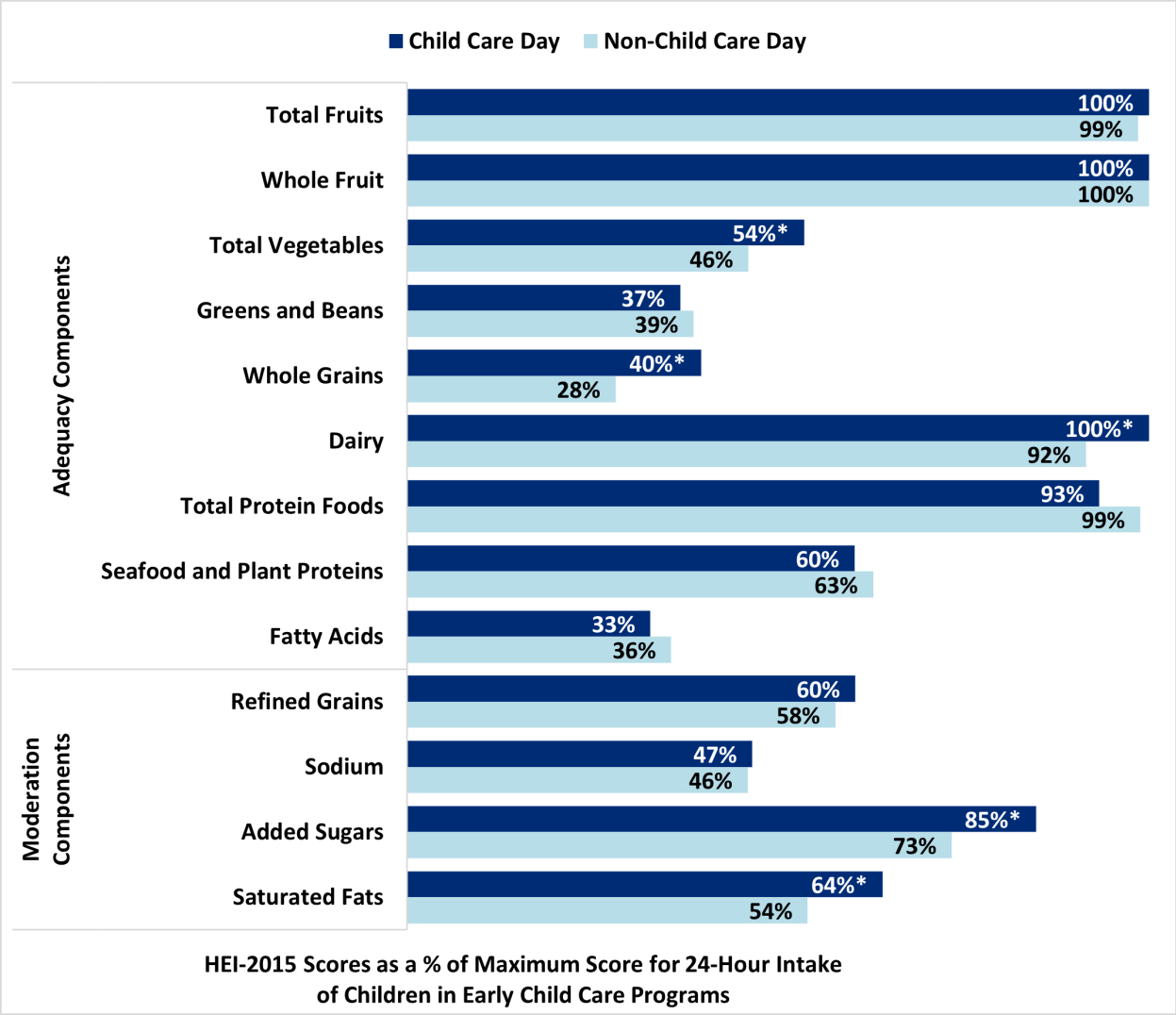
The HEI scores were calculated using a single (first) day of intakes for the child care day and non-child care day, pooled across all age groups (2-12 years), using the population ratio method.[56] (While the age group for this analysis was 2-12 years rather than 3-5 years, most children (97 percent) were ages 2-6 years (See Appendix A, Exhibit A.8-25).

Overall, the diets of children in early child care programs were higher in nutritional quality on child care days than on non-child care days, as measured by HEI scores (65 versus 61 out of 100, respectively). Thus, children's intakes on a child care day more closely aligned with the DGA recommendations than did their intakes on a day they were not in child care.

Exhibit 23 displays the HEI scores of children's intake for specific components on a child care day compared to a non-child care day.

- On both child care and non-child care days, children's intakes had perfect or near perfect alignment with the DGAs for total fruit, whole fruit, dairy, and total protein foods.
- Children's child care day and non-child care day intakes also had similar, though lower, scores on seafood and plant proteins, greens and beans, and fatty acids, indicating a lower than recommended concentration of these components.
- While HEI scores for children's intakes of total vegetables and whole grains were fairly low in general, intakes were significantly higher on child care days versus non-child care days, indicating higher dietary quality for these components on child care days.
- For dairy, children's intakes had high scores for both types of days, but scores were significantly higher on child care versus non-child care days (100 versus 92 percent). Thus, children's intakes were more closely aligned with the DGA recommendations on child care days than on non-child care days.
- Children's intake of added sugar on a child care day was significantly more aligned with the DGAs compared to intakes on a non-child care day.
- While children consumed more saturated fats than recommended on both a child care and a non-child care day, they consumed significantly less on a child care day compared to a non-child care day.
- Low HEI scores for refined grains and sodium indicate that children ate more than recommended amounts of these components on both days.

Exhibit 23. HEI-2015 Scores as a Percentage of Maximum for 24-Hour Intakes of 2-12 Year Olds in Early Child Care Programs



Source: Study of Nutrition and Activity in Child Care Settings (SNACS), Meal Observation Form, Child Care Day and Non-Child Care Day Diaries. See Table G.1e.1 in Appendix G.
*Difference between child care day and non-child care day significant at the .05 level or lower.

Usual 24-Hour Nutrient Intakes and DRIs for 4-8 Year Olds: Adequate, Inadequate, Excessive

The DRIs[57,58] are a set of reference values used to assess nutrient intakes of healthy people[59] based on age, gender, and life stage. Exhibits 24, 25, and 26 present, for selected nutrients, the percentage of intakes that provided adequate, inadequate, or excessive levels of key nutrients on child care and non-child care days compared to DRI benchmarks. The nutrient reference values used in analysis include acceptable macronutrient distribution ranges (AMDRs, in Exhibit 24), estimated average requirements (EARs, in Exhibit 25), adequate intakes (AIs), and tolerable upper intake levels (ULs) (see Exhibit 26).[60] For saturated fat, the study team used the DGA recommendation of not more than 10 percent of kilocalories from saturated fats.

On both child care and non-child care days, most 4-8 year olds in early child care had adequate intakes of most macronutrients, vitamins, and minerals with some exceptions.

- Children's consumption of macronutrients was largely within AMDR ranges for total fat, linoleic acid, carbohydrates, and protein on both child care and non-child care days. However, 68 percent of children had intakes within the AMDR range for total fat on non-child care days, with 30 percent of children's intakes above the acceptable range. In contrast, 99 percent of children were within the AMDR range for total fat on child care days.
- Nearly all children (98 percent or more) had adequate intakes of vitamins A, C, B_6, B_{12}, folate, niacin, riboflavin, and thiamin on child care and non-child care days.
- For some minerals, including iron, magnesium, phosphorus, and zinc, 98 percent of more of children had adequate intakes on both child care and non-child care days. While calcium intakes were adequate on child care days, only 78 percent of children had adequate intakes on non-child care days.

Exhibit 24. Percentage of 4-8 Year Olds in Early Child Care Programs with Usual 24-Hour Intakes of Macronutrients below, within, and above Acceptable Macronutrient Distribution Ranges on Child Care Days and Non-Child Care Days

	CCD Intakes			Non-CCD Intakes		
	% < ADMR	% within ADMR	% > ADMR	% < ADMR	% within ADMR	% > ADMR
Macronutrients						
Total fat	0	99	1	2	68	30
Linoleic acid	0	100	0	10	89	1
Alpha–linolenic acid	48	52	0	49	51	0
Carbohydrate	0	100	0	8	89	3
Protein	0	100	0	3	97	0

Source: Study of Nutrition and Activity in Child Care Settings (SNACS), Meal Observation Form and Child Care Day Diaries. See Table G.1c.1 in Appendix G. AMDR = acceptable macronutrient distribution range; CCD = child care day; non-CCD = non-child care day.

Exhibit 25. Percentage of 4-8 Year Olds in Early Child Care Programs with Usual 24-Hour Intakes of Selected Nutrients at or above Estimated Average Requirements on Child Care Days and Non-Child Care Days

	CCD Intakes	Non-CCD Intakes
	% at or above EAR	
Macronutrients		
Carbohydrate	100	100
Protein	98	97
Vitamins		
Vitamin A	99	100
Vitamin C	100	98
Vitamin D	12	6
Vitamin E	46	67
Vitamin B_6	100	100
Vitamin B_{12}	100	100
Folate	100	100
Niacin	100	100
Riboflavin	100	100
Thiamin	100	100
Minerals		
Calcium	100	78
Iron	100	100
Magnesium	98	99
Phosphorus	100	100
Zinc	100	100

Source: Study of Nutrition and Activity in Child Care Settings (SNACS), Meal Observation Form and Child Care Day Diaries. See Table G.1c.1 in Appendix G. CCD = child care day; EAR = estimated average requirements; non-CCD = non-child care day.

Exhibit 26. Mean Percentage of Adequate Intake Consumed and Percentage of 4-8 Year Olds in Early Child Care Programs with Usual 24-Hour Intakes below the DRI Limits for Selected Nutrients on Child Care Days and Non-Child Care Days

	CCD Intakes	Non-CCD Intakes
Mean Percentage of Adequate Intakes Consumed among 4-8 Year Olds in Early Child Care Programs for Selected Nutrients on Child Care Days and Non-Child Care Days[a]		
Minerals		
Calcium	134	118
Potassium	59	56
Sodium	217	229
Other Dietary Components		
Dietary fiber	55	53
Mean Percentage of 4-8 Year Olds in Early Child Care Programs with Usual 24-Hour Intakes Below DGA Limit for Selected Nutrients on Child Care Days and Non-Child Care Days		
Macronutrients		
Saturated fat	71	74
Mean Percentage of 4-8 Year Olds in Early Child Care Programs with Usual 24-Hour Intakes Below the Tolerable Upper Limit of Selected Nutrients on Child Care Days and Non-Child Care Days		
Minerals		
Sodium	18	0

Source: Study of Nutrition and Activity in Child Care Settings (SNACS), Meal Observation Form and Child Care Day Diaries. See Table G.1c.1 in Appendix G.
[a]Mean intake at or above the AI (100%) suggests a low risk for inadequate intakes.
AI = adequate intake; CCD = child care day; DGA = 2015 Dietary Guidelines for Americans; non-CCD = non-child care day; UL = tolerable upper intake level.

The prevalence of adequate intakes was lower for several nutrients on both child care and non-child care days:

- Alpha-linolenic acid (52 and 51 percent within the AMDR for child care and non-child care days, respectively);
- Vitamin D (12 and 6 percent with intakes at or above the EAR));
- Vitamin E (44 and 67 percent at or above the EAR).

In addition, mean intake of Potassium and dietary fiber was below the AI.

Many children consumed excessive amounts of sodium and saturated fats on both child care and non- child care days:

- About 80 percent or more of children had sodium intakes above the tolerable upper limit on child care days non-child care days.
- More than 25 percent of children consumed more than 10 percent of calories from saturated fat on child care and non-child care days.

Although the NCI Method, as noted above, does not support direct statistical comparisons between child care and non-child care day intakes, there were some apparent differences in inadequate and excessive intakes:

- Inadequate linoleic acid, Vitamin D, and calcium intakes were more prevalent on non-child care days.
- Inadequate Vitamin E intakes were more prevalent on child care days.
- Excessive total fat and sodium intakes were more prevalent on non-child care days.

Usual 24-Hour Energy Intakes and Estimated Energy Requirements of 3-8 Year Olds in Early Child Care

The study team estimated the mean usual total energy intake for 3-8 year olds and compared energy intakes to the Estimated Energy Requirements (EER) at each potential physical activity level: sedentary, low active, active, and very active. The mean usual 24-hour energy intakes for child care days were lower (1575 kcal) than on non-child care days (1718 kcal). On child care days, mean usual intakes fell between the low active and active EER categories. On non-child care days, mean usual intakes fell between the active and very active EER categories.

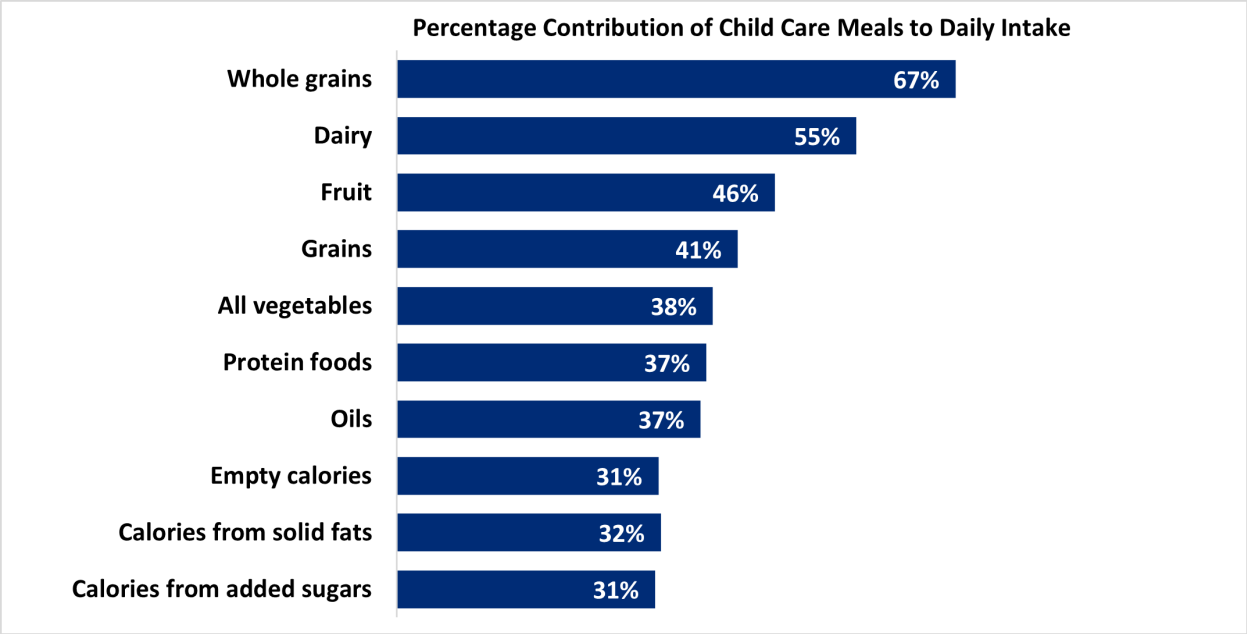
SNACS did not directly measure child activity levels. Previous estimates provided in IOM recommendations[61] suggest that on average 2-4 year old children in the US are low active and 5-8 year old children are active. Assuming a low active level for the 3-8 year old age group in this analysis, approximately 58 percent of children's intakes exceeded EERs on child care days, and 98 percent exceeded EERs on non-child care days. Alternatively, assuming an active level, approximately 40 percent of children's intakes on child care days and 70 percent of intakes on non-child care days exceeded EERs. In other words, at assumed activity levels consistent with IOM recommendations, a sizable proportion of energy intakes were higher than required, especially on non-child care days.

Child Care Meals' Contribution to 24-Hour Intakes of 3-5 Year Olds in Early Child Care

SNACS used the methods described on pages 55-56 to determine how child care meals contribute to children's 24-hour intakes of USDA Food Pattern Food Groups and nutrients.

- As shown in Exhibit 27, early child care meals were the principal source of the whole grains and dairy in children's 24-hour intake, contributing 67 percent of whole grains and 55 percent of dairy consumed on a child care day.
- Child care meals provided between 31 and 46 percent of the recommended daily amount of all the other Food Pattern Food Groups consumed by children on a child care day.
- Children consumed less than one-third (31 percent) of their intake of empty calories, including calories from solid fats and calories from added sugars, while in child care.
- Child care meals provided 36 to nearly 39 percent of the daily intake of most vegetable subgroups and slightly more (42 percent) for dark green vegetables.

Exhibit 27. Contribution of Early Child Care Meals to 3-5 Year Old Children's Daily Intake of USDA Food Pattern Food Groups



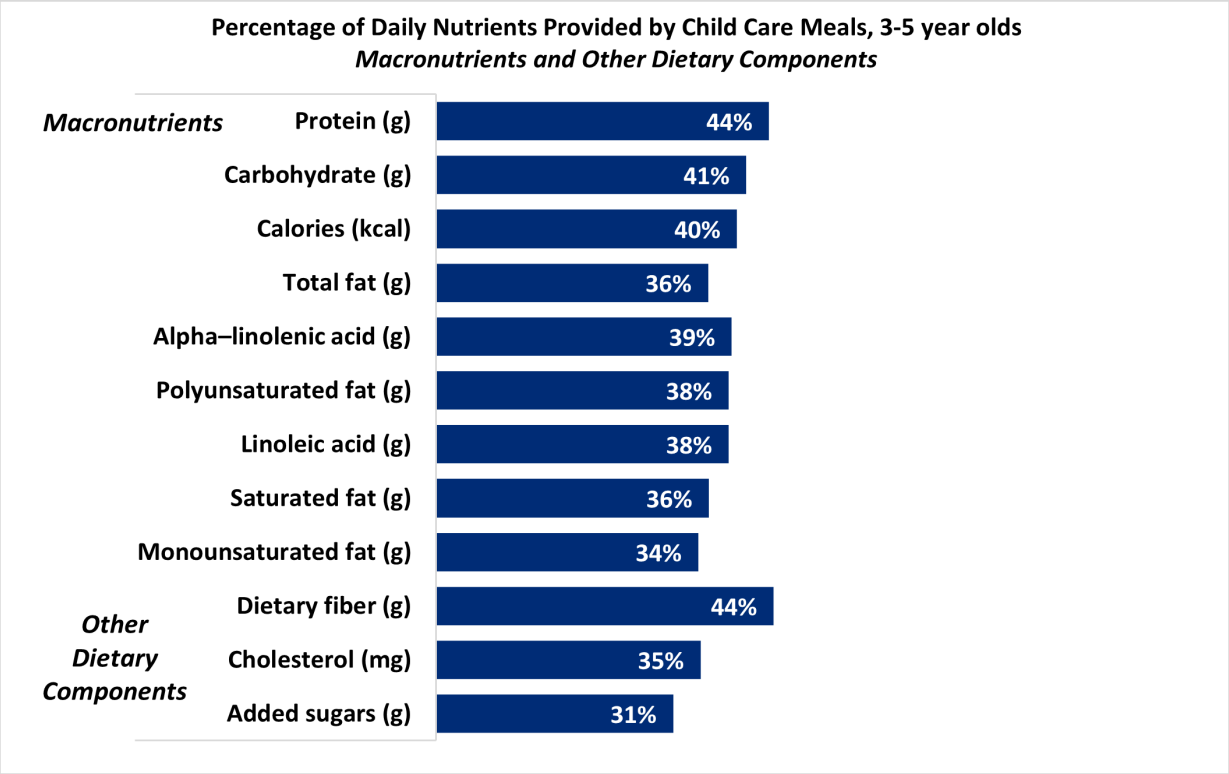
Source: Study of Nutrition and Activity in Child Care Settings (SNACS), Meal Observation Form and Child Care Day Diaries. See Tables G.1a.4 and G.1a.6 in Appendix G.

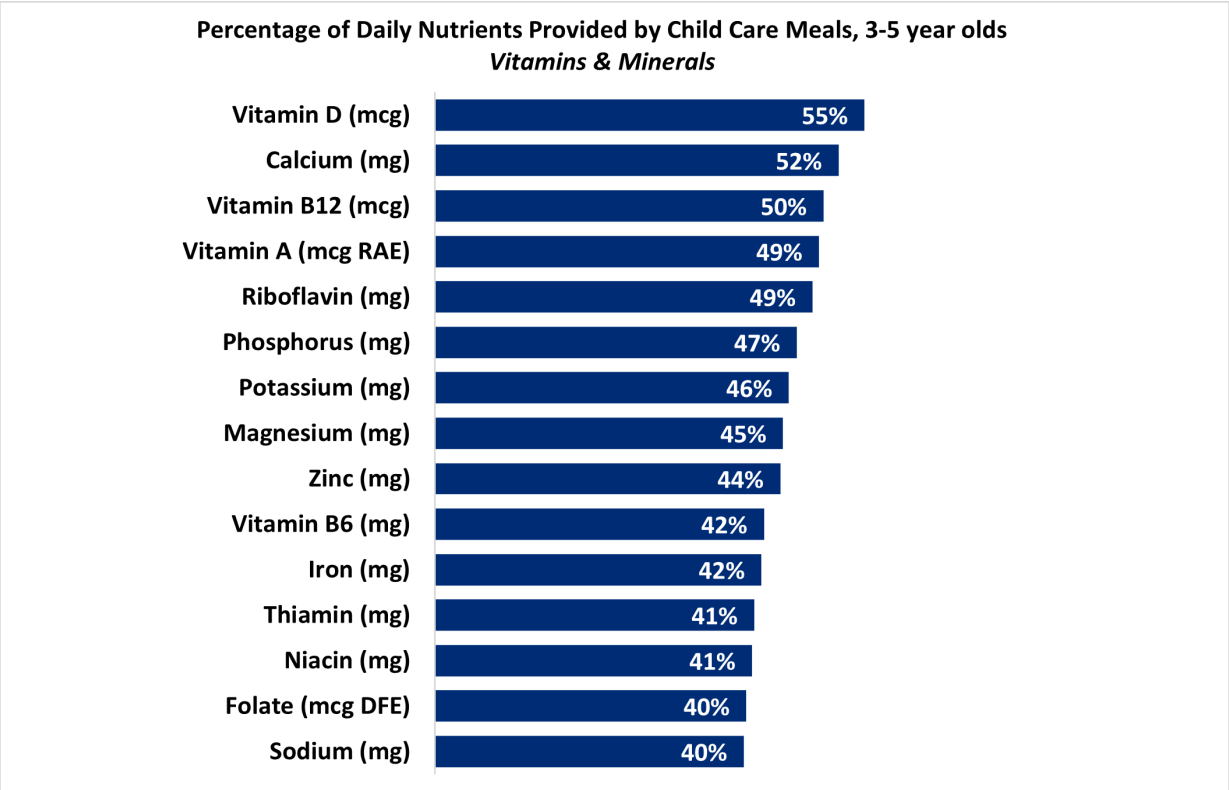
CACFP meals contributed similarly substantial percentages of nutrients to children's 24-hour intakes, between 31 and 55 percent for most nutrients, dietary fiber, and cholesterol (Exhibit 28).

- Children consumed approximately 40 percent of their daily calories and macronutrients while in child care.
- For most vitamins and minerals, child care meals contributed 40 percent or more of the daily intake.
- Child care meals contributed nearly 50 percent or more of children's daily intakes for vitamin A and calcium, compared to 40 percent of daily calorie intake. This implies that CACFP meals were relatively dense in these particular nutrients as compared to other calorie sources in child diets.
- The prevalence of inadequate vitamin D intake was high among 4-8 year olds (see pages 58-61). Child care meals contributed 55 percent of vitamin D to children's daily intake, suggesting that CACFP meals may be particularly crucial for vitamin D intakes among this age group.

Meals and snacks served in CACFP early child care programs contributed about one-third to one-half of children's intakes of most USDA Food Pattern Food Groups and nutrients. These contributions reflected children's consumption while in child care—typically programs served two meals and one snack—and the alignment of CACFP meals and snacks with the DGAs.

Exhibit 28. Contribution of Early Child Care Meals to 3-5 Year Old Children's Daily Nutrient Intakes





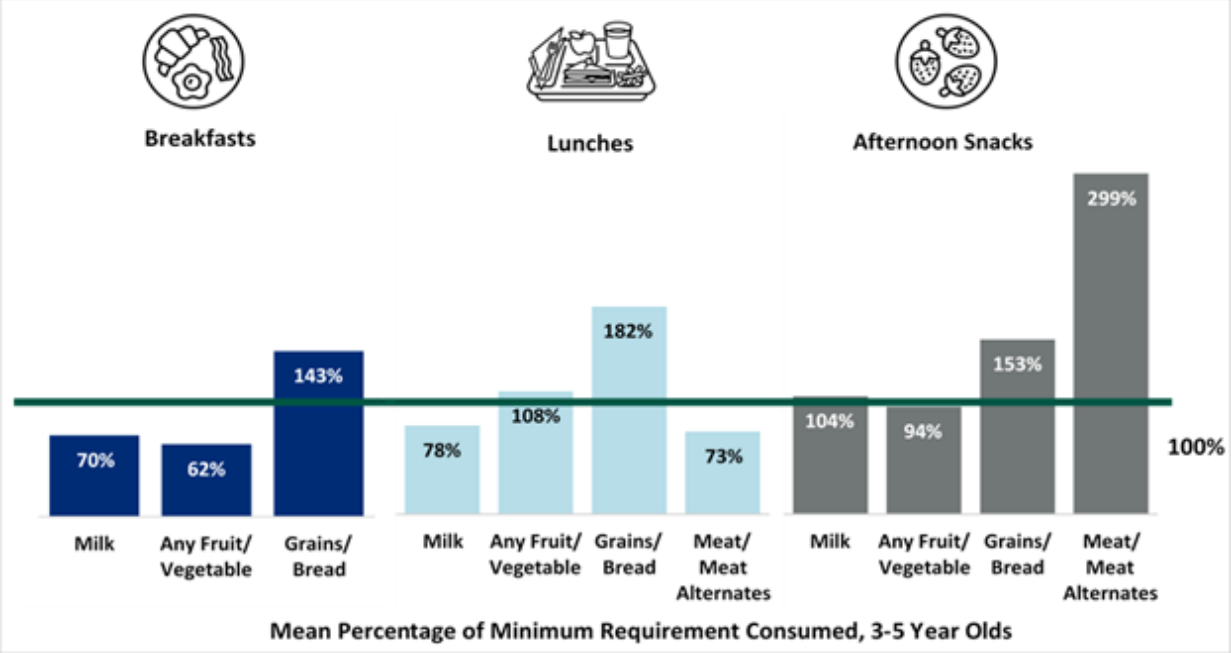
Source: Study of Nutrition and Activity in Child Care Settings (SNACS), Meal Observation Form and Child Care Day Diaries. See Table G.1d.1, Panel II and Table G.1d.3, Panel II in Appendix G.

Mean Percentage of Minimum CACFP Meal Pattern Requirements Consumed by 3-5 Year Olds in Early Child Care at Breakfast, Lunch, and Afternoon Snack, by Component

Exhibit 29 shows the mean percentage of the minimum portion requirement consumed by 3-5 year-olds for the required meal components (when served) for CACFP breakfasts, lunches, and afternoon snacks. The results indicate that across breakfast, lunch, and snack, children consumed 62 percent or more of the amount CACFP providers must offer of each component.

- At breakfast, lunch, and snack, children consumed approximately 1.5 times the required serving of grains/bread as under the CACFP meal pattern (½ slice of bread or equivalent).
- Consumption of fruits and vegetables was slightly greater than the required serving amount at lunch but fell slightly below at snack and further below at breakfast.
- On average, children consumed slightly over the required serving amount of ½ cup of milk at afternoon snacks, but they consumed 70 and 78 percent of the required serving amount of ¾ cup at breakfast and lunch, respectively.
- Children consumed 73 percent of the 1.5-ounce amount of meat/meat alternates required to be served at lunch, but for afternoon snacks, they consumed about three times the portion required to be served at snacks (0.5 ounce equivalents). For context, the snack portion for meat/meat alternates would easily be exceeded by an egg, a slice of deli meat, or two tablespoons of peanut butter.[62]

Exhibit 29. Mean Percentage of Minimum CACFP Meal Pattern Requirements Consumed by 3-5 Year Old Children at Breakfast, Lunch, and Afternoon Snack, by Component



Source: Study of Nutrition and Activity in Child Care Settings (SNACS), Meal Observation Form. See Table G.1b.1, Table G.1b.2, and Table G.1b.6 in Appendix G.

Plate Waste

Plate waste is the percentage of food served to or taken by children during a meal that is not eaten. Some plate waste is anticipated, especially among young children as they develop both feeding skills and taste preferences.

Children are often served an initial amount of food and are served or take (family style) additional amounts throughout the meal service. Therefore, the analysis presented here includes all foods served to or taken by the child as part of CACFP meals that day.

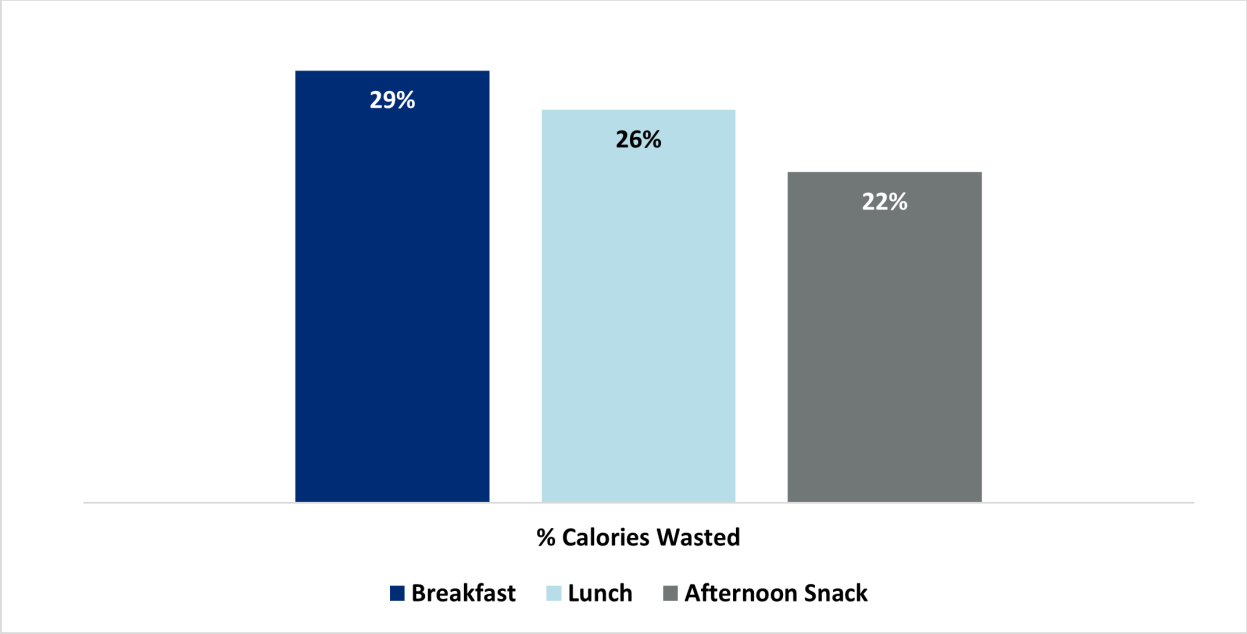
The observed amount wasted by individual children was divided by the observed amount served, resulting in the percentage wasted for each meal.

Results here focus on breakfast, lunch, and afternoon snack for 3-5 year olds. As there were few significant differences by program type, none are reported in this Summary. The full set of plate waste findings can be found in Appendix G.

Percentage of Calories Wasted in Early Child Care among 3-5 Year Olds at Breakfast, Lunch, and Afternoon Snack

- Mean caloric waste was slightly lower at lunch than at breakfast (26 percent and 29 percent wasted, respectively) and even lower at afternoon snack (22 percent wasted), though differences across meals were not tested for statistical significance (Exhibit 30).
- The results for lunch and breakfast waste were both similar to the 26 percent of calories wasted in NSLP lunches and 29 percent of calories wasted in SBP breakfasts in elementary schools reported in the School Nutrition and Meal Cost Study.[63]
- In general, nutrient waste was similar to caloric waste. The notable exception was dietary fiber, which had somewhat higher levels of waste at lunch and afternoon snack but was in line with caloric waste at breakfast (see Tables G.2a.19, 21, and 22 in Appendix G).

Exhibit 30. Percentage of Calories Wasted in Early Child Care Programs among 3-5 Year Olds at Breakfast, Lunch, and Afternoon Snack

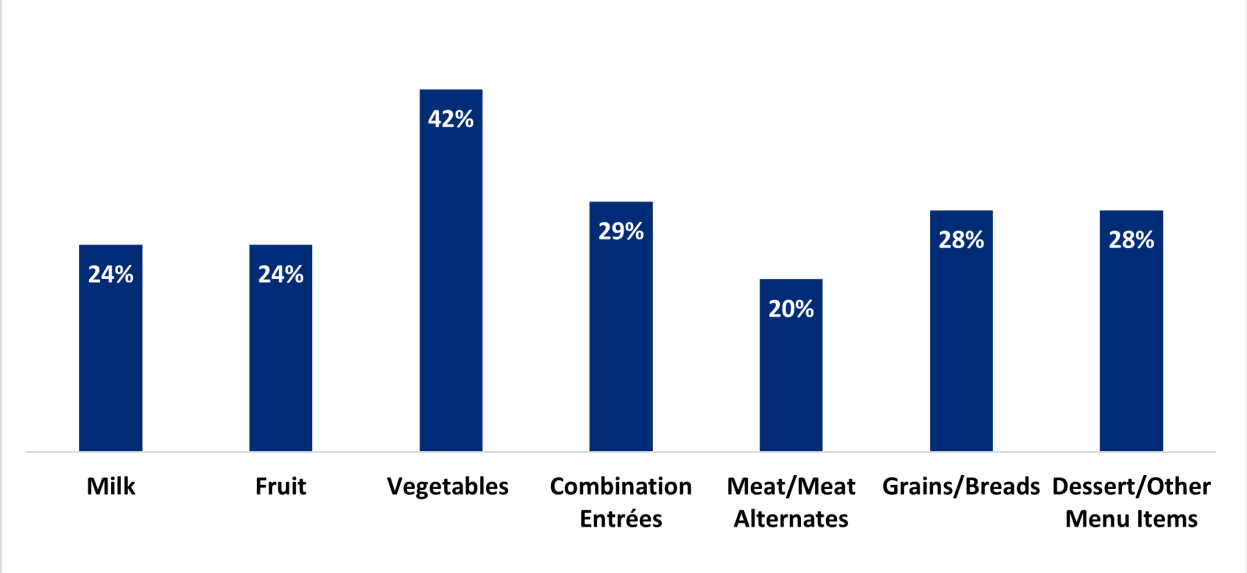


Source: Study of Nutrition and Activity in Child Care Settings (SNACS), Meal Observation Form, Winter through Summer, 2017. See Tables G.2a.19, G.2a.21, and G.2a.22 in Appendix G.

Waste at Lunch

- The most wasted foods were vegetables. The most wasted vegetables included cooked carrots, raw carrots, and string beans.
- Combination entrées were the next most wasted type of food, with burritos and noodles with meat as the most wasted combination entrées.
- Among grains/bread, the greatest waste was for rice, and breads, rolls, and other plain breads.
- The next most commonly wasted food group was dessert/other menu items, which consisted almost entirely of water.
- Almost a quarter of fruit was wasted, of which the most wasted fruits were applesauce, mango, and apple.
- Slightly less than a quarter of milk was wasted, and the most wasted milks were whole and skim.
- Meat/meat alternates were the least wasted foods. The most wasted meat/meat alternates were breaded and fried fish and shellfish, and beef and pork with sauce.
- In general, the least commonly wasted foods within each food classification tended to be among the least nutritious options. For example, the least commonly wasted meat/meat alternates were sausage and breaded chicken or turkey or nuggets, and the least wasted combination entrées were corndogs.

Exhibit 31. Percentage of Observed Foods Wasted on 3-5 Year Old Children's Plates at Early Child Care Program Lunch



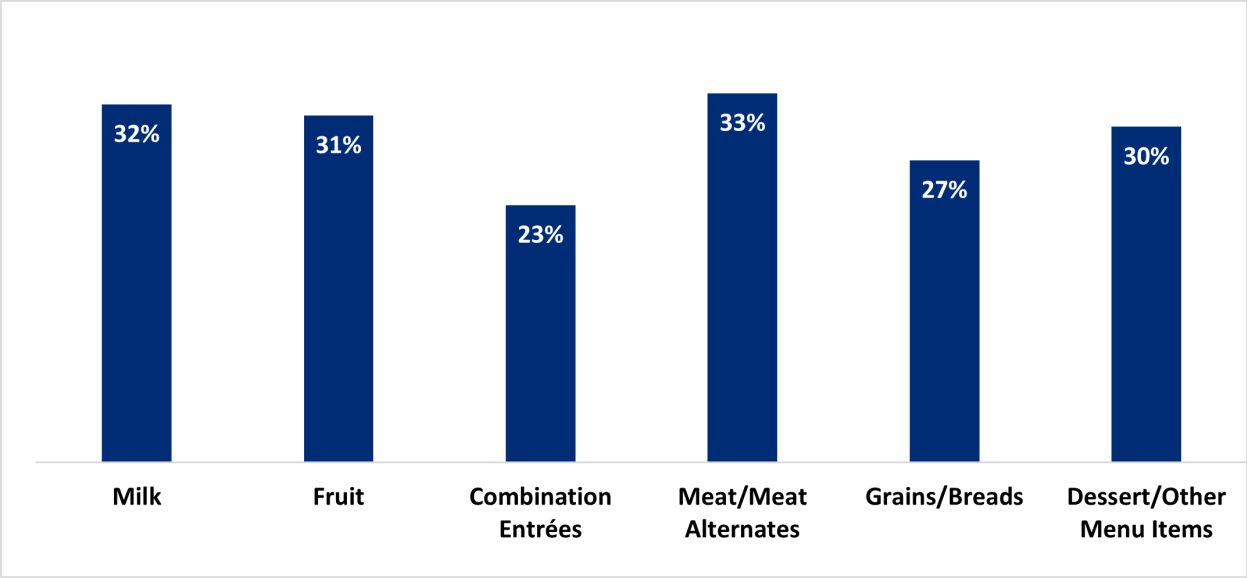
Source: Study of Nutrition and Activity in Child Care Settings (SNACS), Meal Observation Form, Winter through Summer, 2017. See Table G.2a.15 in Appendix G. Note: Dessert/other menu items consists mainly of water.

Waste at Breakfast

Types of specific foods wasted at breakfast were different from those most wasted at lunch (see Exhibit 32). Waste at breakfast was similar across food groups, ranging from 23 to 33 percent, with lower waste for combination entrées than for other food groups.

- Meat/meat alternates were the most commonly wasted food group, of which other protein (such as cheese, nuts, nut butters, seeds, or mixtures) and chicken and turkey were the most wasted types.
- In the milk category, whole and skim milks were wasted the most.
- The most commonly wasted types of fruit were fresh pears and cantaloupe.
- The most commonly offered and wasted dessert/other menu item was water.
- Among the grains/bread food group, hot cereal and breads, rolls, bagels, and other plain breads were the most commonly wasted types of food.
- The least commonly wasted food group was combination entrées, in which the most wasted foods were peanut butter sandwiches and sandwiches with only cheese.

Exhibit 32. Percentage of Observed Foods Wasted on 3-5 Year Old Children's Plates at Early Child Care Program Breakfast



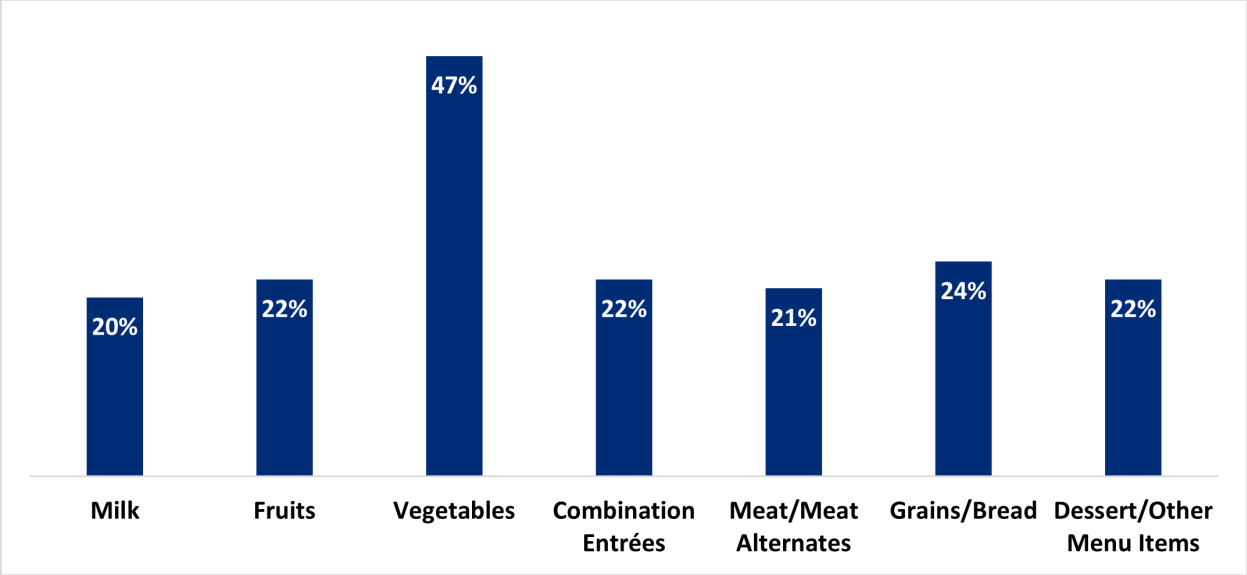
Source: Study of Nutrition and Activity in Child Care Settings (SNACS), Meal Observation Form, Winter through Summer, 2017. See Table G.2a.13 in Appendix G. Note: Dessert/Other menu items consists mainly of water.

Waste at Afternoon Snack

Food waste at afternoon snack was consistent across most food groups, with about a fifth to a quarter of most food groups going to waste. The notable exception was vegetables, which were wasted most often (see Exhibit 33).

- The most commonly wasted vegetables were raw carrots, and celery.
- Among breads and grains, the most wasted foods were breads, rolls, bagels, and other plain breads; and muffins and sweet/quick breads.
- The most commonly wasted combination entrées were peanut butter sandwiches.
- Among dessert/other menu items, the most commonly wasted food was water. This category also included cake and cookies.
- The most wasted type of fruit was canned fruit, which included canned pear, pineapple, and fruit cocktail. Within the meat/meat alternates food group, the most wasted foods were eggs and nuts, nut butters, and seeds.
- Milk was the food group least often wasted, and the most wasted type of milk was whole milk.

Exhibit 33. Percentage of Observed Foods Wasted on 3-5 Year Old Children's Plates at Early Child Care Program Afternoon Snack



Source: Study of Nutrition and Activity in Child Care Settings (SNACS), Meal Observation Form, Winter through Summer, 2017. See Table G.2a.16 in Appendix G.

MEALS SERVED, COST, AND DIETARY INTAKES IN BEFORE AND AFTER SCHOOL PROGRAMS

SNACS also provides findings about before and after school programs participating in CACFP. Whereas early child care programs are the primary source of USDA-subsidized meals and snacks for young children, before and after school programs for older children often supplement the meals provided by the NSLP and the SBP during a typical school day. Thus, the foods offered and their role in children's diets differ.

CACFP provides reimbursement for foods served in two types of participating before and after school programs: outside-of-school hours programs and at-risk afterschool programs. Both types may operate independently or under a sponsoring organization. Program operators might be private non-profit organizations, public school districts, other public agencies, or eligible for-profit day care centers. At-risk afterschool programs can operate after school and on weekends, and their offerings on school days may include one snack and one supper. Outside-of-school hours programs can operate before and after school and therefore can also serve breakfast, for a total of two meals and one snack or two snacks and one meal. Outside-of-school hours programs can also operate on weekends and during school vacation periods. In school settings, at-risk afterschool and outside-of-school hours programs are alternatives to providing afterschool snacks through the NSLP.

At-risk afterschool programs have community income eligibility requirements, whereas outside-of-school hours programs do not. At-risk afterschool programs must be located in areas where at least 50 percent of the area's children are eligible for free or reduced-price meals and receive the reimbursement rate for free meals. By contrast, outside-of-school hours programs are reimbursed based on the eligibility of the individual children enrolled. As a result, at-risk afterschool programs have a higher average reimbursement rate for a meal or snack than most outside-of-school hours programs do.

Though the at-risk afterschool and outside-of-school hours programs are structured differently, the ages of children served overlap. Both types of programs primarily serve 6-12 year olds, but some serve younger children, and some at-risk afterschool programs serve children age 13 years or older.

This summary highlights findings for 6-12 year olds, the most prevalent age group among the at-risk afterschool and outside-of-school hours programs in SNACS. Information on the characteristics of before and after school programs is provided on pages 10-11. Detailed findings supporting the summary in this section can be found in Appendices B through H. The data sources and methods for the analysis of before and after school programs were the same as for early child care programs, as discussed in in prior sections.

Most Common Meals Served to 6-12 Year Olds in Before and After School Programs

Among the 283 before and after school programs in the menu survey sample that served meals and snacks to 6-12 year olds, the two most commonly served CACFP meals and snacks were afternoon snack (47 percent of programs) and supper (67 percent of programs). Smaller percentages of programs served breakfast (18 percent), and evening snack (six percent) (see Exhibit A.8-27). Therefore, this section highlights the SNACS findings on afternoon snacks and suppers.

Afternoon Snacks Served to 6-12 Year Olds in Before and After School Programs

Percentage of Programs Serving CACFP Meal Components in Afternoon Snacks

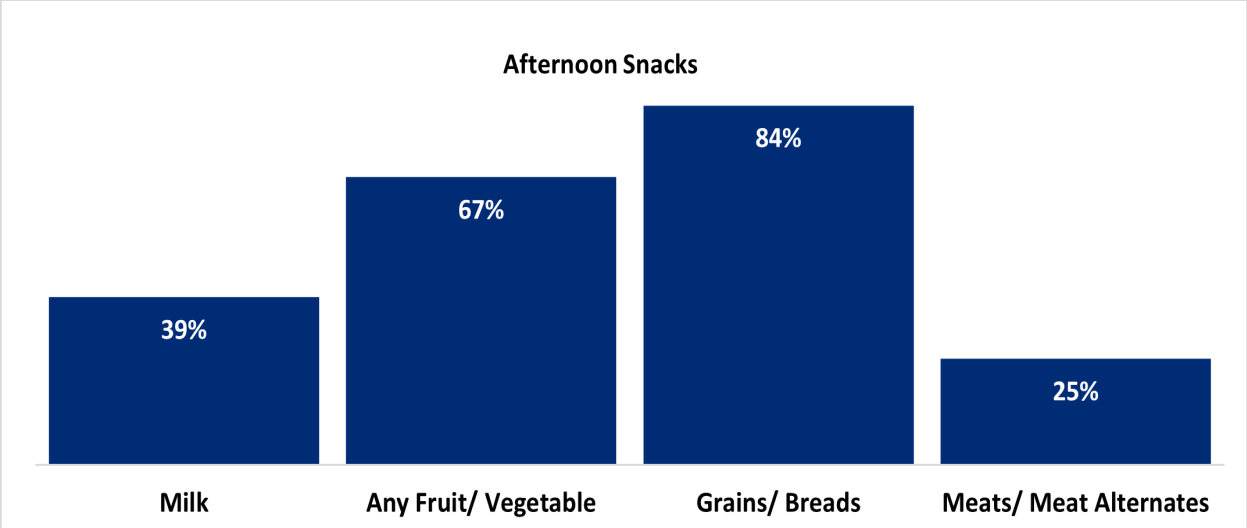
CACFP snacks are not expected to meet as many of children's nutritional requirements as breakfasts, lunches, and suppers since they only need to include two of the four meal pattern components

- The majority of afternoon snacks (97 percent) served across both program types (at-risk afterschool and outside-of-school hours) met all CACFP meal component requirements.

The percentage of all programs offering meal components in afternoon snacks varied across components (Exhibit 34).

- Programs most often served grains/bread (84 percent).
- While two-thirds served a fruit or vegetable, the majority of these (57 percent of the total) served only fruit.
- Fewer than 40 percent of afternoon snacks included milk.

Exhibit 34. Mean Percentage of Afternoon Snacks in Before and After School Programs Containing Component for 6-12 Year Olds



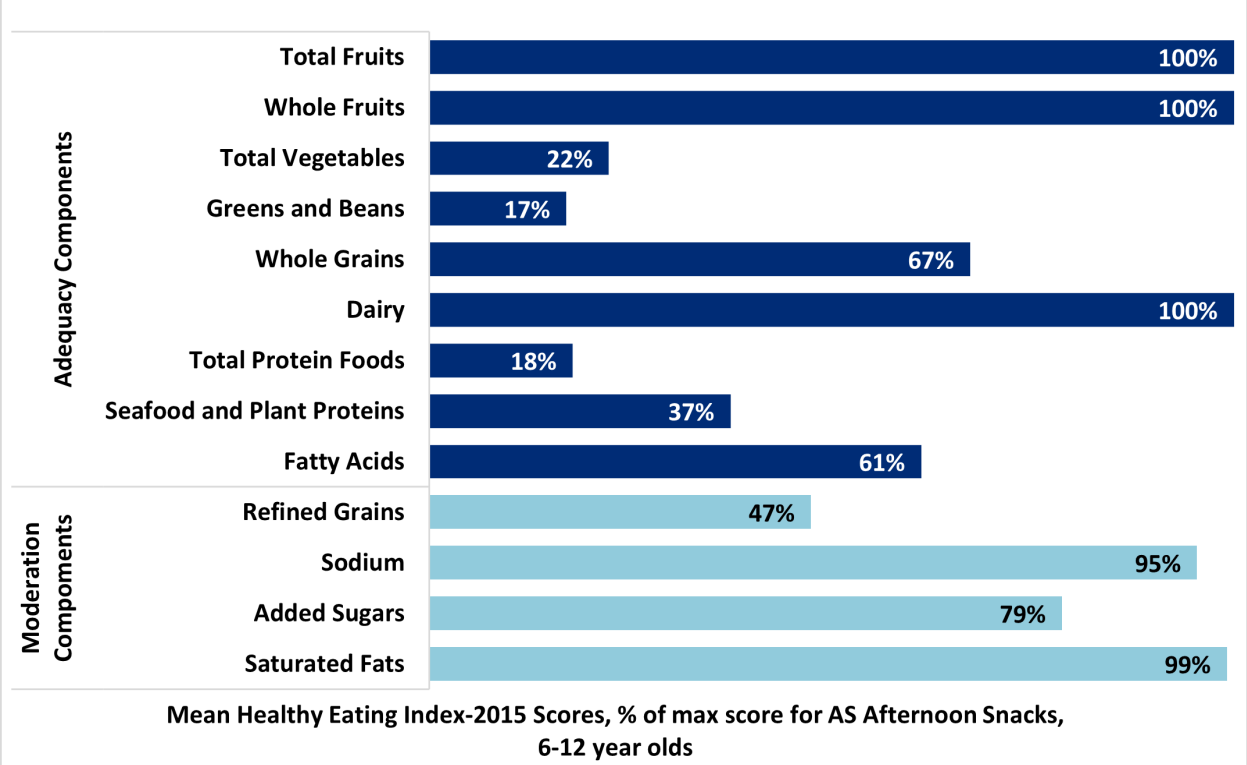
Source: Study of Nutrition and Activity in Child Care Settings (SNACS), Menu Survey, Winter through Summer, 2017. See Table D.2.4 in Appendix D.

HEI Scores and Mean Nutrient Content in Afternoon Snacks

HEI scores presented in this section represent the quality of all meals served in before and after school programs in the aggregate rather than averages of HEI scores for individual programs.

- The overall HEI score for afternoon snacks served to 6-12 year olds in before and after school programs was 70 out of a maximum of 100.
- Afternoon snacks received maximum scores for three of the nine adequacy components, including total fruit, whole fruit, and dairy, and two-thirds of the maximum score for whole grains, indicating high concentrations of these foods in before and after school program snacks and alignment with DGA recommendations (Exhibit 35).
- Near maximum scores for the moderation components for sodium and saturated fats indicate that the amounts served were limited and closely aligned with DGA recommendations.
- The mean amount of calories for afternoon snacks served to 6-12 year olds was 271, with 25 percent of calories from total fat, eight percent of calories from saturated fat, 66 percent from carbohydrates, and 12 percent of calories from protein. (Table D.1.7, Appendix D)

Exhibit 35. HEI Scores for Afternoon Snacks Served to 6-12 Year Olds in Before and After School Programs



Source: Study of Nutrition and Activity in Child Care Settings (SNACS), Menu Survey, Winter through Summer, 2017. See Table D.2.29 in Appendix D.

Suppers Served to 6-12 Year Olds in Before and After School Programs

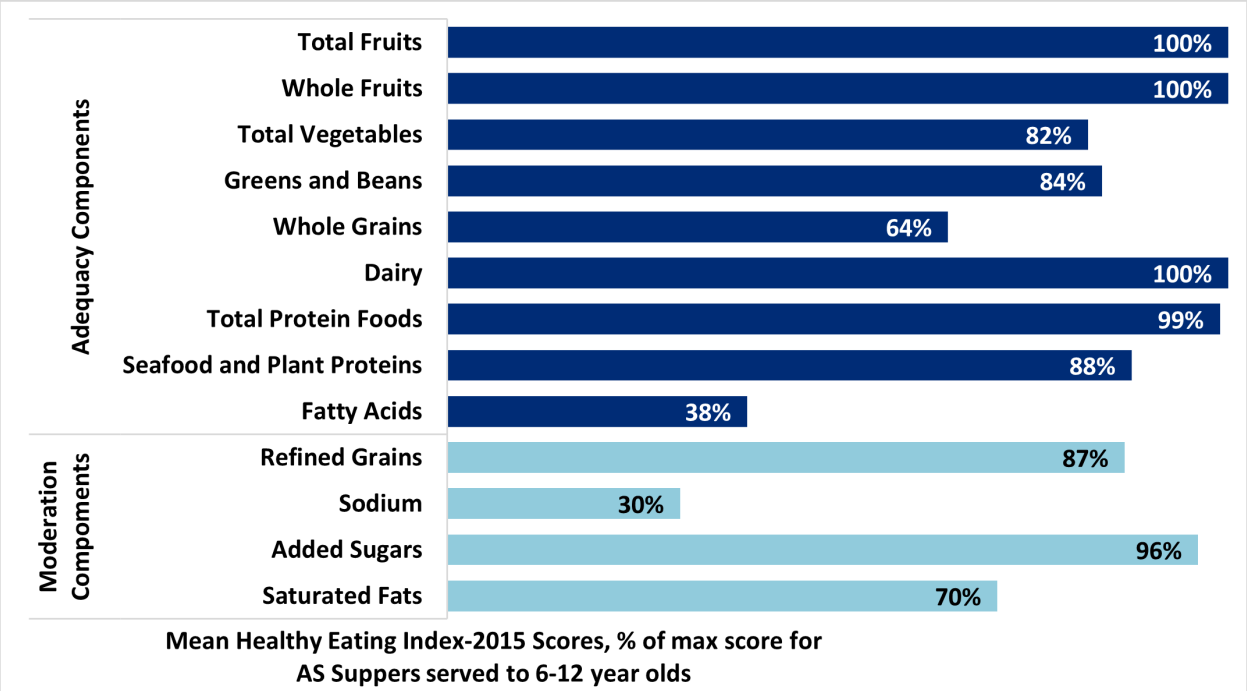
Percentage of Programs Serving CACFP Meal Components in Suppers

- The majority (91 percent) of suppers served to 6-12 year olds across both program types met all component requirements.
- Suppers are required by the CACFP meal pattern to include all four components. A large percentage of suppers (82 percent) included both fruit and vegetables to meet the fruit or vegetables requirement in place at the time of data collection.

HEI Scores and Mean Nutrient Content in Suppers

- The overall HEI score for suppers in before and after school programs served to 6-12 year olds was 76 out of a maximum of 100.
- Suppers received maximum scores for three of the nine adequacy components, including total fruit, whole fruit, and dairy, indicating high concentrations of these foods in before and after school program suppers and alignment with DGA recommendations (Exhibit 36).
- The mean amount of calories was 640, with 30 percent of calories from total fat ten percent of calories from saturated fat, 54 percent of calories from carbohydrates, and 18 percent of calories from protein (Table D.1.4, Appendix D).

Exhibit 36. HEI Scores for Suppers Served to 6-12 Year Olds in Before and After School Programs



Source: Study of Nutrition and Activity in Child Care Settings (SNACS), Menu Survey, Winter through Summer, 2017. See Table D.2.26 in Appendix D.

Foods Served Most Frequently in Suppers

- Milk, most commonly 1% unflavored, was served in almost all (99 percent) suppers for 6-12 year olds. Fruit was served in 94 percent, while vegetables were included in 80 percent of suppers (Table D.3.11, Appendix D).
- The majority of suppers included a combination entrée. Suppers were less likely to include meat/meat alternates and grains/bread that were not part of a combination entrée (Table D.3.11, Appendix D).

Demographic Characteristics of 6-12 Year Olds in Before and After School Programs

Through phone interviews, parents provided information on household characteristics, including race/ethnicity, household poverty level, participation in assistance programs, and food security. In addition, the study team measured the height and weight of assenting children to assess children's weight status. More details regarding the methods are found in Appendix A and more detailed results in Appendix F.

Race/Ethnicity

- Slightly less than half of the children in before and after school programs were identified as Hispanic (46 percent), followed by Black non-Hispanic (24 percent), White non-Hispanic (18 percent), and of other race/ethnicity (nine percent).

Household Poverty Level

- The largest percentage of children lived in households at or below 185 percent of the FPL (48 percent), while 32 percent lived above 185 percent of the FPL. Twenty percent of parents in the parent survey sample refused or did not know the answers to the questions required to assess household poverty.
- The percentage of children living at or below 185 percent of the FPL was higher in at-risk afterschool programs compared to outside-of-school hours (49 versus 36 percent, respectively). This result was expected given that at-risk afterschool programs must be located in areas where 50 percent or more of school children are eligible for free or reduced-price meals (at or below 185 percent of the FPL).

Assistance Program Participation

- When asked about participation in assistance programs, households most frequently reported participation in Children's Health Insurance program (CHIP) (43 percent), followed by 40 percent participation in the Supplemental Nutrition Assistance Program (SNAP), and 37 percent participation in Medicaid. Seventeen percent of households received benefits from the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC).
- In general, a higher percentage of households with children in at-risk afterschool programs participated in medical and food assistance programs than did households in outside-of-school hours programs (See Table F.7 in Appendix F).

Food Security

- Most (68 percent) of the children in before and after school programs lived in food secure households as defined on page 52. On the other hand, 29 percent lived in households at risk for food insecurity.

Percentage Overweight and Obese

- Overall, 23 percent of children in before and after school programs had height and weight measurements indicating obesity, 17 percent had measurements indicating overweight (not including obese), and one percent indicating underweight. In total, 59 percent of children were at a healthy weight. There were no differences in weight status between at-risk

afterschool and outside-of-school hours programs.

- The percentage of children with obesity was slightly higher than the national mean of 18 percent among 6-11 year olds as found by 2015-2016 NHANES data.

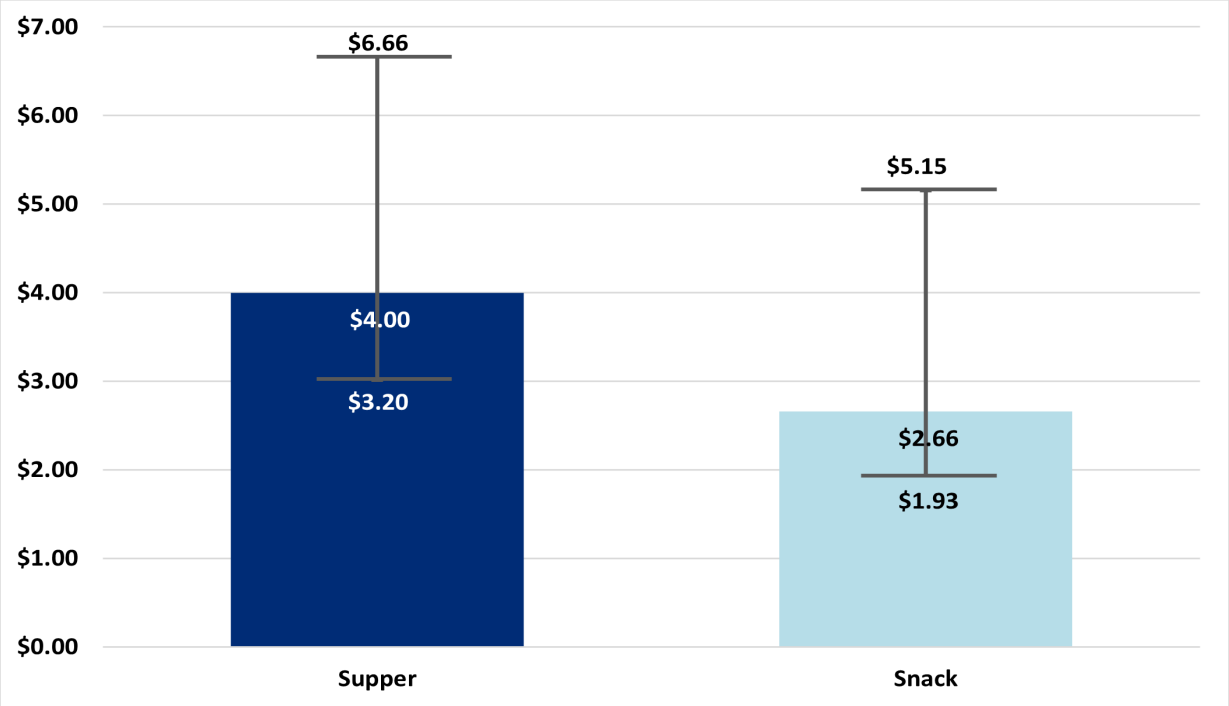
Cost of CACFP Snacks and Suppers in Before and After School Programs

Most findings about costs and revenues of CACFP meals in before and after school programs were similar to the findings for early child care programs, including median total cost, composition of total costs, sources of revenue, and the relationship of USDA subsidies to meal costs.

Total Cost

- The median total (food and labor) costs per meal in before and after school programs were $2.66 per snack and $4.00 per supper (Exhibit 37). These costs were similar to the median total costs per meal in early child care programs ($2.94 per snack and $4.85 per lunch).
- The total (food and labor) cost per snack ranged from $1.93 at the 25th percentile to $5.15 at the 75th percentile, while the total cost per supper ranged from $3.20 at the 25th percentile to $6.66 at the 75th percentile.

Exhibit 37. Median Total Cost per Supper and Snack in Before and After School Programs

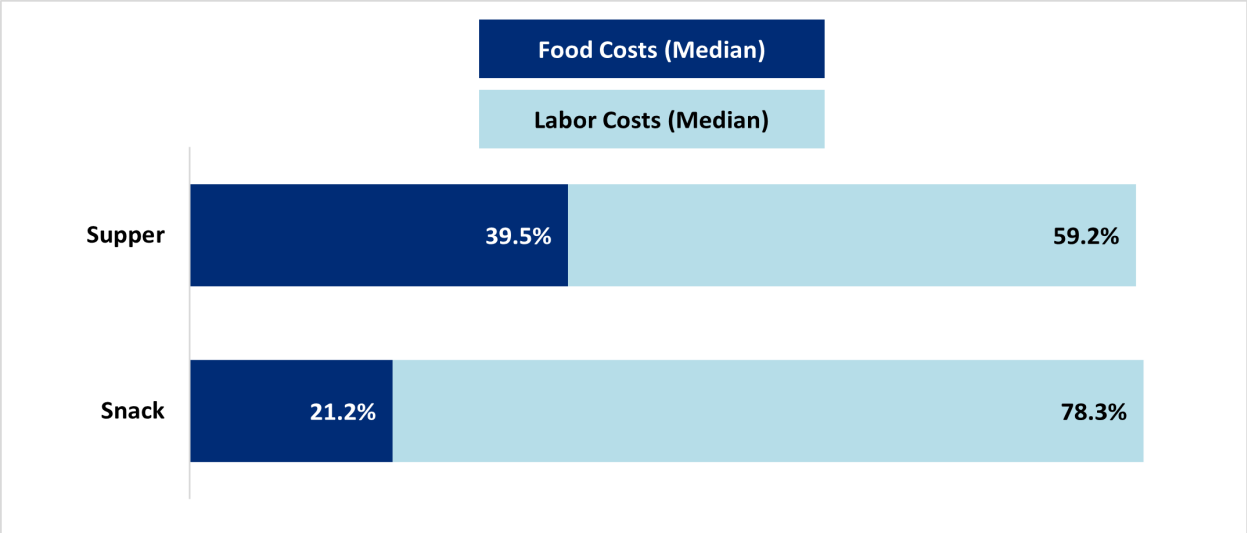


Whiskers represent range from 25th to 75th percentiles.
Source: Study of Nutrition and Activity in Child Care Settings (SNACS), Menu Survey, Center Director Cost Interview, Center Foodservice Cost Interview, Sponsor Cost Interview, Meal and Snack Counts Booklet, Self-Administered Cost Questionnaire, Winter through Summer, 2017. See Tables E.2, E.14, and E.15 in Appendix E.

Composition of Cost (Food and Labor)

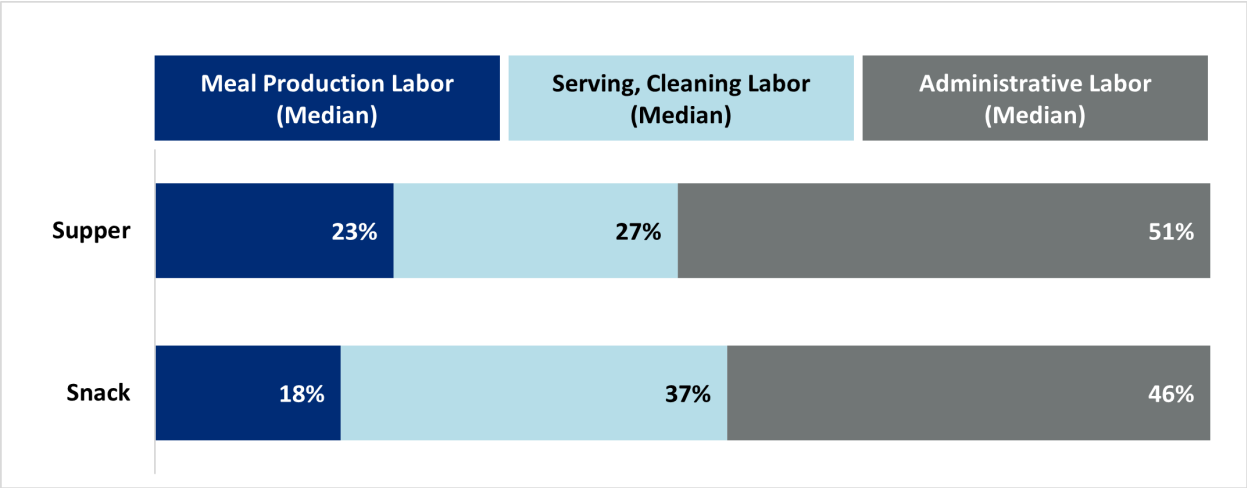
- Median labor costs were 59 percent of the cost per supper and 78 percent of the cost per snack (Exhibit 38).
- Administrative labor was the largest component of labor costs, unlike early child care programs in which serving and cleaning costs were largest (Exhibit 39).
  - On average, administrative labor costs were 51 percent of supper labor costs and 46 percent of snack labor costs.
  - Serving and cleaning labor was the second largest component, and meal production the smallest component.

Exhibit 38. Food and Labor Cost Percentages of Total Cost per Supper and Snack in Before and After School Programs



Source: Study of Nutrition and Activity in Child Care Settings (SNACS), Menu Survey, Center Director Cost Interview, Center Foodservice Cost Interview, Sponsor Cost Interview, Meal and Snack Counts Booklet, Self-Administered Cost Questionnaire, Winter through Summer, 2017. See Table E.5 in Appendix E.

Exhibit 39. Composition of Labor Cost per Supper and Snack in Before and After School Programs

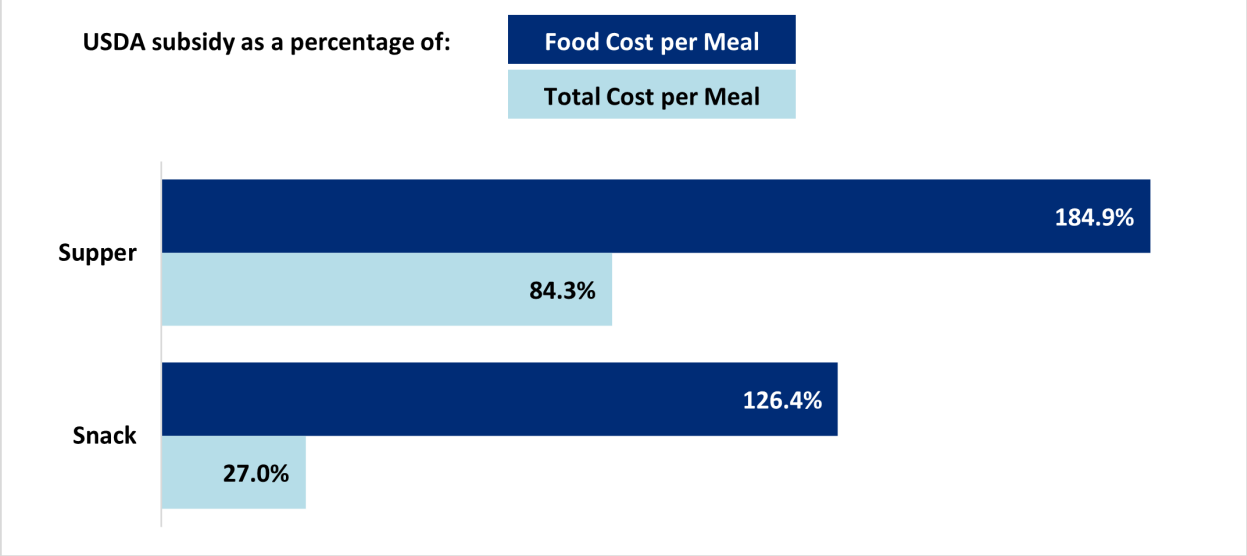


Source: Study of Nutrition and Activity in Child Care Settings (SNACS), Menu Survey, Center Director Cost Interview, Center Foodservice Cost Interview, Sponsor Cost Interview, Meal and Snack Counts Booklet, Self-Administered Cost Questionnaire, Winter through Summer, 2017. See Table E.7 in Appendix E.

Relationship of USDA Subsidies to Costs

- Before and after school programs, like early child care programs, relied almost entirely on USDA subsidies (including reimbursements and USDA donated food or credit in lieu of donated food) to fund CACFP meals and snacks.
- One-fifth of before and after school programs reported receiving USDA donated food, compared to only four percent of early child care programs. Nearly 46 percent of before and after school programs, but only eight percent of early child care programs, were operated by public schools or public school districts and therefore had access to USDA donated foods distributed for use in school meal programs.
- The relationship of USDA subsidies to meal costs among before and after school programs (Exhibit 40) was similar to that of early child care programs.
  - The USDA subsidy covered 185 percent of food costs for suppers and 126 percent for snacks, but less than the total costs of suppers (84 percent) and snacks (27 percent) inclusive of labor costs.

Exhibit 40. USDA Subsidy as a Percentage of Food Costs and Total Costs of Supper and Snacks in Before and After School Programs



Source: Study of Nutrition and Activity in Child Care Settings (SNACS), Menu Survey, Center Director Cost Interview, Center Foodservice Cost Interview, Sponsor Cost Interview, Meal and Snack Counts Booklet, Self-Administered Cost Questionnaire, Winter through Summer, 2017. See Table E.17 in Appendix E.

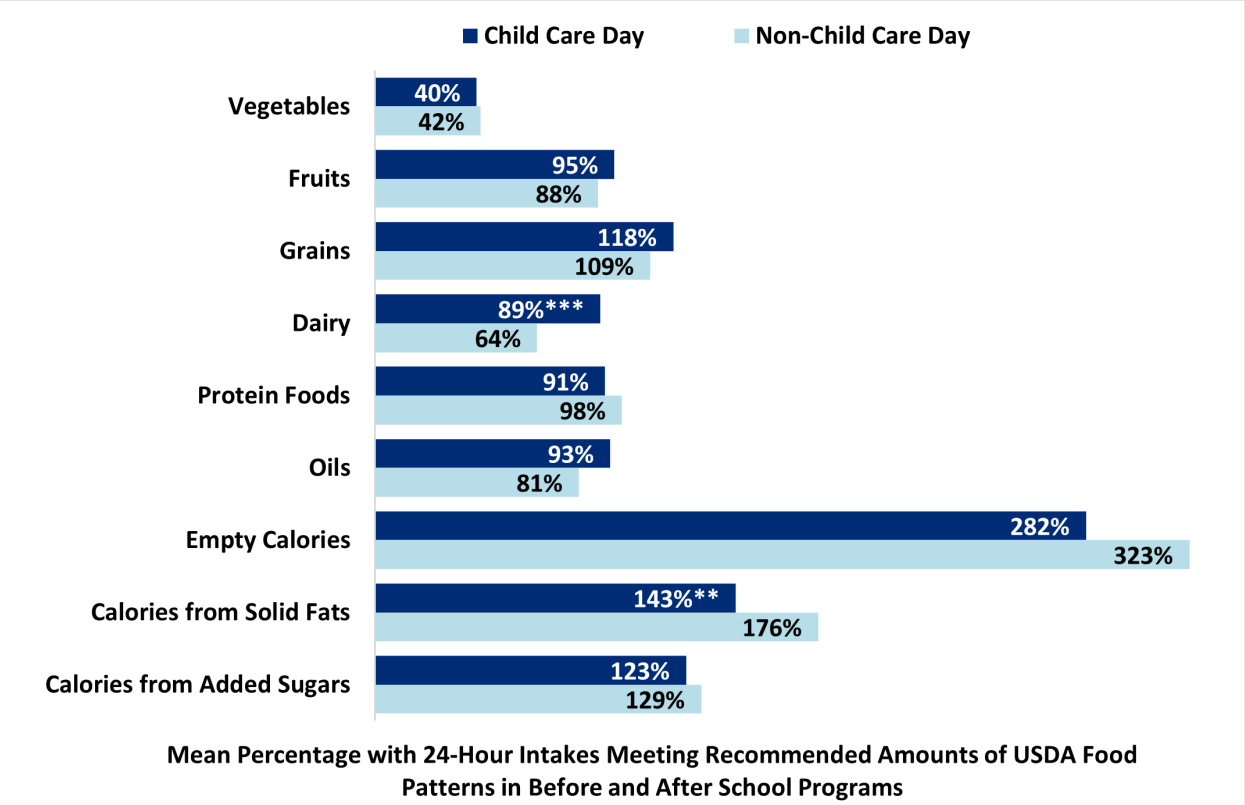
Dietary Intakes of Children in Before and After School Programs

Using the same methods as in the early care programs, intakes for children in before and after school programs were collected on a one child care day and one non-child care day. The age groups for these analyses varied as noted in this section. When interpreting these results, it is important to note that all child care days were school days when most children ate one or two school meals, while most non-child care days were weekend days.

Contribution of 24-Hour Child Intakes to Recommended Amounts of USDA Food Pattern Food Groups on a Child Care Day and Non-Child Care Day for 6-12 Year Olds in Before and After School Programs

- On both child care days and non-child care days, the average child in before and after school programs consumed more than the recommended amounts of grains and empty calories, near the recommended amounts for fruit, protein foods, and oils, but only 40 percent of the daily recommended amount of vegetables (Exhibit 41).
- Children in before and after school programs consumed significantly more whole grains and dairy and significantly fewer calories from solid fats on child care days than on non-child care days.

Exhibit 41. Mean Percentage Contribution of 24-Hour Child Intakes to Recommended Amounts of USDA Food Pattern Food Groups in Before and After School Programs, 6-12 Year Olds



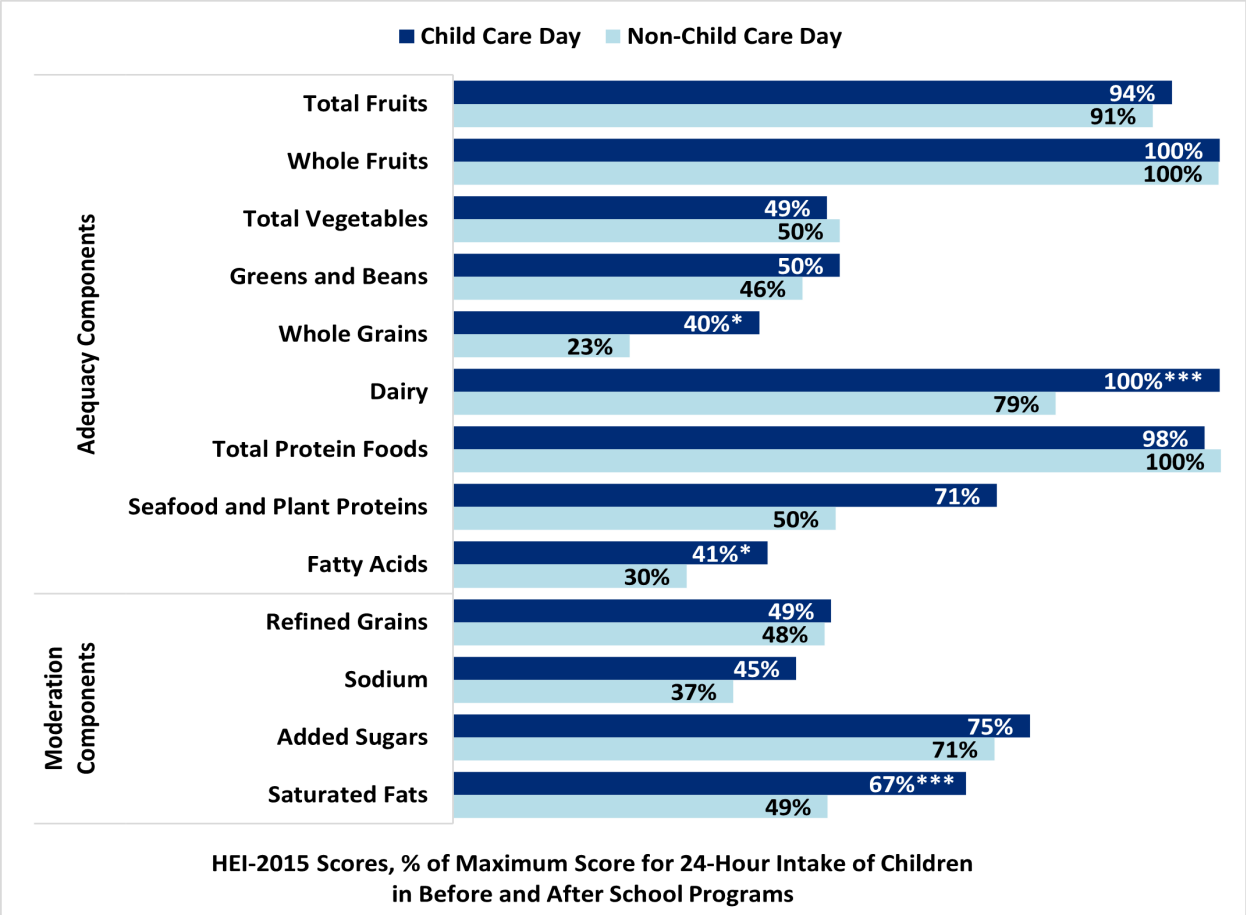
Source: Study of Nutrition and Activity in Child Care Settings (SNACS), Meal Observation Form, Child Care Day and Non-Child Care Day Diaries. Winter through Summer, 2017. See Table G.1a.10 in Appendix G. Note: Difference between intakes on the Child Care Day and Non-Child Care Day is significantly different from zero at the*** 0.001 level, ** 0.01 level, or * 0.05 level.

Dietary Quality on Child Care Day versus Non-Child Care Day: HEI and Adequacy Scores for 3-12 Year Olds in Before and After School Programs

While the age group for this analysis was 3-12 years, fewer than 5 percent were younger than 5 years old (See Appendix A, Exhibit A.8-25).

- Children had better overall diet quality on child care days than on non-child care days. The overall HEI score of 65 on child care days was significantly higher than the score of 55 on non-child care days for the entire sample of children (ages three through twelve) in before and after school programs.
- Among the adequacy components, children's intakes on both child care days and non-child care days were most aligned with the DGAs for total fruit, whole fruit, dairy, and total protein foods. Children's intakes of total vegetables, greens and beans, whole grains, and fatty acids were lower than the DGA recommendations. However, children had significantly higher fatty acids intakes on child care days than on non-child care days (Exhibit 42).
- Among the moderation components, children's intakes had their highest scores (that is, best alignment with the DGA) for added sugars. Scores for saturated fats were significantly higher on child care days than on non-child care days.

Exhibit 42. HEI-2015 Scores as a Percentage of the Maximum for 24-Hour Intake of 3-12 Year Olds in Before and After School Programs



Source: Study of Nutrition and Activity in Child Care Settings (SNACS), Meal Observation Form, Child Care Day and Non-Child Care Day Diaries. Winter through Summer, 2017. See Table G.1e.2 in Appendix G. Difference between intakes on the Child Care Day and Non-Child Care Day is significantly different from zero at the ***0.001 level, **0.01 level, or *0.05 level.

INFANT WELLNESS POLICIES AND PRACTICES, INFANT FEEDING, AND INFANTS' MILK CONSUMPTION

Early child care programs have a critical role in establishing healthy habits among infants. SNACS provides evidence regarding programs' policies, procedures, and practices regarding physical activity and sedentary time for infants and food served to infants, based on provider surveys. In addition, this section also presents results regarding infants' consumption of breastmilk and formula in early child care programs, based on reported feedings of individual infants on a selected day. Infant menu survey program-level results are nationally representative of CACFP early child care programs serving infants. Provider-level web survey results are nationally representative of CACFP early child care programs. At the infant level, results are based on data from child care centers as these data were not collected in other types of programs. The results from SNACS are some of the only national estimates available on infants attending these programs.

Infant Activity and Sedentary Policies

In the provider survey, program directors answered questions regarding infant wellness policies and practices. Of particular interest were practices regarding opportunities for physical activity, including tummy time, and by contrast, provider practices regarding infant sedentary time, including screen time and the use of equipment that limits infant mobility. This section presents data collected from child care centers, Head Start programs, and family day care homes.

Screen Time

The American Academy of Pediatrics (AAP) recommend avoiding digital media (including TV, video, DVD, and computer use) in the early child care setting for children younger than 18 months old.[64,65] All infants included in the analysis below fall under 12 months, an age for which no screen time is recommended.

Providers responded to questions regarding use of screens. Screen time was defined as time spent in front of a television, computer, video game, tablet, or smart phone, including any time spent on educational programing or videos.

- Most (79 percent) early child care programs offering full-day care reported no screen time for infants (Exhibit 43).
- Family day care homes reported more screen time for infants than child care centers or Head Start programs (Exhibit 43).

Use of Playpens

The AAP guidelines recommend that care providers provide infants with "a least restrictive environment," and the use of infant equipment such as swings and bouncy seats should be limited to short periods of time.[66] Programs answered questions regarding whether infants spent any time in this type of equipment when not sleeping.[67]

- 32 percent of early child care programs offering full-day care reported playpens as an area where infants may spend some time while not sleeping (Exhibit 43).
- Family day care homes reported using playpens significantly more than child care centers and Head Start programs (Exhibit 43). Head Start programs also used swings, bouncy seats, and stationary entertainers less often than child care centers.

Exhibit 43. Infant Screen Time and Sedentary Opportunities Reported in Early Child Care Programs Offering Full-Day Care

	Percentage of Early Child Care Programs			
	CC Centers	HS Programs	FDCHs	All Programs
Amount of screen time				
Daily, 2 hours or more per day	0.0	0.0	0.0	0.0
Daily, 1 to 2 hours per day	0.0	0.0	15.2	7.9
Daily, less than 1 hour per day	1.7	0.0†	12.5	7.2
Daily, less than 30 minutes per day	0.0	0.0	0.0	0.0
A few times a week	0.0	0.0	4.5	2.4
A few times a month	0.0	0.0	7.6	3.9
Once a month	0.0	0.0	0.0	0.0
Never	98.3	100.0††	60.2##	78.5
Places infants may spend some time when not sleeping[a]				
Playpens	6.4*	0.0†††	55.3###	31.5
Bouncy seats	70.7***	2.7	65.4	64.4
Swings	46.5***	0.0	46.2	43.9
Stationary entertainers	51.7***	8.4	51.9	49.6

Source: Study of Nutrition and Activity in Child Care Settings (SNACS), Provider Web Survey, Winter through Summer, 2017. See Table H.2.5 (Panel I) in Appendix H. CC = Child Care; HS = Head Start; FDCHs = Family Day Care Homes.
Difference between Child Care Centers and Head Start Programs is significantly different from zero at the ***0.001 level, **0.01 level, or *0.05 level.
Difference between Child Care Centers and Family Day Care Homes is significantly different from zero at the ###0.001 level, ##0.01 level, or #0.05 level.
Difference between Head Start Programs and Family Day Care Homes is significantly different from zero at the †††0.001 level, ††0.01 level, or †0.05 level.
[a] A smaller proportion of child care programs reported infants spending some time not sleeping in cribs (20.2 percent) or car seats (2.1 percent).

Solid Foods

Programs participating in the provider survey were also asked to complete an infant menu survey if they had infants in their care. The following sections feature findings from the infant menu surveys on the foods served to infants in early child care programs, including child care centers, Head Start programs, and family day care homes.

Introduction of Solid Foods to Infants under 6 Months

The AAP recommends introducing complementary foods to infants around six months of age, depending on the infant's developmental status.[68] CACFP encourages introduction of solid food at a developmentally appropriate age.[69,70]

- Most programs (77 percent) served solid food at least once during the target week to infants 4-5 months old. Some programs (23 percent) served solid food at least once during the target week to infants 0-3 months old. (See table H.1.2 in Appendix H.)
- The top three major solid food groups served in daily infant menus to infants 0-3 month and 4-5 months old were grains, fruit, and vegetables (Exhibit 44). Fruit and vegetables served to these ages were primarily pureed or jarred, and grains were primarily in the form of infant cereal.

Exhibit 44. Solid Foods Served in Daily Infant Menus in Early Child Care Programs

Major Food Group	Mean Percentage of Daily Menus Including Food Group			
	0-3 Months	4-5 Months	6-7 Months	8-11 Months
Grains	16.0	67.2	89.6	94.6
Fruit	8.8	41.2	65.7	89.2
Vegetables	4.2	35.3	71.9	76.2
Meat/Meat alternates	0.3	4.5	17.0	45.2
Desserts/Salty snacks	2.6	1.1	13.1	29.7
Mixed dishes	0.0	3.7	8.7	23.1

Source: Study of Nutrition and Activity in Child Care Settings (SNACS), Infant Menu Survey, Winter through Summer, 2017. See Table H.1.1 in Appendix H.

Most Frequently Served Solid Foods to Infants 6-11 Months

Infants six months and older were served a variety of solid foods.

- The top three major solid food groups served in daily infant menus to the 6-7 month and 8-11 month age groups were grains, vegetables, and fruit (Exhibit 44).
- Fruit and vegetables served to these ages were primarily pureed or jarred, and grains were primarily in the form of infant cereal.

Juice and Sugar-Sweetened Beverages Served to Infants

At the time of data collection, the CACFP Infant Meal Pattern allowed programs to offer juice to infants older than six months if they were developmentally ready, and full-strength 100% juice could be used to satisfy the meal pattern for infants 8-11 months old.[71,72]

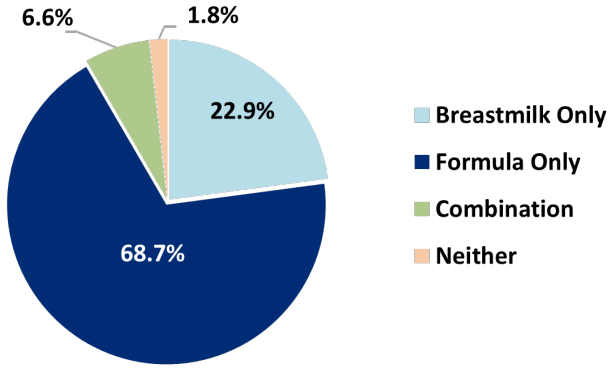
- The majority of programs (97 percent for infants under 6 months and 85 percent for infants 6-11 months of age) did not serve juice to infants during the target week in the infant menu survey. (See table H.2.2 in Appendix H.)
- When juice was served, the programs primarily reported serving 100% juice, and the remaining three to four percent did not specify. No programs explicitly reported serving less-than-100% juice to infants during the target week, and no programs listed other sweetened beverages on their menus. (See table H.2.2 in Appendix H.)

Infant Milk Consumption among Infants under 12 Months

The CACFP Infant Meal Pattern requires that programs serve 4-6, 4-8, and 6-8 fluid ounces of formula or breastmilk for infants 0-3, 4-7, and 8-11 months of age, respectively. While breastmilk feeding is encouraged, programs can serve breastmilk, formula, or both.[73] The following results represent data collected at child care centers that participated in onsite data collection and had infants onsite during the data collection week.

- Overall, 69 percent of infants under 12 months consumed only formula while in child care on the single target day; 23 percent consumed only breastmilk; and seven percent of infants consumed a combination of formula and breastmilk (Exhibit 45).
- Infants 0-5 months of age consumed a mean of five fluid ounces of breastmilk and/or formula per feeding and had a mean of four feedings of breastmilk and/or formula while at child care. Infants 6-11 months old consumed a mean of five fluid ounces of breastmilk and/or formula per feeding and had a mean of three feedings while at child care. (See table H.3.1 in Appendix H.)

Exhibit 45. Percentage of Infants <12 months Consuming Breastmilk, Formula, or Both at Child Care Centers



Source: Study of Nutrition and Activity in Child Care Settings (SNACS), Infant Food Intake Form, Winter through Summer, 2017. See Table H.3.5 in Appendix H.

CREDITS FOR ICONS IN EXHIBITS

Exhibit 4 Mean Percentage of CACFP Lunches, Afternoon Snacks, and Breakfasts Served to 3-5 Year Olds in Early Child Care Programs Including Each Meal Component– "Breakfast" and "Strawberry" icons by Made by Made, "Food Tray" icon by Isabel Martínez from the Noun Project.

Exhibit 7 Mean Percentage Contribution of Early Child Care Program Lunches for 3-5 Year Olds to the DGA Daily Recommendation – “Calories Burn" icon by Becris, "Fruits" icon by Vectors Market, "Vegetables" icon by DailyPM, "Grain" icon by Rivercon, "Milk" icon by Tomas Knopp, "Meat" icon by Melissa Gutierrez from the Noun Project.

Exhibit 13 Mean Percentage Contribution of Early Child Care Program Afternoon Snacks for 3-5 Year Olds to the DGA Daily Recommendation – "Calories Burn" icon by Becris, "Fruits" icon by Vectors Market, "Vegetables" icon by DailyPM, "Grain" icon by Rivercon, "Milk" icon by Tomas Knopp, "Meat" icon by Melissa Gutierrez from the Noun Project.

Exhibit 17 Median Total Cost per Breakfast, Lunch and Snack in Early Child Care Programs – "Breakfast" and "Strawberry" icons by Made by Made, "Food Tray" icon by Isabel Martínez from the Noun Project.

Exhibit 29 Mean Percentage of Minimum CACFP Meal Pattern Requirements Consumed by 3-5 Year Old Children at Breakfast, Lunch and Afternoon Snack, by Component – "Breakfast" and "Strawberry" icons by Made by Made, "Food Tray" icon by Isabel Martínez from the Noun Project.

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ENDNOTES

[1] American Academy of Pediatrics, American Public Health Association, National Resource Center for Health and Safety in Child Care and Early Education. *Caring for Our Children: National Health and Safety Performance Standards; Guidelines for Early Care and Education Programs, Third Edition.* Elk Grove Village, IL: American Academy of Pediatrics; Washington, DC: American Public Health Association; 2011. http://nrckids.org/CFOC/Database/3.1.3.1. Accessed April 19, 2019.

[2] Institute of Medicine. 2011. *Child and Adult Care Food Program: Aligning Dietary Guidance for All.* Washington, DC: The National Academies Press. https://doi.org/10.17226/12959. See Table 6-3. The Institute of Medicine became the National Academy of Medicine in 2015.

[3] U.S. Department of Agriculture, Food and Nutrition Service, Office of Policy Support, *School Nutrition and Meal Cost Study, Final Report Volume 4: Student Participation, Satisfaction, Plate Waste, and Dietary Intakes* by Mary Kay Fox, Elizabeth Gearan, Charlotte Cabili, Dallas Dotter, Katherine Niland, Liana Washburn, Nora Paxton, Lauren Olsho, Lindsay LeClair, and Vinh Tran. Project Officer: John Endahl. Alexandria, VA: April 2019.

[4] Child and Adult Care Food Program - Participation, Meals, and Costs, USDA-FNS. https://fns-prod.azureedge.net/sites/default/files/resource-files/ccsummar-7.pdf.

[5] As discussed later in the report, the study finds that 58 percent of children in early child care programs and 48 percent in before and after school programs had household incomes at or below 185 percent of the Federal Poverty Level.

[6] See standards that were in place at the time of data collection: United States Department of Agriculture, Food and Nutrition Service. *Crediting Handbook for the Child and* Adult Care Food Program. Washington, DC; 2014.

[7] https://www.fns.usda.gov/part-226%E2%80%94child-and-adult-care-food-program

[8] Some follow-up to collect missing data occurred between September and December 2017. All data were intended to represent how programs operated during the 2017 Federal Fiscal Year (October 2016-September 2017).

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[14] Birch LL. Development of food preferences. *Annu Rev Nutr.* 1999;19(1):41. doi:10.1146/annurev.nutr.19.1.41

[15] Anzman-Frasca S, Ventura AK, Ehrenberg S, Myers KP. Promoting healthy food preferences from the start: a narrative review of food preference learning from the prenatal period through early childhood. *Obes Rev*. 2018;19(4):576-604. doi:10.1111/obr.12658

[16] Benjamin-Neelon SE. Position of the Academy of Nutrition and Dietetics: benchmarks for nutrition in child care. *J Acad Nutr Diet.* 2018;118(7):1291-1300. doi:10.1016/j.jand.2018.05.001

[17] Spill MK, Johns K, Callahan EH, et al. Repeated exposure to food and food acceptability in infants and toddlers: a systematic review. *Am J Clin Nutr.* 2019;109(Supplement_1):978S-989S. doi:10.1093/ajcn/nqy308

[18] Fewer than one percent of family day care homes reported using off-site sources such as commercial vendors or central kitchens.

[19] See U.S. Department of Agriculture, Food and Nutrition Service, Office of Research and Analysis, *School Food Purchase Study-III,* by Nick Young et al. Project Officer: John R. Endahl, Alexandria, VA: March 2012.

[20] Tandon PS, Tovar A, Jayasuriya AT, et al. The relationship between physical activity and diet and young children's cognitive development: A systematic review. *Prev Med Rep.* 2016;3:379-390.

[21] Carson V, Lee EY, Hewitt L, et al. Systematic review of the relationships between physical activity and health indicators in the early years (0-4 years). *BMC Public Health*. 2017;17(Suppl 5):854.

[22] National Center for Education Statistics. Number of children under 6 years old and not enrolled in kindergarten, percentage in center-based programs, average weekly hours in nonparental care, and percentage in various primary care arrangements, by selected child and family characteristics: 2012. https://nces.ed.gov/programs/digest/d14/tables/dt14_202.30.asp. Published April, 2015. Accessed September 5, 2017.

[23] American Academy of Pediatrics, American Public Health Association, National Resource Center for Health and Safety in Child Care and Early Education. *Caring for Our Children: National Health and Safety Performance Standards; Guidelines for Early Care and Education Programs, Third Edition.* Elk Grove Village, IL: American Academy of Pediatrics; Washington, DC: American Public Health Association; 2011. http://nrckids.org/CFOC/Database/3.1.3.1. Accessed April 19, 2019.

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[25] Henderson KE, Grode GM, O'Connell ML, Schwartz MB. Environmental factors associated with physical activity in childcare centers. *Int J Behav Nutr Phys Act*. 2015;12(1):43

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[29] https://www.fns.usda.gov/cacfp/meals-and-snacks

[30] Fox MK, Glantz FB, Geitz L, Burstein N. Early *Childhood and Child Care Study: Nutritional assessment of the CACFP. Final report.* Alexandria, VA: U.S. Department of Agriculture, Food and Consumer Service; 1997. https://www.fns.usda.gov/cacfp/early-childhood-and-child-care-study. Accessed August 13, 2020.

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[32] See https://www.fns.usda.gov/cacfp/why-cacfp-important for more background.

[33] 7 CFR 226.20 Requirements for meals.

[34] The HEI analysis used the population ratio method. To compute HEI scores, the study team added up the amount of each dietary component in the lunches, then added up all the calories in the lunches, divided the first sum by the second sum and multiplied by 1000 to get the amount of each dietary component per 1000 kcal, and then converted to a numeric score.

[35] Overview & Background of the Healthy Eating Index https://epi.grants.cancer.gov/hei/

[36] The analysis of HEI scores, food pattern food group amounts, and nutrient content used data from the menu survey on the foods offered by providers as well as portion size data from the meal observations conducted in a subsample of the menu survey sample. Meal observation data provided estimates of the average portion size of each type of food providers served to CACFP age groups: 1-2 year olds, 3-5 year olds, and 6-12 year olds. For more information on the HEI, see https://www.fns.usda.gov/how-hei-scored.

[37] USDA-FNS, HEI Scores for Americans. Accessed October 27, 2020 from https://www.fns.usda.gov/hei-scores-americans.

[38] U.S. Department of Agriculture, Food and Nutrition Service, Office of Policy Support, *School Nutrition and Meal Cost Study, Final Report Volume 4: Student Participation, Satisfaction, Plate Waste, and Dietary Intakes* by Mary Kay Fox, Elizabeth Gearan, Charlotte Cabili, Dallas Dotter, Katherine Niland, Liana Washburn, Nora Paxton, Lauren Olsho, Lindsay LeClair, and Vinh Tran. Project Officer: John Endahl. Alexandria, VA: April 2019.

[39] The choice of the 1,400 calorie level was derived from the "Energy Levels Used for Assignment of Individuals to USDA Food Patterns" table developed by the Center for Nutrition Policy and Promotion (CNPP) to identify calorie targets consistent with the relevant CACFP age groups. https://www.cnpp.usda.gov/sites/default/files/usda_food_patterns/EstimatedCalorieNeedsPerDay.pdf

[40] Meal level benchmarks were based on distributions of calorie levels across meals and snacks recommended in the 2011 IOM Report *Child and Adult Care Food Program: Aligning Dietary Guidance for All*. (adapted from Table 6-3 in the report).

[41] For this analysis, the daily limit of 10 percent of calories from added sugars was applied to the 1,400 calorie level to set a daily limit of 140 calories. The mean quantity of added sugars in lunches was 14 percent of the daily limit.

[42] Meal benchmark represents the recommended percentage contribution of breakfast to daily meal pattern, adapted from Table 6-3 in the 2011 IOM Report, Child and Adult Care Food Program: Aligning Dietary Guidance for All. 21% of the daily recommendation equates to 294 total kcal, 0.32 cups of Fruit, 0.32 cups of Vegetables, 1.1 ounces of Grains/Breads, 0.5 cups of Dairy, and 0.8 ounces of Protein Foods.

[43] Institute of Medicine 2006. *Dietary Reference Intakes: The Essential Guide to Nutrient Requirements.* Washington, DC: The National Academies Press. https://doi.org/10.17226/11537.

[44] SNACS did not collect cost data in family day care homes due to feasibility and burden concerns.

[45] SNACS also collected data on other direct costs and indirect costs, but very few programs were able to provide this information. Only 39 percent of programs were able to report sufficient data on both other direct costs and indirect costs. Therefore, the cost analysis focuses on the food and labor components of costs. For more details on the data collected on other direct costs and indirect costs please refer to Appendix A.

[46] Food costs were based on the foods served during the target week covered by the menu data. Labor costs were a mixture of costs for the target week and annual costs converted to weekly costs. Thus the cost per meal was representative of the target week, as was the case for the menu data used in other analyses for SNACS.

[47] Programs that received USDA foods could not consistently report the value of those foods, so the value of the entitlement for cash in lieu of those foods was a more reliable measure. This method would understate the value of USDA foods for programs that received bonus commodities, and it would overstate the value of USDA foods for programs that did not use their full entitlement of USDA foods. Relatively few programs appeared to receive USDA foods, so there was likely a minimal difference between the reported results and what would be estimated if the value of donated foods were known for those programs that received them.

[48] Respondents often could not separate revenues from non-USDA sources between those that supported food service and those that supported other operations.

[49] In order to participate in SNACS, programs had to participate in CACFP and receive USDA reimbursements for CACFP meals, so it was expected that they would all have been able to report this revenue dollar amount.

[50] Programs often had trouble separating out the dollar amount for the cash-in-lieu of USDA Foods from their USDA reimbursements. Just over 22 percent of programs reported a cash-in-lieu of USDA Foods dollar amount, a third reported they did not receive this type of revenue, with the remaining 44 percent unable to identify the amount of this revenue they received.

[51] The survey asked whether respondents experienced a challenge that reimbursements were not enough to cover food costs. About one-fifth of child care centers and Head Start programs reported this as a major challenge, while 38 and 39 percent (respectively) reported this as a minor problem. (See Tables B.24 and B.26.) The cost analysis findings indicate that the USDA subsidy was, on average, greater than food costs but less than the total costs of food and labor.

[52] Feeding America guidelines for use of the two-question food security screener note that if anyone responds "often" or "sometimes" to either question, they should be considered food insecure. https://hungerandhealth.feedingamerica.org/wp-content/uploads/2014/05/FA_Clinical-Training_2017.pdf

[53] See https://www.cdc.gov/nccdphp/dnpao/growthcharts/resources/sas.htm for more information.

[54] Anzman-Frasca, S., Ventura, A., Ehrenberg, S., Meyers, K. *Obesity reviews* 2018 v.19 no.4 pp. 576-604.

[55] Benjamin-Neelon, S. E. (2018). Position of the Academy of Nutrition and Dietetics: Benchmarks for Nutrition in Child Care. *Journal of the Academy of Nutrition and Dietetics*, 118(7), 1291-1300. https://doi.org/10.1016/j.jand.2018.05.001.

[56] Freedman LS, Guenther PM, Dodd KW, Krebs-Smith SM, Midthune D. The population distribution of ratios of usual intakes of dietary components that are consumed every day can be estimated from repeated 24-hour recalls. *J Nutr.* 2010;140(1):111-116. doi:10.3945/jn.109.110254

[57] Institute of Medicine 2006. *Dietary Reference Intakes: The Essential Guide to Nutrient Requirements.* Washington, DC: The National Academies Press. https://doi.org/10.17226/11537.

[58] Institute of Medicine 2011. *Dietary Reference Intakes for Calcium and Vitamin D*. Washington, DC: The National Academies Press. https://doi.org/10.17226/13050.

[59] See https://health.gov/our-work/food-nutrition/dietary-reference-intakes-dris#:~:text=Dietary%20Reference%20Intakes%20(DRIs)%20are,dietary%20guidelines%20and%20food%20guides

[60] The appropriate DRI benchmarks vary among nutrients. Acceptable Macronutrient Distribution Ranges (AMDRs) are the recommended proportion of a person's daily calories that should come from protein, fat, and carbohydrates) for fats, protein, and carbohydrates. Estimated average requirements (EARs) represent the amount of a nutrient that is estimated to meet the requirement for a specific criterion of adequacy of half of the healthy individuals of a specific age, sex, and life-stage. Adequate intake levels (AIs) are the recommended average daily intake levels based on observed or experimentally determined approximations or estimates of nutrient intake by a group (or groups) of apparently healthy people that are assumed to be adequate. AIs are used when an RDA cannot be determined. Tolerable upper intake levels (ULs) are the highest levels of nutrient intake that is likely to pose no risk of adverse health effects for almost all individuals in the general population.

[61] See *Child and Adult Care Food Program: Aligning Dietary Guidance for All* found at http://www.nap.edu/catalog/12959.html (Pg. 52).

[62] United States Department of Agriculture, Food and Nutrition Service. *Crediting Handbook for the Child and Adult Care Food Program.* Washington, DC; 2014.

[63] U.S. Department of Agriculture, Food and Nutrition Service, Office of Policy Support, *School Nutrition and Meal Cost Study, Final Report Volume 4: Student Participation, Satisfaction, Plate Waste, and Dietary Intakes* by Mary Kay Fox, Elizabeth Gearan, Charlotte Cabili, Dallas Dotter, Katherine Niland, Liana Washburn, Nora Paxton, Lauren Olsho, Lindsay LeClair, and Vinh Tran. Project Officer: John Endahl. Alexandria, VA: April 2019.

[64] American Academy of Pediatrics, American Public Health Association, National Resource Center for Health and Safety in Child Care and Early Education. Standard 2.2.0.3 in *Caring for Our Children: National Health and Safety Performance Standards; Guidelines for Early Care and Education Programs, Third Edition.* Elk Grove Village, IL: American Academy of Pediatrics; Washington, DC: American Public Health Association; 2011. Accessed August 8, 2020 from https://nrckids.org/files/cfoc3_updated_final.pdf.

[65] American Academy of Pediatrics Council on Communications and Media. Media and young minds. *Pediatrics.* 2016;138(5):e20162591. http://pediatrics.aappublications.org/content/pediatrics/138/5/e20162591.full.pdf

[66] American Academy of Pediatrics, American Public Health Association, National Resource Center for Health and Safety in Child Care and Early Education. Standard 3.1.3.1 in *Caring for Our Children: National Health and Safety Performance Standards; Guidelines for Early Care and Education Programs, Third Edition.* Elk Grove Village, IL: American Academy of Pediatrics; Washington, DC: American Public Health Association; 2011. Accessed August 8, 2020 from https://nrckids.org/files/cfoc3_updated_final.pdf

[67] Appendix H provides results for use of playpens and similar equipment for programs offering part-day and both part-day and full-day care.

[68] American Academy of Pediatrics, American Public Health Association, National Resource Center for Health and Safety in Child Care and Early Education. Standard 4.3.1.11 in *Caring for Our Children: National Health and Safety Performance Standards; Guidelines for Early Care and Education Programs, Third Edition.* Elk Grove Village, IL: American Academy of Pediatrics; Washington, DC: American Public Health Association; 2011. Accessed August 8, 2020 from https://nrckids.org/files/cfoc3_updated_final.pdf.

[69] Note that revised CACFP guidelines came into effect on October 1, 2017 (after data collection) and delayed the introduction of complementary foods to infants until 6 months of age. *Feeding Infants and Meal Pattern Requirements in the Child and Adult Care Food Program; Questions and Answers.* Food and Nutrition Service; 2016. Accessed August 11, 2020 from https://fns-prod.azureedge.net/sites/default/files/cn/CACFP23_2016os.pdf.

[70] *Amendments to the Child Nutrition Infant Meal Pattern: Final Rule. 67 Federal Register 102.* Food and Nutrition Service; 2002. Accessed August 11, 2020 from https://fns-prod.azureedge.net/sites/default/files/2002-05-28.pdf.

[71] Revised CACFP guidelines came into effect on October 1, 2017 (after data collection) and restricted the service of fruit juice to infants, consistent with AAP guidance. *Feeding Infants and Meal Pattern Requirements in the Child and Adult Care Food Program; Questions and Answers.* Food and Nutrition Service; 2016. Accessed August 11, 2020 from https://fns-prod.azureedge.net/sites/default/files/cn/CACFP23_2016os.pdf.

[72] *Amendments to the Child Nutrition Infant Meal Pattern: Final Rule. 67 Federal Register 102.* Food and Nutrition Service; 2002. Accessed August 11, 2020 from https://fns-prod.azureedge.net/sites/default/files/2002-05-28.pdf.

[73] See *Amendments to the Child Nutrition Infant Meal Pattern: Final Rule. 67 Federal Register 102.* Food and Nutrition Service; 2002. Accessed August 11, 2020 from https://fns-prod.azureedge.net/sites/default/files/2002-05-28.pdf.

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