

School Nutrition and Meal Cost Study

Volume 2

Nutritional Characteristics of School Meals



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**School Nutrition and Meal Cost Study
Final Report Volume 2:
Nutritional Characteristics of School Meals**

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LIST OF ACRONYMS AND ABBREVIATIONS

AI	Adequate Intake
AMDR	Acceptable Macronutrient Distribution Range
ARS	Agricultural Research Service
AT	alpha-tocopherol
CN	child nutrition
DFE	dietary folate equivalents
DHHS	United States Department of Health and Human Services
DoD	Department of Defense
DRI	Dietary Reference Intake
HEI	Healthy Eating Index
EAR	Estimated Average Requirement
FPED	Food Patterns Equivalents Database
FPID	Food Patterns Ingredients Database
FNDDS	Food and Nutrient Database for Dietary Studies
FNS	Food and Nutrition Service
FPL	Federal poverty level
FRAC	Food Research and Action Center
FSMC	foodservice management company
g	grams
HHFKA	Healthy, Hunger-Free Kids Act of 2010
HMD	Health and Medicine Division of the National Academies of Science
IOM	Institute of Medicine
LEA	local educational agency
mcg	micrograms
mg	milligrams
n.a.	not applicable
NSLP	National School Lunch Program
OVS	offer-versus-serve
oz	ounce
oz eq	ounce equivalent
RAE	retinol activity equivalent

RDA	Recommended Dietary Allowance
SBP	School Breakfast Program
SE	standard error
SFA	school food authority
SNDA	School Nutrition Dietary Assessment Study
SNM	school nutrition manager
SNMCS	School Nutrition and Meal Cost Study
SMI	School Meals Initiative for Healthy Children
SY	school year
TMI	target median intake
tsp	teaspoon
UL	Tolerable Upper Intake Level
USDA	United States Department of Agriculture

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EXECUTIVE SUMMARY

The National School Lunch Program (NSLP) and School Breakfast Program (SBP) form the cornerstone of the nation's nutrition safety net for low-income children. These programs, which are administered by the U.S. Department of Agriculture (USDA), Food and Nutrition Service (FNS), provide 30 million Federally subsidized lunches and 15 million Federally subsidized breakfasts to children each school day.¹

In school year (SY) 2012–2013, the school meal programs began to undergo widespread changes, mainly stemming from the Healthy, Hunger-Free Kids Act of 2010 (HHFKA, Public Law 111-296). Key reforms included more fruits, vegetables, and whole grains in the school menu; updated nutrition standards to improve the nutritional quality of school meals and students' diets in order to reduce children's risk of developing chronic diseases; a new requirement that students select at least 1/2 cup of fruits or vegetables in order for their meal to be eligible for Federal reimbursement; equitable price-setting for full-price (also called "paid") meals; and the introduction of nutrition standards for all foods and beverages sold in competition with reimbursable meals in schools during the school day (competitive foods).

There is a critical need for information about how school food authorities (SFAs) and schools are doing in implementing the changes, and about whether and how the changes are affecting school foodservice operations; the nutritional quality, cost, and acceptability of meals; student participation and satisfaction; plate waste; and the quality of students' diets. FNS sponsored the School Nutrition and Meal Cost Study (SNMCS) to ensure that this information would be available to policymakers and other stakeholders. The SNMCS continues FNS's long-standing commitment to periodically assess the school meal programs, and is the first nationally representative, comprehensive assessment of these programs since major reforms began in SY 2012–2013.

A. Overview of the School Nutrition and Meal Cost Study

The SNMCS addressed a broad array of research questions of interest to stakeholders at the national, State, and local levels. The research questions are grouped under four broad domains:

- School meal program operations and school nutrition environments
- Food and nutrient content of school meals and afterschool snacks and overall nutritional quality of meals
- School meal costs and school foodservice revenues
- Student participation, student and parent satisfaction, plate waste, and students' dietary intakes.

To address these research questions, the SNMCS collected data from nationally representative samples of public SFAs and public, non-charter schools participating in the NSLP, students enrolled in these schools, and their parents. Data collection primarily occurred in spring

¹ Statistics reported for the NSLP and SBP were obtained from national-level annual summary tables generated by FNS. These tables are available at <http://www.fns.usda.gov/pd/child-nutrition-tables>. Accessed April 18, 2018.

of SY 2014–2015. Study findings are presented in four report volumes plus a summary report that highlights key findings from across the volumes. Report Volume 2 (this volume) provides information on the food and nutrient content of reimbursable meals and afterschool snacks and overall nutritional quality of meals.²

All findings in this report volume are based on analysis of data from a detailed Menu Survey, which was completed by school nutrition managers (SNMs) over the course of one school week. The Menu Survey collected detailed information about the foods and beverages offered in daily menus for reimbursable meals and afterschool snacks for a typical school week.

B. Updated Nutrition Standards for School Meals

The updated nutrition standards for NSLP lunches and SBP breakfasts were phased in over several years, beginning in SY 2012–2013 (USDA, FNS 2012). SY 2014–2015 (when data for this study were collected) was the first year school meals were required to meet all of the requirements for both NSLP lunches and SBP breakfasts. The updated standards, which were based on recommendations from the Institute of Medicine³ (IOM), were designed to better reflect the *Dietary Guidelines for Americans* and improve the nutritional quality of school meals (IOM 2010; USDA and DHHS 2010). The updated standards included substantial changes to school meal requirements, relative to the former standards, which were implemented in 1995 as part of the School Meals Initiative for Healthy Children (SMI).

The nutrition standards for NSLP lunches and SBP breakfasts include four different types of requirements: (1) daily meal pattern requirements, (2) weekly meal pattern requirements, (3) dietary specifications, and (4) restrictions on specific forms of some foods. Separate standards are defined for three grade groups—kindergarten to grade 5, grades 6 to 8, and grades 9 to 12—the most common grade spans for elementary, middle, and high schools, respectively (IOM 2010):

- The daily and weekly meal pattern requirements specify minimum amounts of foods to be offered each day and over the course of a week. Requirements for NSLP lunches include five meal components (fruits, vegetables, grains, meats/meat alternates, and milk), and requirements for SBP breakfasts include three meal components (fruits, grains, and milk).

² Volume 1 (Forrestal et al. 2019) provides updated information on SFA and school characteristics, foodservice operations and school nutrition environments. Volume 3 (Logan et al. 2019) provides a detailed examination of the costs to produce reimbursable school meals and school foodservice revenues. Volume 4 (Fox et al. 2019) addresses students' participation in school meals, parents' and students' satisfaction with the meals, amounts of plate waste, and the influence of school meals on students' dietary intakes. A separate summary report (Fox and Gearan 2019) summarizes key findings across the report volumes, and a separate methodology report (Zeidman et al. 2019) provides technical details about study design, sampling, and data collection procedures.

³ The Institute of Medicine (IOM) is now referred to as the Health and Medicine Division (HMD) of the National Academies of Science. Throughout this report, we refer to the IOM because that was the name of the organization when it developed recommendations for the updated nutrition standards for school meals.

- The weekly meal pattern requirements for NSLP lunches also specify weekly minimum amounts for five vegetable subgroups (dark green, red and orange, legumes, starchy, and other).
- The dietary specifications set average weekly minimum and maximum calorie levels, limits on saturated fat and sodium content, and require foods to contain zero grams (less than 0.5 grams) of synthetic *trans* fat per serving (that is, *trans* fat that is not naturally occurring in foods). The standard for sodium was designed to be phased in over several years. In SY 2014–2015, schools were expected to not exceed Target 1 levels for sodium.
- In addition, the meal patterns include the following restrictions on the types of foods included in school meals:
 - Fluid milk must be fat-free (flavored or unflavored) or low-fat (1% or less) unflavored, and at least two choices must be offered daily⁴
 - No more than 50 percent of fruit and vegetable offerings over the course of a week can be in the form of juice
 - All grains must be whole grain-rich⁵; however in SY 2014–2015, SFAs that demonstrated a hardship in meeting this requirement could seek an exemption that allowed for meeting a relaxed requirement that at least 50 percent of all grains must be whole grain-rich
 - For NSLP lunches, no more than two ounce equivalents of grains can be provided by grain-based desserts over the course of a week.

C. Compliance of Daily and Weekly Menus with the Nutrition Standards

The study team examined the extent to which daily and weekly menus complied with the nutrition standards for NSLP lunches and SBP breakfasts. The general approach used in assessing compliance was based on the approach FNS uses in determining whether an SFA is eligible to receive an additional 6-cent reimbursement per lunch.⁶ However, because the data collected in the Menu Survey were used to address multiple research questions not related to compliance, there were some differences in how the data were collected and analyzed. To assess the extent to which NSLP lunches and SBP breakfasts met daily and weekly meal pattern requirements, the study team compared the types and amounts of food offered in each daily menu and across a school week to daily and weekly meal pattern requirements. To assess the extent to which NSLP lunches and SBP breakfasts met the dietary specifications for calories, saturated fat, and sodium, the study team computed the average nutrient content of weekly NSLP and SBP menus prepared in each school. Estimates for menus prepared take into account the

⁴ In November 2017, USDA published an interim final rule that provides flexibility in meeting the milk requirement by allowing schools to offer low-fat flavored milk in reimbursable meals.

⁵ To be whole grain-rich, a food item must contain at least 50 percent whole grains. Any non-whole grain portion must be enriched meal and/or flour (USDA, FNS 2014).

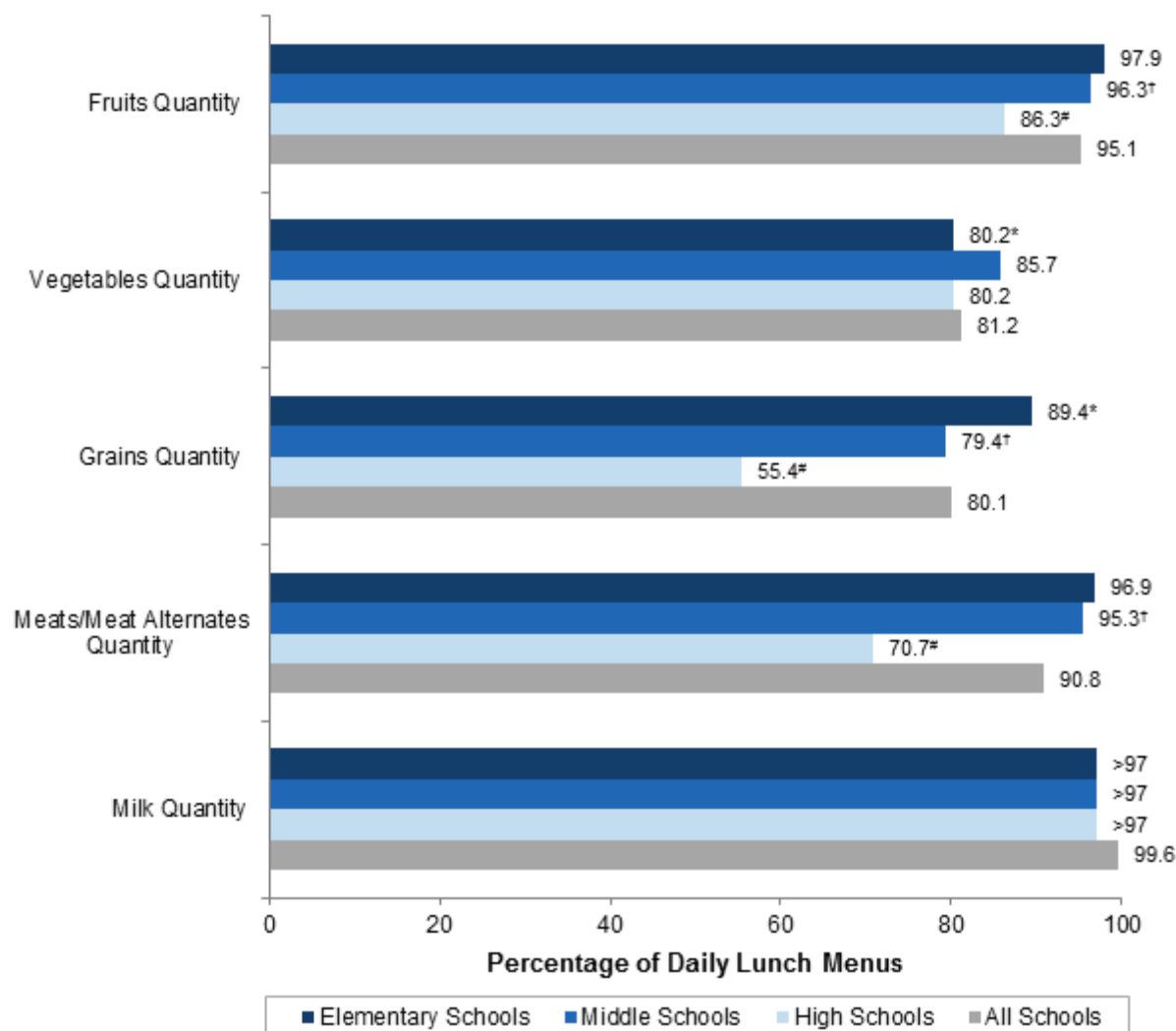
⁶ Under HHFKA, schools that provide meals that comply with the updated nutrition standards for both lunch and breakfast (if offered) are eligible to receive an additional reimbursement of 6 cents per lunch. Additional information on the certification process is available at <http://www.fns.usda.gov/school-meals/certification-compliance>.

amounts of food prepared (number of servings) for reimbursable meals and give greater weight to menu items that were prepared in larger quantities.

1. NSLP Lunches

Daily Meal Pattern Requirements (Figure ES.1)

- Overall, 95 percent of daily lunch menus met the daily quantity requirement for fruits. The vast majority of daily lunch menus in elementary and middle schools (98 and 96 percent, respectively) met the daily quantity requirement for fruits, and 86 percent of daily menus in high schools met this requirement. Daily lunch menus in elementary and middle schools were significantly more likely than those in high schools to meet the daily quantity requirement for fruits.
- Eighty-one percent of daily lunch menus met the daily quantity requirement for vegetables. Eighty percent of daily menus in elementary schools and high schools and 86 percent of daily menus in middle schools met this requirement. Daily menus in middle schools were significantly more likely than those in elementary schools to meet this requirement.
- Overall, 80 percent of daily lunch menus met the daily quantity requirement for grains; however, there was substantial and statistically significant variation across school types in the proportion of daily menus meeting this requirement. Roughly 9 in 10 daily menus in elementary schools (89 percent) and 8 in 10 daily menus in middle schools (79 percent) met the daily quantity requirement for grains. However, less than 6 in 10 daily menus in high schools (55 percent) met this requirement.
- Roughly 9 in 10 daily lunch menus overall (91 percent) met the daily quantity requirement for meats/meat alternates. Most daily menus in elementary schools (97 percent) and middle schools (95 percent) met the daily quantity requirement for meats/meat alternates; however, only 71 percent of daily menus in high schools met this requirement. Daily lunch menus in elementary and middle schools were significantly more likely than those in high schools to meet the daily quantity requirement for meats/meat alternates.
- Virtually all daily lunch menus met the daily quantity requirement for milk, and the vast majority (91 to 92 percent) of daily menus offered only allowed types of milk (fat-free milk or unflavored low-fat milk; data not shown in figure). If flavored low-fat milk was allowed, virtually all daily lunch menus would meet the allowed milk type requirement (data not shown in figure).

Figure ES.1. Percentage of Daily Lunch Menus That Met Daily NSLP Meal Pattern Quantity Requirements

*Difference between elementary and middle schools is significantly different from zero at the 0.05 level.

†Difference between middle and high schools is significantly different from zero at the 0.05 level.

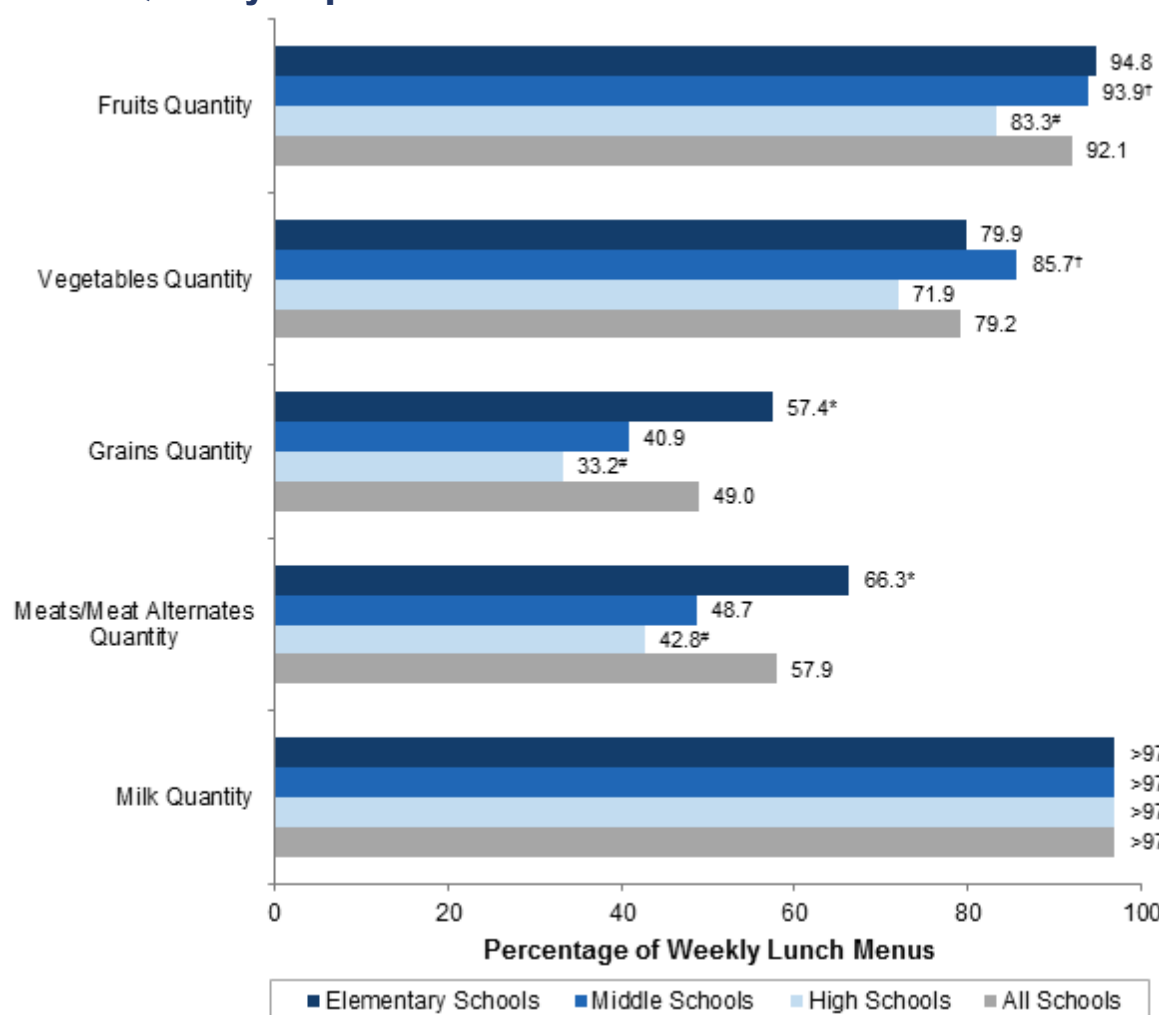
#Difference between elementary and high schools is significantly different from zero at the 0.05 level.

>97 = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large.

Weekly Meal Pattern Requirements

- Overall, 92 percent of weekly lunch menus met the weekly quantity requirement for fruits (Figure ES.2). The vast majority of weekly menus in elementary and middle schools (95 and 94 percent, respectively) met this requirement. A smaller proportion (83 percent) of weekly menus in high schools met the weekly quantity requirement for fruits. Weekly menus in elementary and middle schools were significantly more likely than those in high schools to meet this requirement.
- Almost all (97 percent) weekly lunch menus complied with the requirement that no more than half of the fruits offered be in the form of juice (data not shown in figure).

Figure ES.2. Percentage of Weekly Lunch Menus That Met Weekly NSLP Meal Pattern Quantity Requirements



*Difference between elementary and middle schools is significantly different from zero at the 0.05 level.

[†]Difference between middle and high schools is significantly different from zero at the 0.05 level.

[#]Difference between elementary and high schools is significantly different from zero at the 0.05 level.

NSLP = National School Lunch Program.

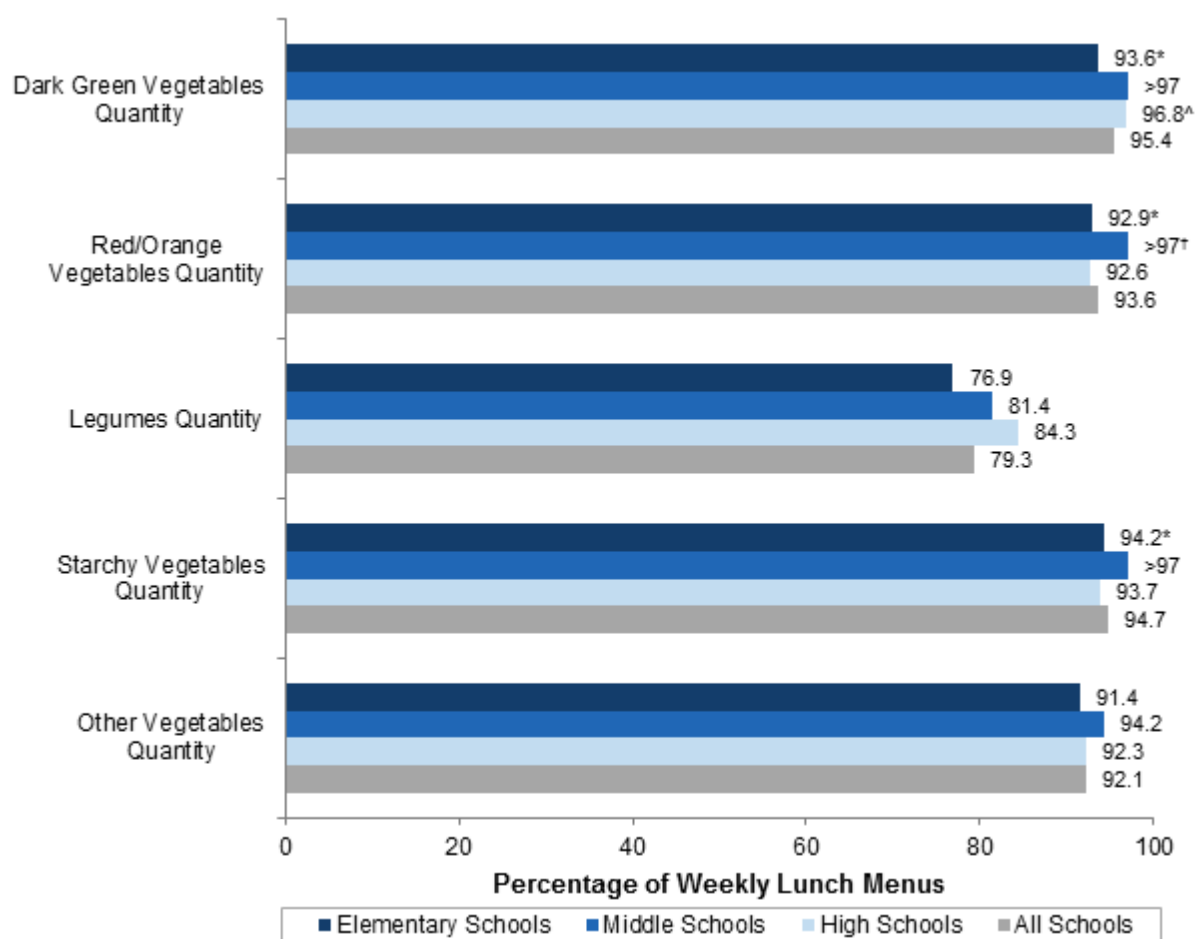
>97 = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large.

- Nearly 4 out of 5 (79 percent overall) weekly lunch menus met the weekly quantity requirement for vegetables (Figure ES.2). Eighty percent of weekly menus in elementary schools and 86 percent in middle schools met the weekly quantity requirement for vegetables. A smaller proportion (72 percent) of weekly menus in high schools met this requirement, and weekly menus in high schools were significantly less likely to do so than weekly menus in middle schools.
 - Overall, between 92 and 95 percent of weekly lunch menus met the weekly quantity requirements for dark green vegetables, red and orange vegetables, starchy vegetables, and other vegetables (Figure ES.3). A smaller proportion (79 percent) of weekly menus met the weekly quantity requirement for legumes.
 - Weekly menus in middle schools were significantly more likely than those in elementary schools to meet the weekly quantity requirements for dark green vegetables and starchy vegetables (virtually all weekly menus in middle schools versus 94 percent in elementary schools; Figure ES.3). Weekly menus in middle schools were also significantly more likely than those in elementary or high schools to meet the weekly quantity requirement for red and orange vegetables (virtually all weekly menus in middle schools versus 93 percent in elementary and high schools).
- Just under half (49 percent) of all weekly lunch menus met the weekly quantity requirement for grains, but there was some variation across school types (Figure ES.2). In elementary schools, more than half (57 percent) of weekly lunch menus met the weekly quantity requirement for grains. Notably smaller proportions of weekly menus in middle and high schools (41 percent and 33 percent, respectively) met this requirement. The differences between elementary schools and middle and high schools were statistically significant.
 - The vast majority (96 percent) of all weekly lunch menus met the grain-based dessert restriction, which sets a limit on the maximum amount of grains allowed as grain-based desserts (Figure ES.4). Weekly menus in middle schools were significantly more likely than weekly menus in high schools to meet this restriction (virtually all weekly menus in middle schools versus 93 percent in high schools).
 - SY 2014–2015 was the first year school meals were required to include only whole grain-rich items.⁷ Overall, more than one-quarter (27 percent) of all weekly lunch menus offered only whole grain-rich grain items (Figure ES.4). This was true for about 3 in 10 weekly menus in elementary and middle schools (30 percent and 26 percent, respectively) and 2 in 10 weekly menus in high schools (21 percent). Weekly menus in elementary schools were significantly more likely than those in high schools to offer only whole grain-rich grain items.
 - The majority (87 percent) of weekly lunch menus met the relaxed requirement for whole grains—that at least 50 percent of the grains offered must be whole grain-rich (Figure ES.4). This relaxed requirement was available for SFAs that were granted exemptions from the requirement that all grains be whole grain-rich.

⁷ SFAs that demonstrated a hardship in meeting this requirement could seek an exemption that allowed for meeting a relaxed requirement that at least 50 percent of all grains must be whole grain-rich.

- Overall, 58 percent of weekly lunch menus met the weekly quantity requirement for meats/meat alternates, but there was some variation across school types (Figure ES.2). Two-thirds (66 percent) of weekly menus in elementary schools met the weekly quantity requirement for meats/meat alternates, but less than half of weekly menus in middle schools and high schools (49 percent and 43 percent, respectively) met this requirement. The differences between elementary schools and middle and high schools were statistically significant.
- Virtually all weekly lunch menus met the weekly quantity requirement for milk (Figure ES.2).

Figure ES.3. Percentage of Weekly Lunch Menus that Met Weekly NSLP Meal Pattern Quantity Requirements for Vegetable Subgroups



Note: None of the differences between elementary and high schools were statistically significant.

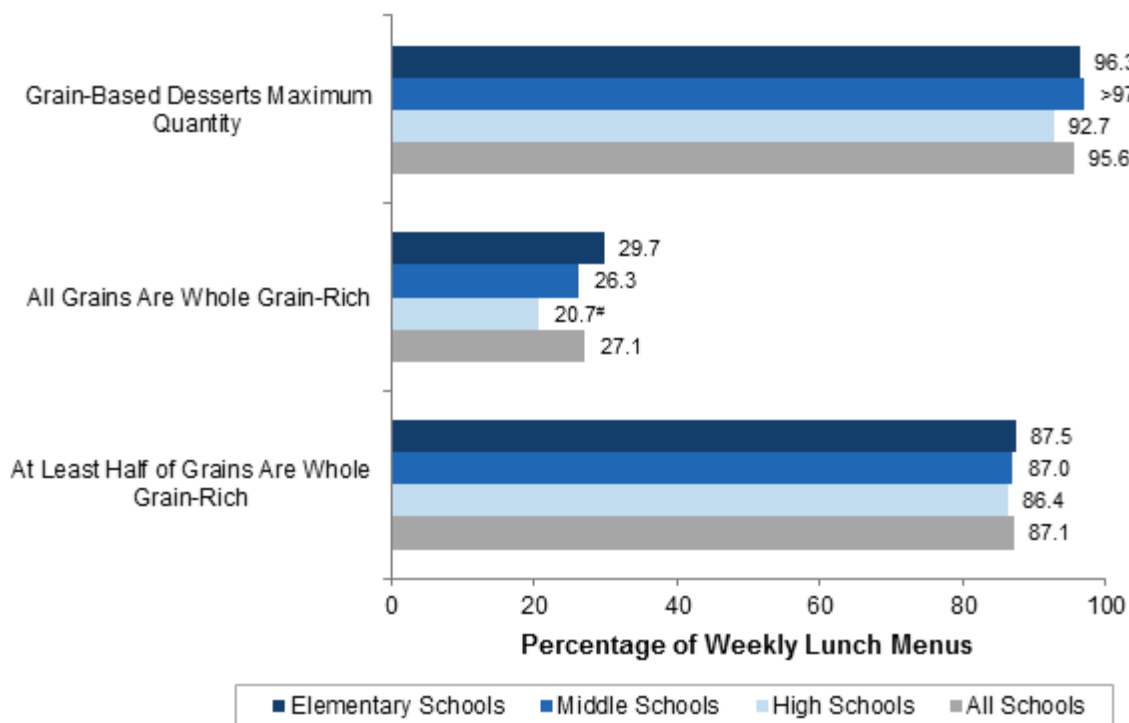
*Difference between elementary and middle schools is significantly different from zero at the 0.05 level.

†Difference between middle and high schools is significantly different from zero at the 0.05 level.

NSLP = National School Lunch Program.

>97 or ^ = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large.

Figure ES.4. Percentage of Weekly Lunch Menus that Met Weekly NSLP Meal Pattern Requirements for Grain-Based Desserts and Whole Grain-Rich Grains



Note: None of the differences between elementary and middle schools were statistically significant.

[†]Difference between middle and high schools is significantly different from zero at the 0.05 level.

[#]Difference between elementary and high schools is significantly different from zero at the 0.05 level.

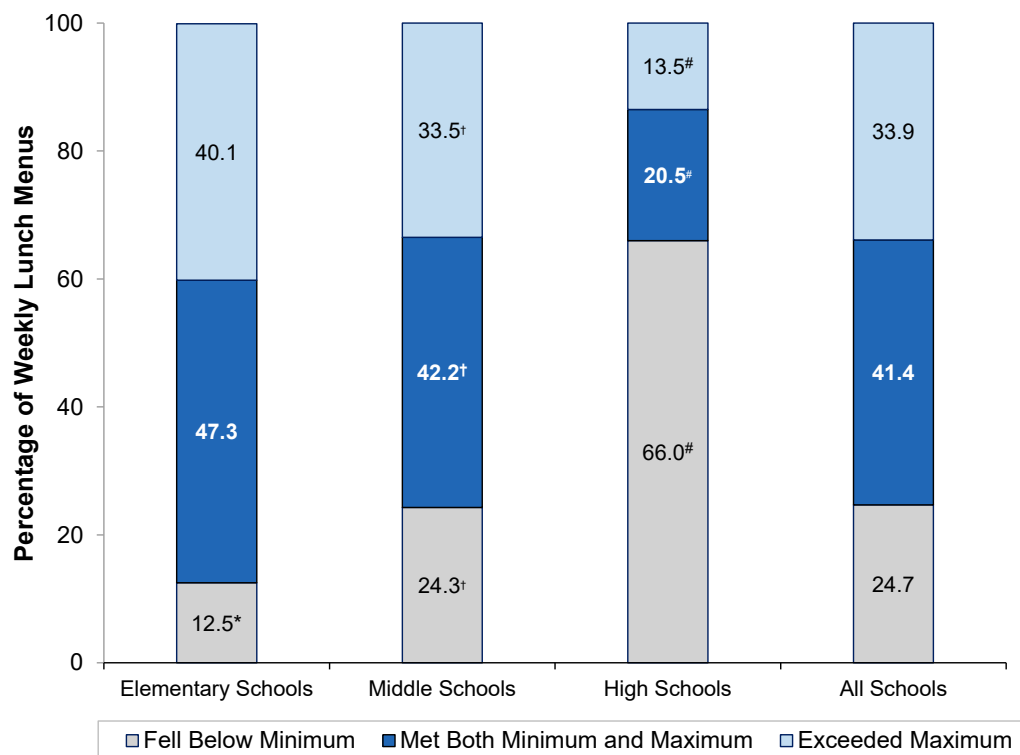
>97 = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large.

Dietary Specifications for Calories (Figure ES.5)

- Overall, 41 percent of average weekly lunch menus fell within the specified calorie range (that is, they met both the minimum and maximum calorie levels). Average weekly lunch menus in elementary and middle schools were significantly more likely than those in high schools to fall within the specified calorie range (47 percent and 42 percent for elementary and middle schools, respectively, versus 21 percent for high schools).
- It was more common for average weekly lunch menus in elementary and middle schools to exceed the maximum calorie level (40 percent and 34 percent, respectively) than to fall below the minimum calorie level (13 percent and 24 percent, respectively).
- The pattern of findings was reversed for high schools. Among high schools, it was more common for average weekly lunch menus to fall below the minimum calorie level than to exceed the maximum calorie level (66 percent versus 14 percent).
- More than one-third of weekly lunch menus did not meet the specified calorie range but came within 10 percent of doing so (data not shown in figure). The average calorie content of weekly menus in 33 percent of elementary schools, 35 percent of middle schools, and 38 percent of high schools was within 10 percent of the calorie range. Thus, overall, more than

three-quarters of weekly lunch menus (76 percent) met both the minimum and maximum calorie levels or came close to meeting these specifications.

Figure ES.5. Percentage of Weekly Lunch Menus That Met and Did Not Meet NSLP Dietary Specifications for Minimum and Maximum Calorie Levels



*Difference between elementary and middle schools is significantly different from zero at the 0.05 level.

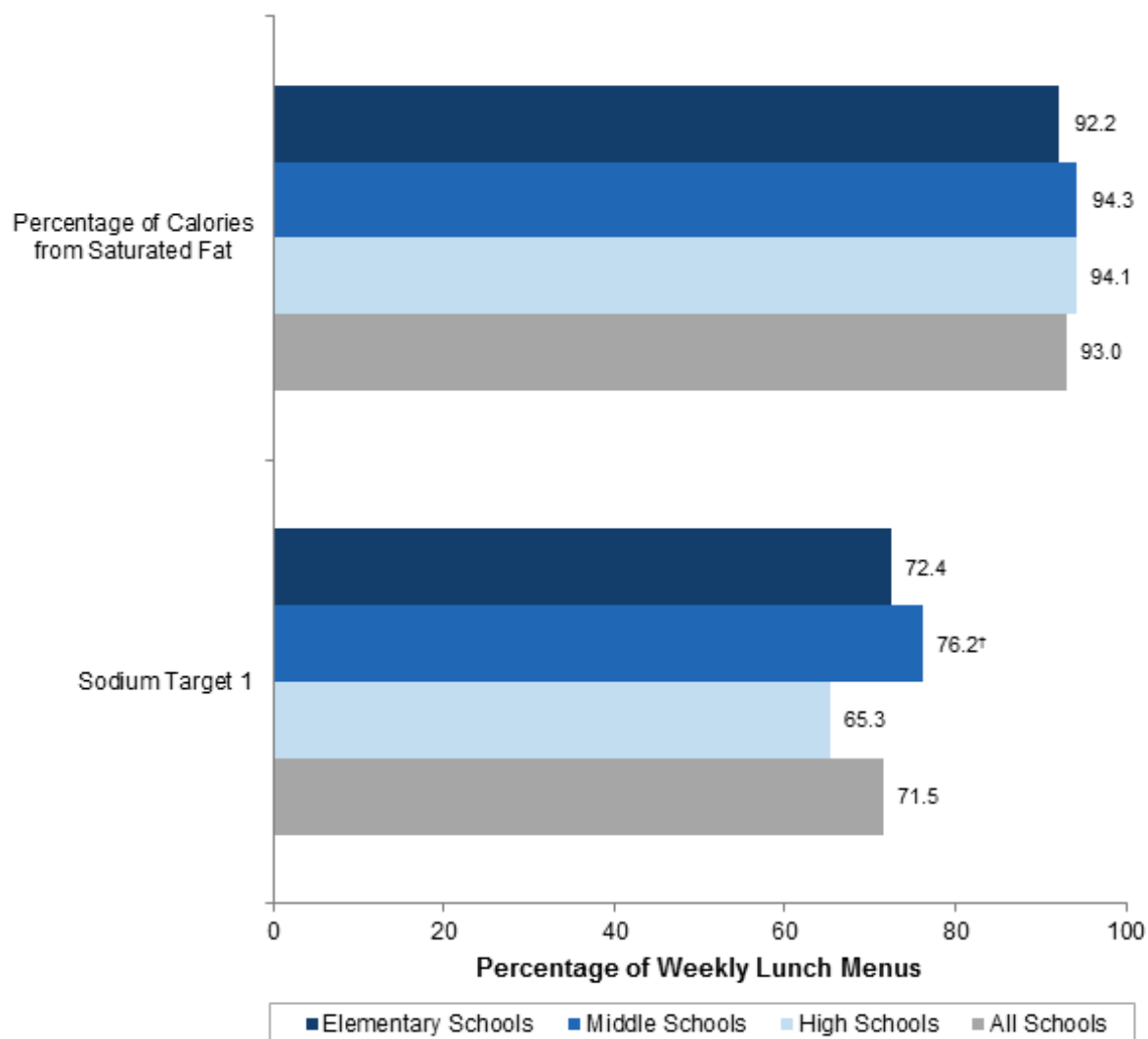
†Difference between middle and high schools is significantly different from zero at the 0.05 level.

#Difference between elementary and high schools is significantly different from zero at the 0.05 level.

Dietary Specifications for Saturated Fat and Sodium (Figure ES.6)

- The vast majority (93 percent) of average weekly lunch menus met the limit on the percentage of calories from saturated fat
- Roughly 7 in 10 average weekly lunch menus (72 percent) met the Target 1 sodium limit that was in place in SY 2014–2015. About three-quarters of average weekly menus in elementary schools and middle schools (72 and 76 percent, respectively) met the sodium limit. About two-thirds (65 percent) of average weekly menus in high schools met the sodium limit, and average weekly menus in high schools were significantly less likely to do so than menus in middle schools.

Figure ES.6. Percentage of Weekly Lunch Menus That Met NSLP Dietary Specifications for Saturated Fat and Sodium



Note: None of the differences between elementary schools and middle or high schools were statistically significant.

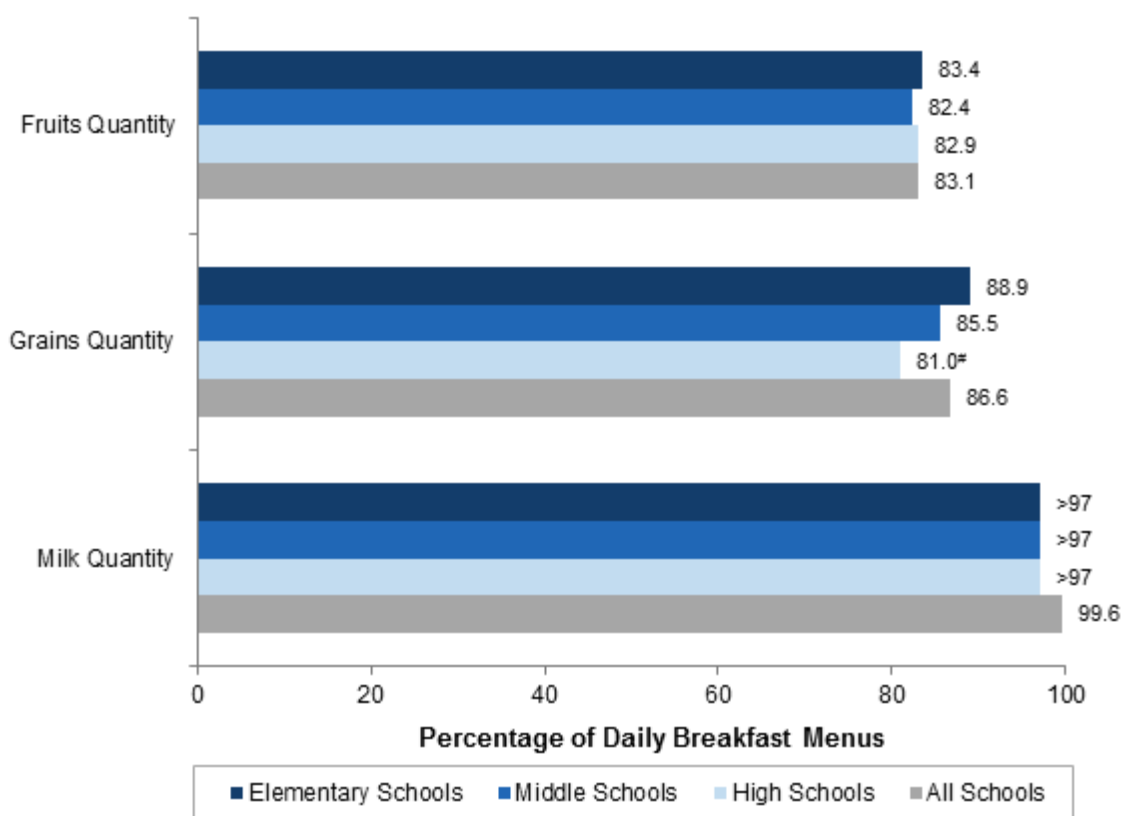
[†]Difference between middle and high schools is significantly different from zero at the 0.05 level.

2. SBP Breakfasts

Daily Meal Pattern Requirements (Figure ES.7)

- Overall, 83 percent of daily breakfast menus met the daily quantity requirement for fruits.
- The majority (87 percent) of all daily breakfast menus met the daily quantity requirement for grains. More than 85 percent of daily breakfast menus in elementary and middle schools (89 and 86 percent, respectively) met the daily quantity requirement for grains, and 81 percent of daily menus in high schools met this requirement. Daily menus in elementary schools were significantly more likely than those in high schools to meet this requirement.
- Virtually all daily breakfast menus met the daily quantity requirement for milk, and the majority (88 to 90 percent) of daily menus offered only allowed types of milk (fat-free milk or unflavored low-fat milk; data not shown in figure). If flavored low-fat milk was allowed, the percentage of daily breakfast menus that met the allowed milk type requirement would increase by about 6 percentage points in each school type (data not shown in figure).

Figure ES.7. Percentage of Daily Breakfast Menus That Met Daily SBP Meal Pattern Quantity Requirements



Note: None of the differences between middle and elementary or high schools were statistically significant.

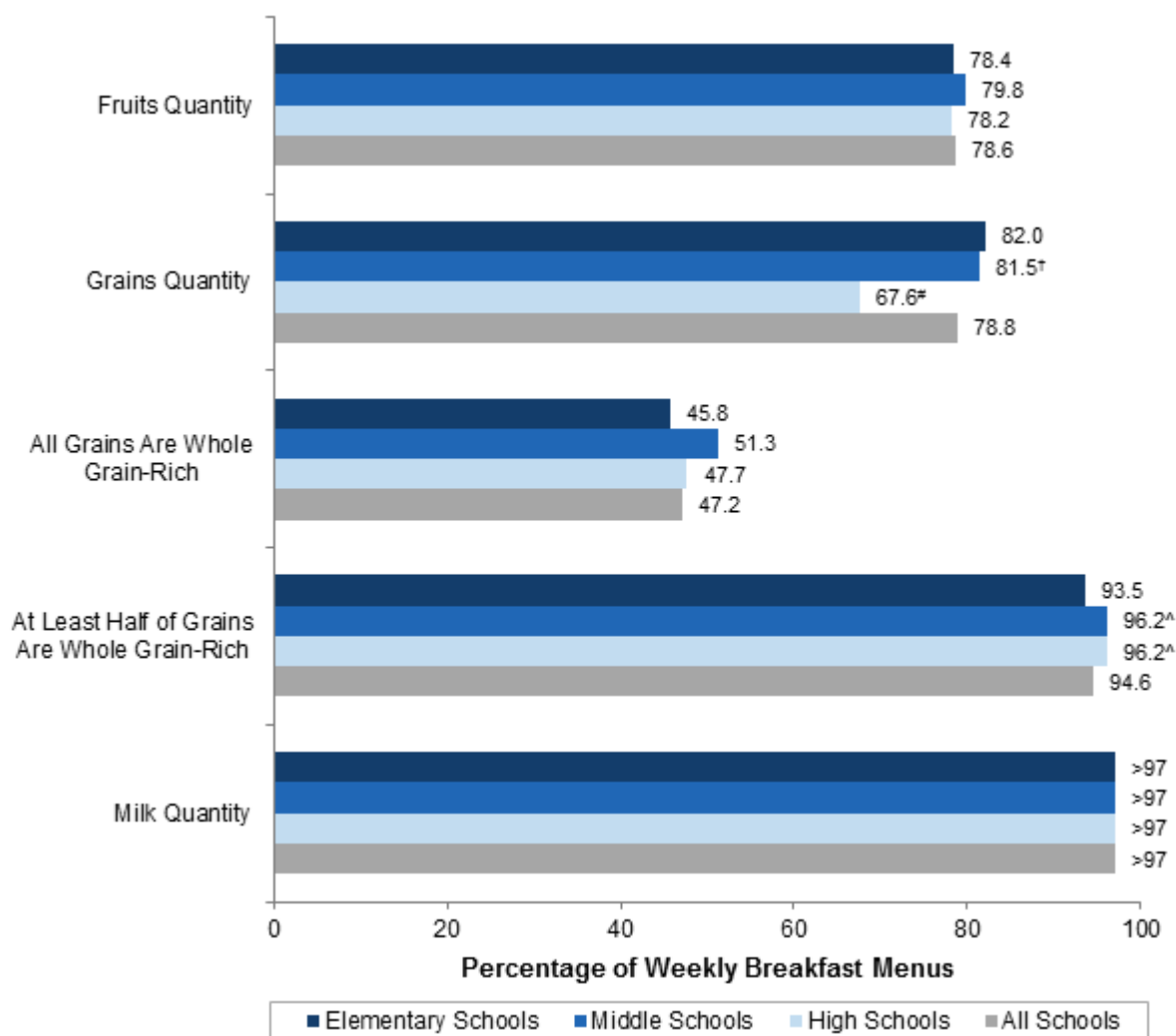
#Difference between elementary and high schools is significantly different from zero at the 0.05 level.

>97 = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large.

Weekly Meal Pattern Requirements (Figure ES.8)

- Overall, 79 percent of weekly breakfast menus met the weekly quantity requirement for fruits. In addition, two-thirds (67 percent) of weekly breakfast menus in elementary schools and 73 percent in middle and high schools complied with the requirement that no more than half of the fruits offered be in the form of juice (data not shown in figure).

Figure ES.8. Percentage of Weekly Breakfast Menus That Met Weekly SBP Meal Pattern Quantity Requirements and Requirements for Whole Grain-Rich Grains



Note: None of the differences between elementary and middle schools were statistically significant.

[†] Difference between middle and high schools is significantly different from zero at the 0.05 level.

[#] Difference between elementary and high schools is significantly different from zero at the 0.05 level.

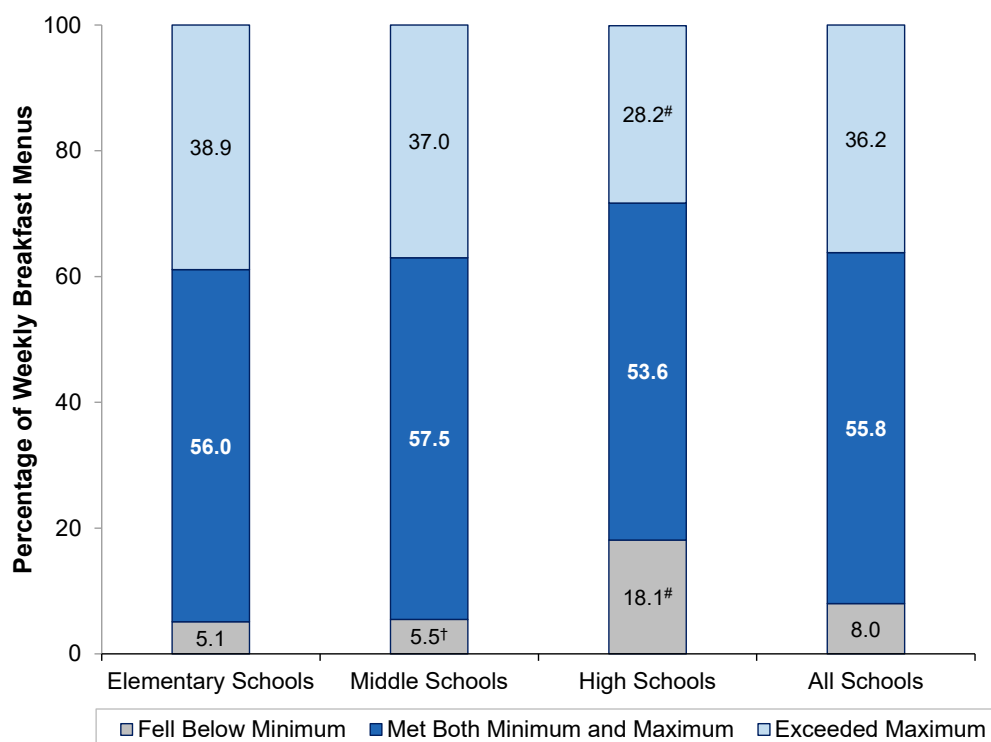
>97 or [^] = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large.

- Almost 8 in 10 weekly breakfast menus (79 percent overall) met the weekly quantity requirement for grains, but there was some variation across school types. Eighty-two percent of weekly menus in elementary and middle schools and 68 percent in high schools met the weekly quantity requirement for grains. Weekly menus in elementary and middle schools were significantly more likely than those in high schools to meet this requirement.
- Overall, about half of all weekly breakfast menus (46 percent in elementary schools, 51 percent in middle schools, and 48 percent in high schools) offered only whole grain-rich grain items. However, 95 percent of all weekly breakfast menus met the relaxed requirement that at least 50 percent of the grains offered must be whole grain-rich.
- Virtually all weekly breakfast menus met the weekly quantity requirement for milk.

Dietary Specifications for Calories (Figure ES.9)

- Overall, more than half (56 percent) of average weekly breakfast menus fell within the specified calorie range (that is, they met both the minimum and maximum calorie levels).
- It was more common for average weekly breakfast menus across all school types to exceed the maximum calorie level (36 percent overall) than to fall below the minimum calorie level (8 percent overall).
- Twenty-two percent of weekly breakfast menus did not meet the specified calorie range but came within 10 percent of the calorie range (data not shown in figure). Thus, overall, more than three-quarters (78 percent) of weekly breakfast menus met both the minimum and maximum calorie levels or came close to meeting these specifications.

Figure ES.9. Percentage of Weekly Breakfast Menus That Met and Did Not Meet SBP Dietary Specifications for Minimum and Maximum Calorie Levels



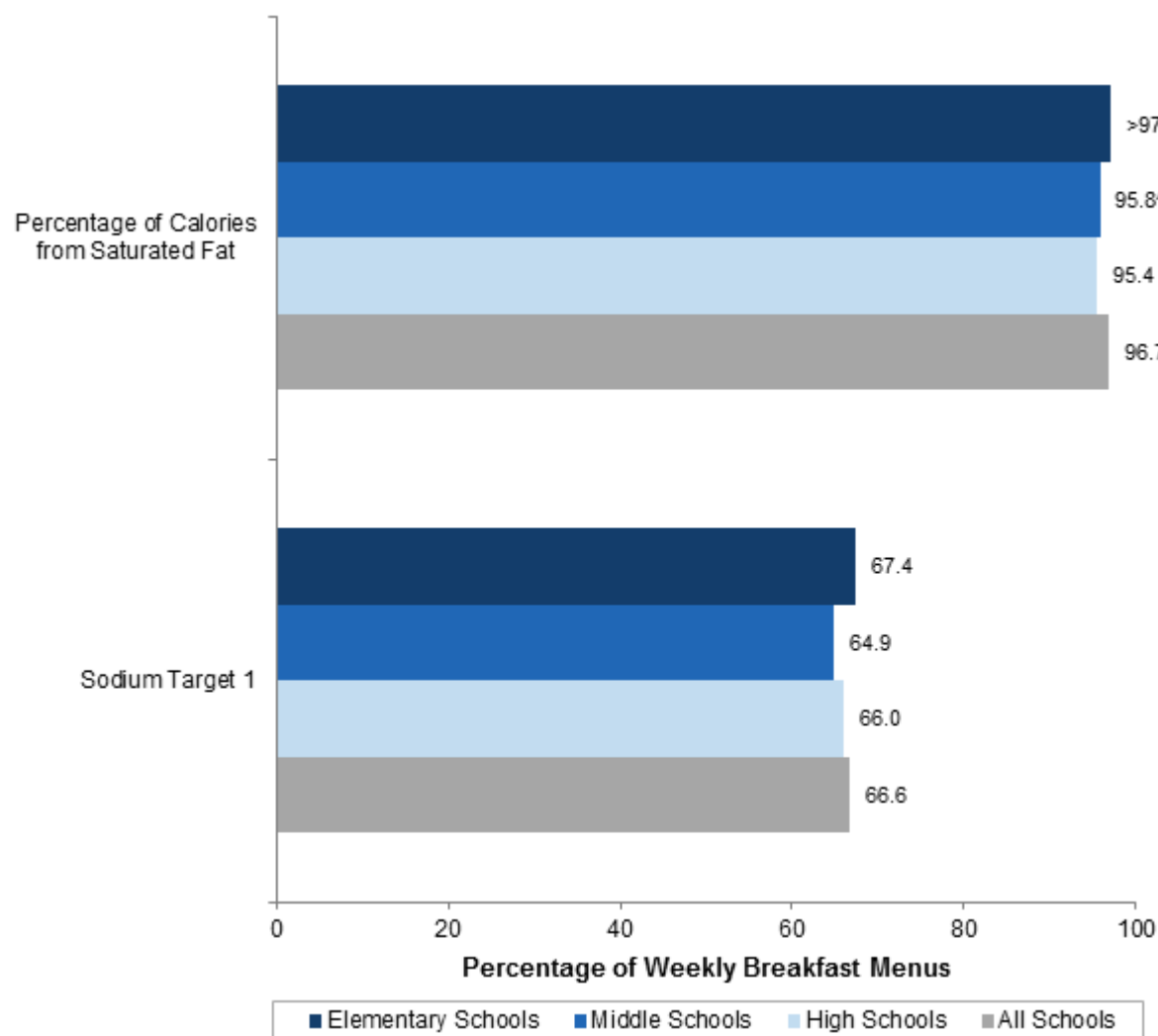
Note: None of the differences between elementary and middle schools were statistically significant.

[†] Difference between middle and high schools is significantly different from zero at the 0.05 level.

[#] Difference between elementary and high schools is significantly different from zero at the 0.05 level.

Dietary Specifications for Saturated Fat and Sodium (Figure ES.10)

- Nearly all (97 percent) average weekly breakfast menus met the limit on the percentage of calories from saturated fat.
- Roughly two-thirds (65 to 67 percent) of average weekly breakfast menus met the Target 1 sodium limit that was in place in SY 2014–2015.

Figure ES.10. Percentage of Weekly Breakfast Menus That Met SBP Dietary Specifications for Saturated Fat and Sodium

Note: None of the differences between school types were statistically significant.

>97 or [^] = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large.

D. Overall Nutritional Quality of School Meals and Factors Associated with Nutritional Quality

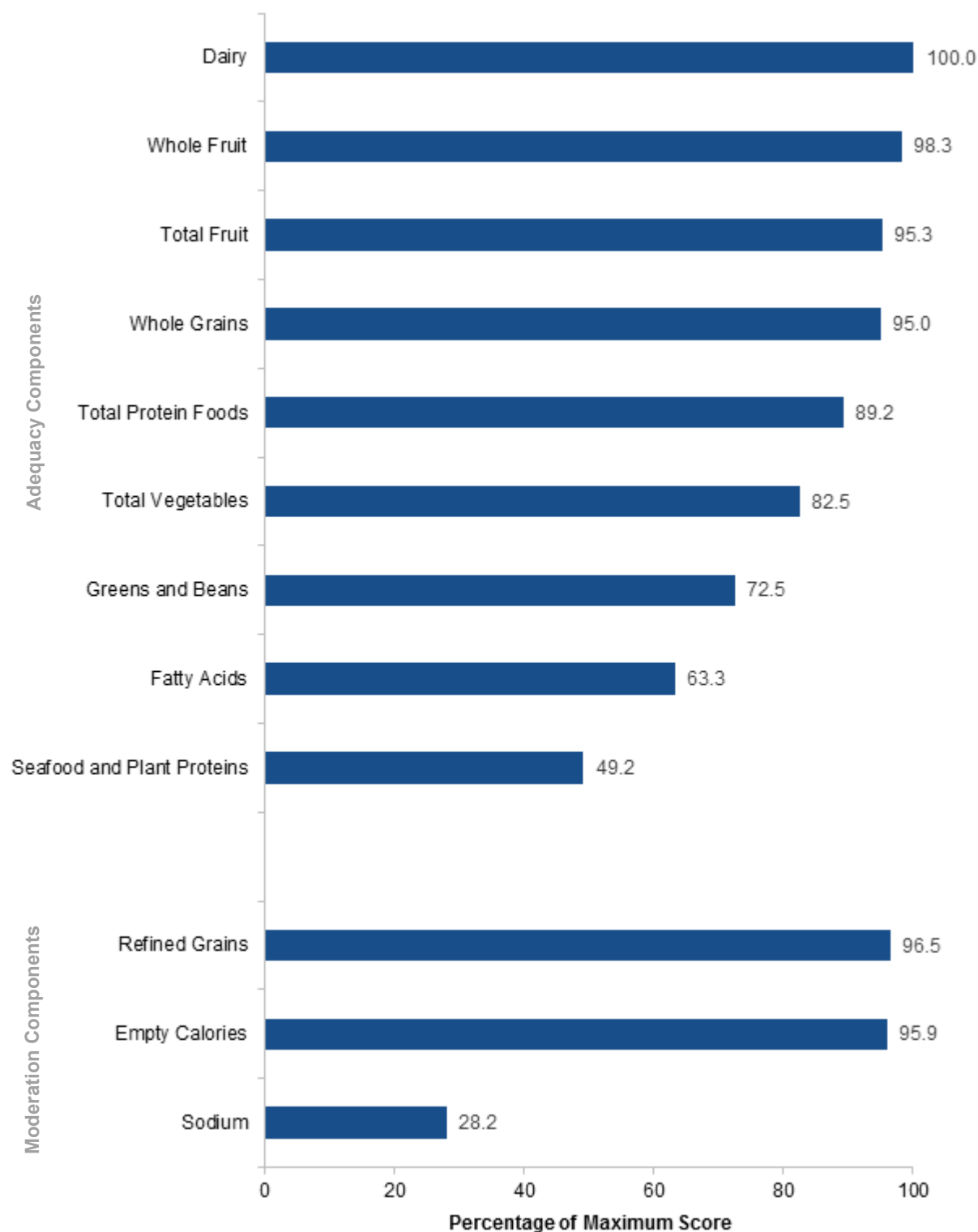
The study team used the Healthy Eating Index-2010 (HEI-2010) to examine the nutritional quality of NSLP lunches and SBP breakfasts and factors associated with the overall nutritional quality of these meals. The HEI-2010 provides a measure of the nutritional quality of school meals by assessing conformance to key recommendations of the 2010 *Dietary Guidelines for Americans* (Guenther et al. 2013).⁸ The HEI-2010 consists of 12 components, each reflecting a key aspect of nutritional quality, and a total score that measures overall nutritional quality. Nine of the 12 components included in the HEI-2010 are adequacy components, which focus on meeting food group and nutrient needs without exceeding calorie requirements. The adequacy components include total fruit (including juice), whole fruit, total vegetables, greens and beans, whole grains, dairy, total protein foods, seafood and plant proteins, and fatty acids. The three remaining components, referred to as moderation components, measure dietary components that individuals are encouraged to limit. The moderation components include refined grains, sodium, and empty calories. The HEI-2010 assigns scores for each component based on its concentration in school meals. Maximum scores for the various components range from 5 to 20, and the total score, which is computed by summing scores for each of the 12 components, has a maximum of 100. The total HEI-2010 score provides an overall measure of the nutritional quality of school meals. For the total score and all components, higher scores reflect better conformance with *Dietary Guidelines for Americans* recommendations and higher nutritional quality.

1. Mean HEI-2010 Scores for NSLP Lunches Prepared (Figure ES.11)

- Overall, NSLP lunches received an average total HEI-2010 score of 81.8 out of 100 (data not shown in figure). Average scores were comparable for all three school types.
- The overall nutritional quality of NSLP lunches prepared (based on a total HEI-2010 score of 82 out of 100) was high in comparison to the overall diet quality of students in schools that participated in the school meal programs. In SY 2014–2015, total HEI-2010 scores for students' daily intakes were 65 out of 100 for students that participated in the NSLP and 61 out of 100 for nonparticipants (Fox et al. 2019).

⁸ The study team used the HEI-2010, because the 2010 *Dietary Guidelines for Americans* were in effect when data for this study were collected.

Figure ES.11. Mean Healthy Eating Index-2010 Component Scores, as a Percentage of Maximum Scores, for NSLP Lunches Prepared: All Schools



Note: Higher scores for adequacy components indicate higher concentrations in NSLP lunches; whereas, higher scores for moderation components indicate lower concentrations in NSLP lunches.

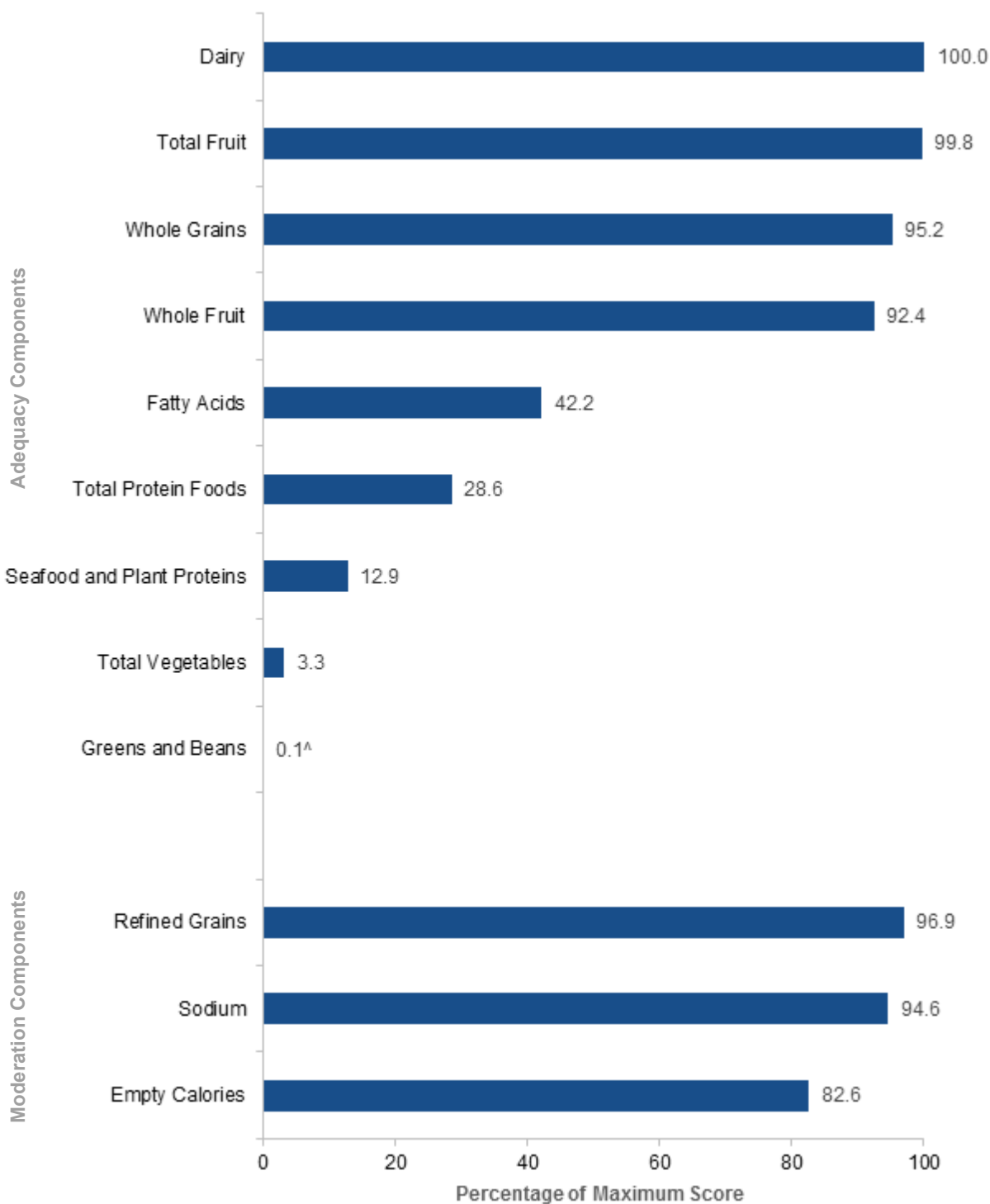
- For NSLP lunches overall, average scores for 6 of the 9 adequacy components in the HEI-2010 were at least 82 percent of the maximum possible score. Scores for the remaining three components were lower.
 - On average, NSLP lunches overall received the maximum score for dairy (100 percent of the maximum score) and came close to receiving the maximum score for whole fruit (98 percent), total fruit (95 percent), and whole grains (95 percent). These perfect and near-perfect scores indicate that the concentrations of these components in NSLP lunches were very consistent with the relevant *Dietary Guidelines for Americans* recommendations.
 - Average scores for total protein foods and total vegetables were slightly lower, but were still more than 80 percent of the maximum possible score (89 and 83 percent, respectively). On average, scores for greens and beans and fatty acids were 73 and 63 percent of the maximum scores, respectively.
 - NSLP lunches received the lowest score for seafood and plant proteins (49 percent, on average), indicating that the concentration of this component in NSLP lunches was about half of the concentration recommended in the *Dietary Guidelines for Americans*.
- There were some variations by school type in scores for the adequacy components of the HEI-2010 (data not shown in figure):
 - On average, NSLP lunches in middle schools received a significantly lower score for total fruit than those in elementary or high schools (93 percent versus 96 percent for both middle and high schools).
 - Relative to high schools, NSLP lunches in middle schools received significantly lower scores for total vegetables and for greens and beans (85 percent versus 81 percent for total vegetables, on average; and 75 percent versus 69 percent for greens and beans, on average).
 - On average, NSLP lunches in elementary schools received a significantly higher score for seafood and plant proteins than middle or high schools (52 percent versus 46 percent for both middle and high schools).
 - Relative to high schools, NSLP lunches in elementary schools received a significantly lower average score for fatty acids (61 percent versus 68 percent).
- Higher scores for the moderation components in the HEI-2010 reflect lower concentrations in NSLP lunches (which is desirable). Overall, NSLP lunches received high scores for two of the three moderation components.
 - Average NSLP lunches came close to receiving the maximum score for refined grains (97 percent of the maximum score) and empty calories (96 percent). The near-perfect scores for these components indicate that concentrations of refined grains and empty calories in NSLP lunches were very consistent with the relevant *Dietary Guidelines for Americans* recommendations.
 - On average, NSLP lunches in elementary schools received a significantly lower score for empty calories than NSLP lunches in high schools (95 percent versus 97 percent; data not shown in figure).

- Average scores for sodium were 28 percent of the maximum score, indicating that the concentration of sodium in NSLP lunches was higher than recommended in the *Dietary Guidelines for Americans*. All of the differences between school types in the scores for sodium were statistically significant (data not shown in figure).

2. Mean HEI-2010 Scores for SBP Breakfasts Prepared (Figure ES.12)

- Overall, SBP breakfasts received an average total HEI-2010 score of 71.3 out of 100 (data not shown in figure). Average scores were comparable for all three school types.
- The overall nutritional quality of SBP breakfasts prepared (based on a total HEI-2010 score of 71 out of 100) was slightly higher than the overall diet quality of students in schools that participated in the school meal programs. In SY 2014–2015, total HEI-2010 scores for students' daily intakes were 66 out of 100 for both students that participated in the SBP and nonparticipants (Fox et al. 2019).
- For SBP breakfasts overall, average scores for 4 of the 9 adequacy components in the HEI-2010 were at least 92 percent of the maximum possible score. Scores for the remaining five components were lower.
 - On average, SBP breakfasts received the maximum score for dairy and total fruit (100 percent) and came close to receiving the maximum score for whole grains (95 percent) and whole fruit (92 percent). These perfect and near-perfect scores indicate that the concentrations of these components in SBP breakfasts were very consistent with the relevant *Dietary Guidelines for Americans* recommendations.
 - Overall scores for fatty acids and total protein foods were, on average, 42 and 29 percent of the maximum scores, respectively. On average, SBP breakfasts in elementary schools received a significantly lower score for total protein foods than either middle or high schools (25 percent versus 32 and 35 percent, respectively; data not shown in figure).
 - On average, the score for seafood and plant proteins was 13 percent of the maximum, while the scores for total vegetables and greens and beans were less than 4 percent of the maximum.
 - The lower scores for total protein foods, seafood and plant proteins, total vegetables, and greens and beans are consistent with the facts that (1) menu items that contribute to these components were not commonly offered on daily breakfast menus, and (2) the nutrition standards for SBP breakfasts do not include requirements for vegetables or meats/meat alternates.

Figure ES.12. Mean Healthy Eating Index-2010 Component Scores, as a Percentage of Maximum Scores, for SBP Breakfasts Prepared: All Schools



Note: Higher scores for adequacy components indicate higher concentrations in SBP breakfasts; whereas, higher scores for moderation components indicate lower concentrations in SBP breakfasts.

[^] = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large.

- Overall, SBP breakfasts received high scores for all three of the moderation components in the HEI-2010.
 - On average, SBP breakfasts came close to receiving the maximum possible score for refined grains (97 percent) and sodium (95 percent), indicating that the concentrations of these components in SBP breakfasts were consistent with *Dietary Guidelines for Americans* recommendations.
 - The overall score for empty calorie for SBP breakfast was slightly lower, but still more than 80 percent of the maximum score (83 percent).
 - On average, SBP breakfasts in elementary schools received a significantly higher score for sodium relative to high schools (96 percent versus 92 percent) and for empty calories relative to both middle and high schools (84 percent versus 81 percent for both middle and high schools) (data not shown in figure).

3. Factors Associated with the Nutritional Quality of NSLP Lunches

The study team conducted multivariate analyses to examine the relationships between the nutritional quality of school meals and key characteristics of (1) the meals, including compliance with selected nutrition standards, (2) school foodservice operations, (3) the school food environment, and (4) other characteristics of schools and SFAs. The total HEI-2010 score was used as the overall measure of nutritional quality. Findings are presented as regression-adjusted mean total HEI-2010 scores (hereafter referred to as “HEI-2010 scores” for simplicity). Because the probability of finding significant associations by chance increases with the number of associations tested, findings for the many characteristics examined in these analyses should be considered exploratory.

Compliance with NSLP Nutrition Standards

- Overall, the mean HEI-2010 score for schools with weekly lunch menus that met the relaxed requirement for whole grains (that at least half of all grains were whole grain-rich) was 4.9 points higher than the mean score for schools that were otherwise similar but had weekly lunch menus that did not meet the relaxed requirement (82.5 versus 77.6).
- Meeting the Target 1 sodium limit was also associated with significantly higher HEI-2010 scores. Overall, the mean score for schools with average weekly lunch menus that met this requirement was 3.1 points higher than the mean score for similar schools that had average weekly menus that did not meet this requirement (82.7 versus 79.6).
- Findings related to meeting the minimum and maximum calorie levels were mixed. (The average amount of calories in NSLP lunches over the week must provide at least the minimum amount of calories specified for the grade groups included in the school while not exceeding the maximum calorie level.) Overall, schools with average weekly lunch menus that met the minimum calorie level had a significantly higher mean HEI-2010 score (1.5 points higher), whereas schools with average weekly menus that met the maximum calorie level had a significantly lower mean score (1.2 points lower).

Types of Food Offered

- Overall, offering dark green vegetables or legumes on more than half of daily lunch menus and offering breaded meat items on at least one daily were both associated with significantly higher mean HEI-2010 scores (1.0 point and 1.5 points higher, respectively).
- Offering pizza or pizza products on more than half of daily lunch menus was associated with significantly lower mean HEI-2010 scores (1.9 points lower).

Foodservice Operations and School Food Environment

- Participation in a purchasing cooperative was associated with significantly higher mean HEI-2010 scores for NSLP lunches. Overall, the mean HEI-2010 score for schools in SFAs that participated in a purchasing cooperative was 1.6 points higher than the mean score for similar schools in SFAs that did not participate in a purchasing cooperative (82.6 versus 81.0).
- Receipt of fully or partially prepared meals from production or central kitchens was associated with significantly higher HEI-2010 scores for NSLP lunches. Overall, the mean score for such schools was 1.5 points higher than the mean score for similar schools that did not receive meals from central or production kitchens.
- There was a positive association between HEI-2010 scores for NSLP lunches and *not* selling competitive foods during meal times. Overall, the mean HEI-2010 score for schools that did not sell competitive foods at meal times was 2.8 points higher than the mean score for similar schools that did sell competitive foods at meal times (84.2 versus 81.4).

Other SFA characteristics

- Overall, the mean HEI-2010 score for NSLP lunches in schools located in FNS's Western region was 2.7 points higher than the mean score for similar schools located in the Mid-Atlantic region (the reference category) (84.0 versus 81.3).

4. Factors Associated with the Nutritional Quality of SBP Breakfasts

Compliance with SBP Nutrition Standards

- Overall, the mean HEI-2010 score for schools with weekly breakfast menus that met the relaxed requirement for whole grains (that at least half of all grains were whole grain-rich) was 5.3 points higher than the mean score for similar schools with weekly breakfast menus that did not meet the relaxed requirement (71.6 versus 66.3).
- Meeting the Target 1 sodium limit was also associated with a significantly higher HEI-2010 score for SBP breakfasts. Overall, schools with average weekly breakfast menus that met this requirement had a HEI-2010 score that was 1.8 points higher than the mean score for similar schools with average weekly menus that did not meet this requirement (71.0 versus 70.1).
- Overall, schools with average weekly breakfast menus that met the minimum calorie level had a significantly higher mean HEI-2010 score (1.4 points higher) than similar schools with average weekly menus that did not meet the minimum calorie level.

Types of Food Offered

- Offering cold cereal on every daily breakfast menu was associated with significantly higher mean HEI-2010 scores (1.1 points higher), as was offering pizza products on at least one daily breakfast menu (1.4 points higher).

Foodservice Operations and School Food Environment

- Overall, schools that participated in a Farm to School program had a significantly higher mean HEI-2010 score for SBP breakfasts (2.9 points higher) than similar schools that did not participate in a Farm to School program.
- Charging higher prices for paid SBP breakfasts was associated with significantly lower mean HEI-2010 scores. Overall, schools that charged between \$1.50 and \$1.99 for paid breakfasts had a significantly lower mean HEI-2010 score than the reference group of schools that charged less than \$1.25 (but did charge for paid breakfasts) (2.2 points lower).

Other SFA characteristics

- Schools located in the Western region of the country had a significantly higher mean HEI-2010 score for SBP breakfasts than schools in the Mid-Atlantic reference group (1.8 points higher).

E. Changes in School Meals since the Fourth School Nutrition Dietary Assessment

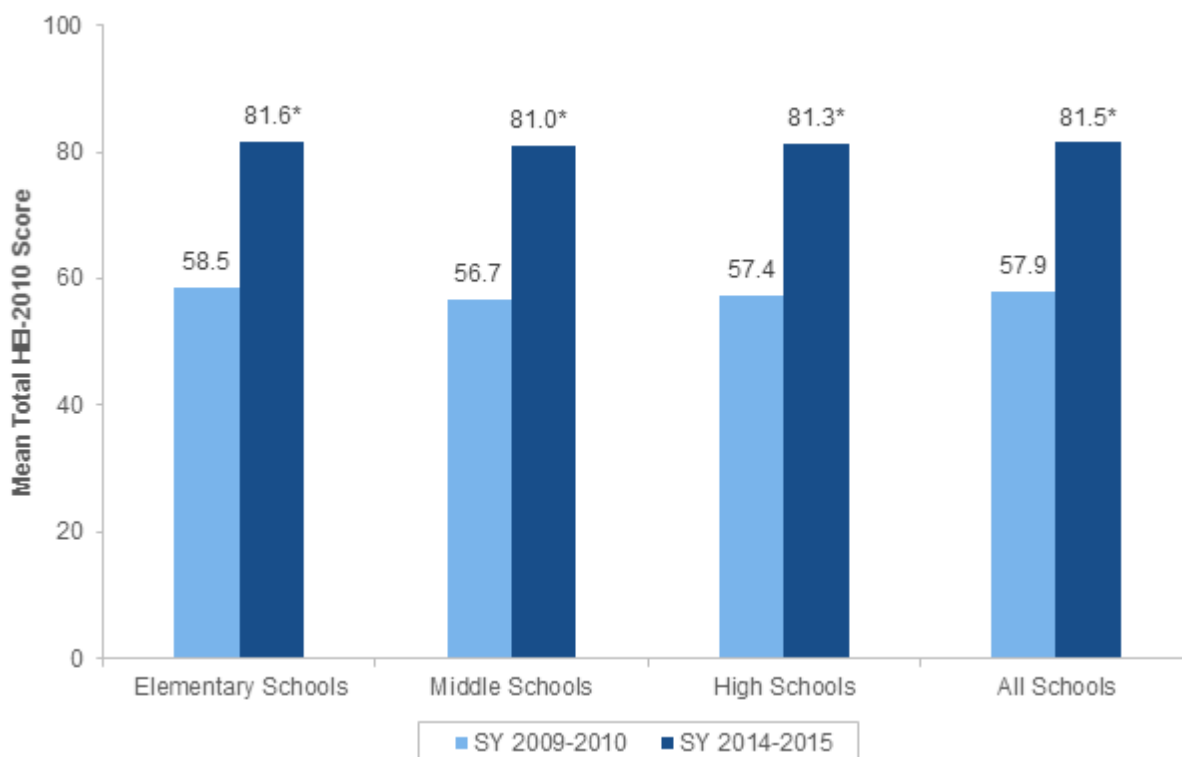
The SNMCS continues FNS's long-standing commitment to periodically assess the school meal programs. To gain insights into trends in school meals over time, selected findings from the SNMCS were compared with findings from the most recent prior assessment of school meals—the fourth School Nutrition Dietary Assessment (SNDA-IV)—which was conducted in SY 2009–2010. Analyses compare Healthy Eating Index (HEI)-2010 total and components scores and the average calorie, saturated fat, and sodium content of NSLP lunches and SBP breakfasts served. Findings for HEI-2010 scores and nutrient content are based on estimates of average menus served, which take student selection patterns into account and give greater weight to menu items that were most frequently selected by students as part of reimbursable meals. These estimates for menus served differ slightly from (but are closely related to) the estimates presented previously for menus prepared. SNDA-IV did not collect the data needed to produce estimates for menus prepared. It is important to note that the observed changes described in this section may also have occurred between 2010 and 2012, after SNDA-IV was conducted but before the formal incorporation of the updated standards, and SY 2012–2013, the first year the updated nutrition standards were phased in.

1. NSLP Lunches

Trends in HEI-2010 Scores for NSLP Lunches Served

- Between SY 2009–2010 and SY 2014–2015, the mean total HEI-2010 score for NSLP lunches served increased significantly by at least 23 points for all school types (Figure ES.13). The large increases in HEI-2010 total scores observed for all school types suggests that the updated nutrition standards have significantly improved the nutritional quality of NSLP lunches.

Figure ES.13. Comparison of Mean Healthy Eating Index-2010 Total Scores for NSLP Lunches Served in SY 2009–2010 and SY 2014–2015



Note: Higher scores reflect higher nutritional quality.

*Difference between SY 2009–2010 and SY 2014–2015 is significantly different from zero at the 0.05 level.

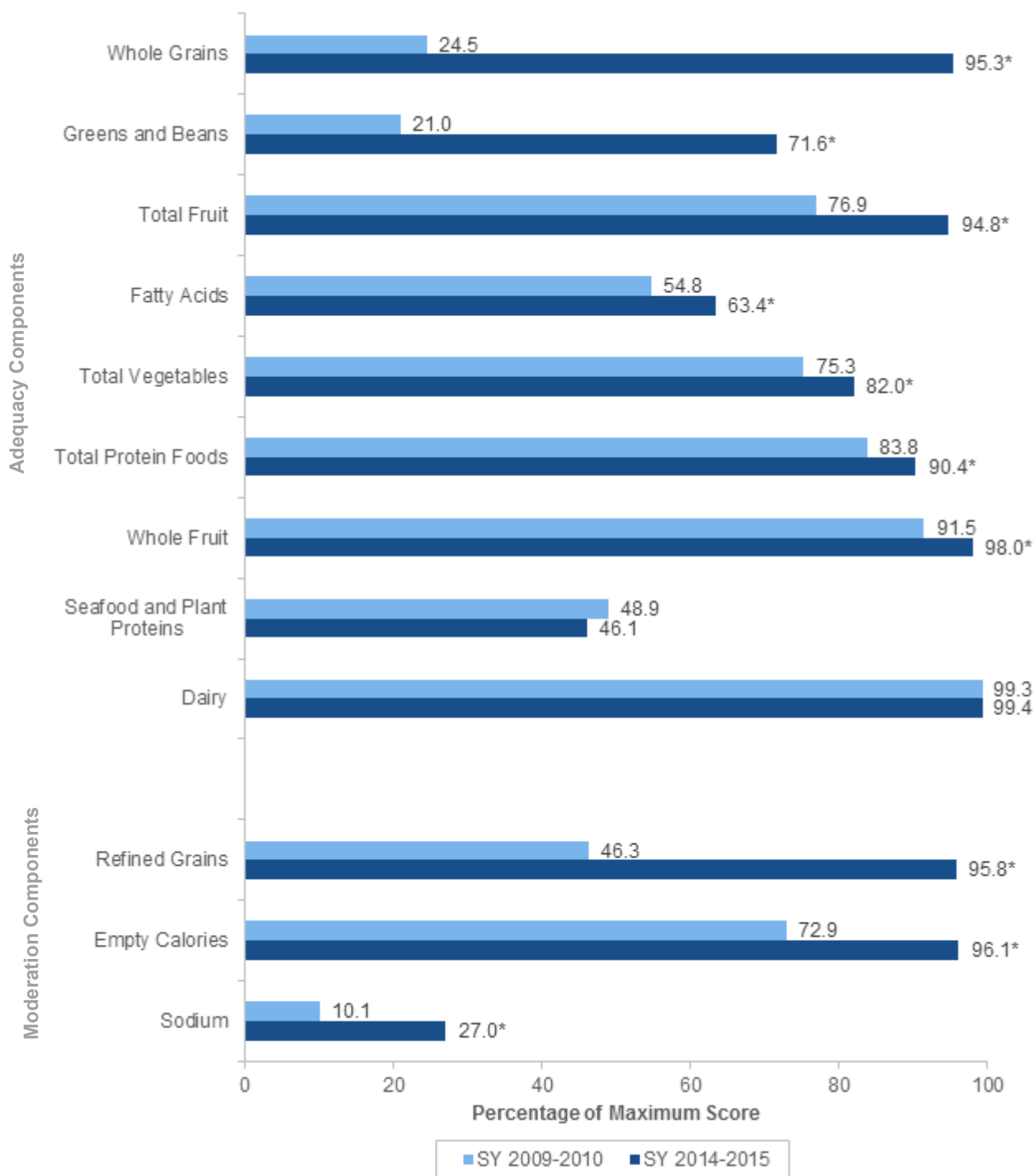
- For NSLP lunches served, scores for 7 of the 9 adequacy components in the HEI-2010 increased significantly between SY 2009–2010 and SY 2014–2015 (Figure ES.14).
 - The largest increases in scores for the adequacy components for NSLP lunches were observed for whole grains and greens and beans. Between SY 2009–2010 and SY 2014–2015, the score for whole grains increased by 71 percentage points (from 25 to 95 percent of the maximum score), and the score for greens and beans increased by 51 percentage points (from 21 to 72 percent of the maximum score).
 - In addition, the score for total fruit increased by 18 percentage points (from 77 to 95 percent of the maximum score).

- Scores for whole fruit, total vegetables, total protein foods, and fatty acids increased by 7 to 8 percentage points between SY 2009–2010 and SY 2014–2015.
- Scores for seafood and plant proteins decreased slightly, but the differences were not statistically significant.
- Scores for the three moderations components increased significantly between SY 2009–2010 and SY 2014–2015 (Figure ES.14), indicating that the concentrations of refined grains, empty calories, and sodium in NSLP lunches decreased over time.
 - The score for refined grains increased by 50 percentage points (from 46 to 96 percent of the maximum score).
 - In addition, the score for empty calories increased from 73 to 96 percent of the maximum score.
 - The score for sodium increased by 17 percentage points (from 10 to 27 percent of the maximum score).

Trends in the Calorie, Saturated Fat, and Sodium Content of NSLP Lunches Served (Figure ES.15)

- Between SY 2009–2010 and SY 2014–2015, the average calorie content of NSLP lunches overall decreased significantly by 9 percent (62 calories). This suggests that the maximum calorie levels included (for the first time) in the nutrition standards that went into effect beginning in SY 2012–2013 have influenced the calorie content of NSLP lunches.
- However, it is important to note that a decrease in calories may not be desirable for some schools, particularly high schools where students' calorie needs are greatest. As reported previously (Figure ES.5), two-thirds (66 percent) of average weekly lunch menus in high schools in SY 2014–2015 did not meet the minimum calorie level specified in the updated nutrition standards. The same was true for 13 percent of average weekly menus in elementary schools and 24 percent in middle schools.
- The updated nutrition standards may also have affected the saturated fat content of NSLP lunches, despite the fact that the actual standard (less than 10 percent of total calories from saturated fat) did not change. Between SY 2009–2010 and SY 2014–2015, the average percentage of calories from saturated fat in NSLP lunches served decreased by roughly 2 percentage points, which overall reflects a 17 percent decrease over time.
- Overall, the average sodium content of NSLP lunches served decreased by 19 percent—from 1,375 mg to 1,105 mg. The SMI standards encouraged SFAs to reduce levels of sodium in school meals but did not establish quantitative targets, whereas the updated nutrition standards established three sodium targets to be met incrementally, with the first target taking effect in SY 2014–2015.

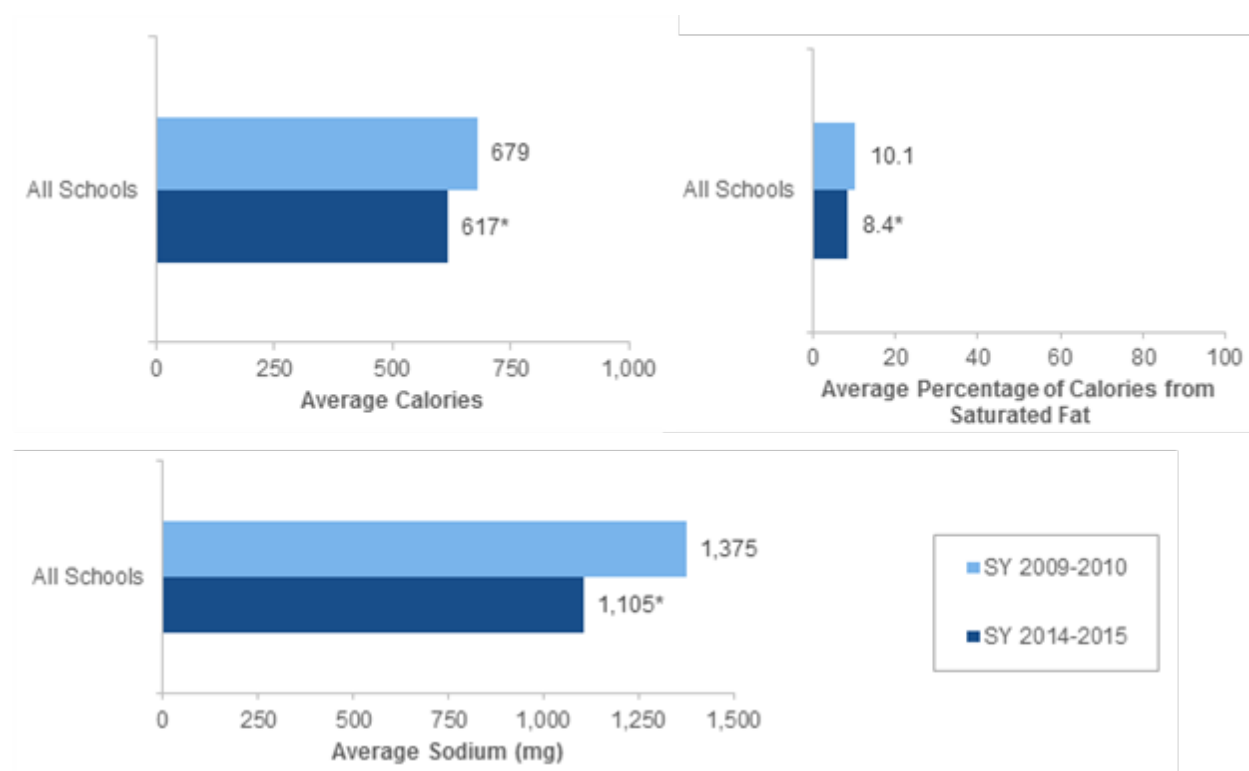
Figure ES.14. Comparison of Healthy Eating Index-2010 Component Scores, as a Percentage of Maximum Scores, for NSLP Lunches Served in SY 2009–2010 and SY 2014–2015: All Schools



Note: Higher scores for adequacy components indicate higher concentrations in NSLP lunches; whereas higher scores for moderation components indicate lower concentrations in NSLP lunches.

*Difference between SY 2009–2010 and SY 2014–2015 is significantly different from zero at the 0.05 level.

Figure ES.15. Comparison of Average Calorie, Saturated Fat, and Sodium Content of NSLP Lunches Served in SY 2009–2010 and SY 2014–2015: All Schools



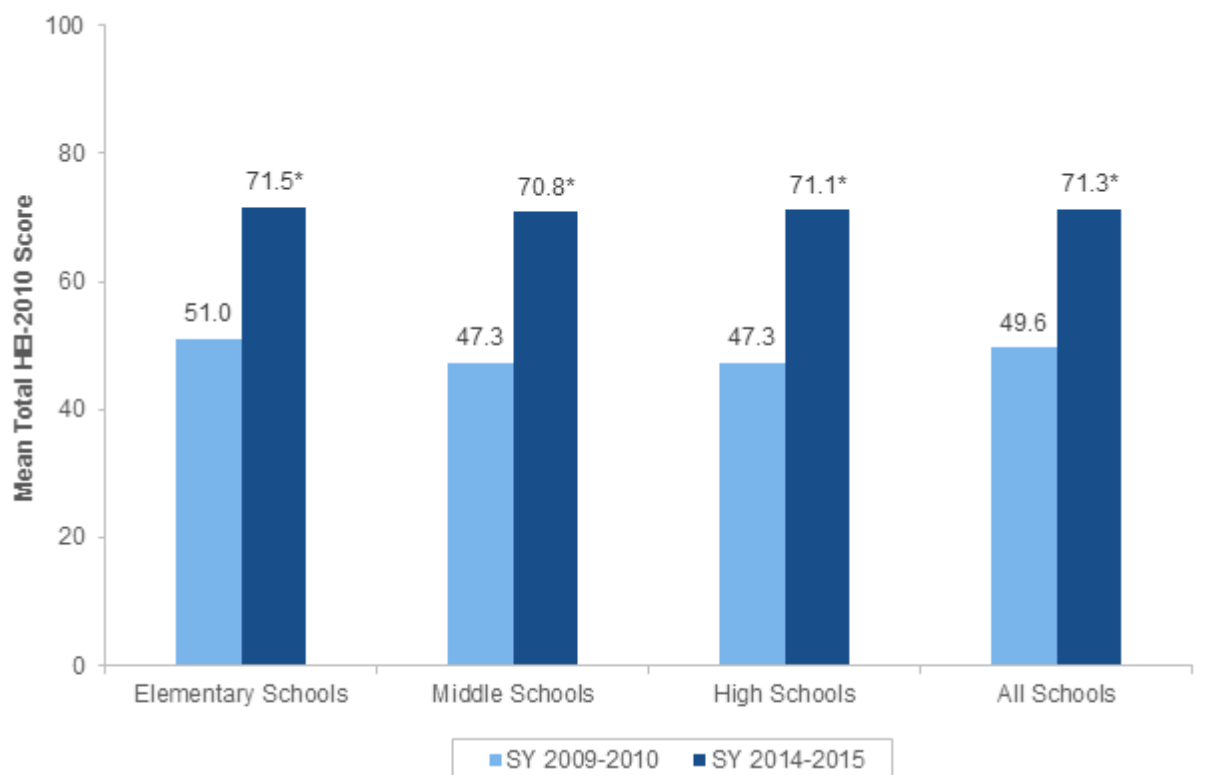
*Difference between SY 2009–2010 and SY 2014–2015 is significantly different from zero at the 0.05 level.

2. SBP Breakfasts

Trends in HEI-2010 Scores for SBP Breakfasts Served

- Between SY 2009–2010 and SY 2014–2015, the mean total HEI-2010 score for SBP breakfasts served increased significantly—by at least 21 percentage points for all school types (Figure ES.16). The large increases in HEI-2010 total scores observed for all school types suggests that the updated nutrition standards have significantly improved the nutrition quality of SBP breakfasts.

Figure ES.16. Comparison of Mean Healthy Eating Index-2010 Total Scores for SBP Breakfasts Served in SY 2009–2010 and SY 2014–2015

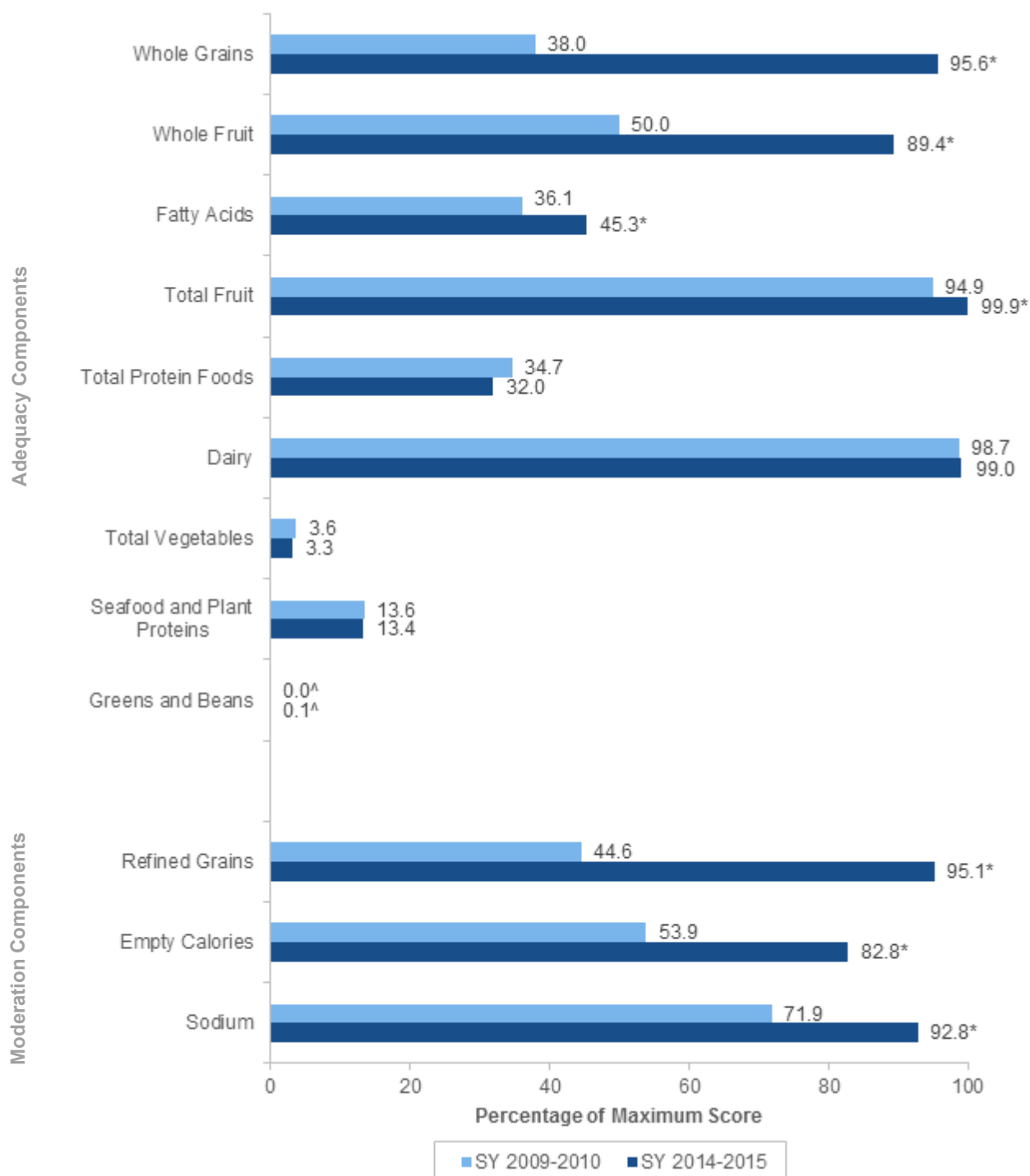


Note: Higher scores reflect higher nutritional quality.

*Difference between SY 2009–2010 and SY 2014–2015 is significantly different from zero at the 0.05 level.

- For SBP breakfasts served, scores for 4 of the 9 adequacy components in the HEI-2010 increased significantly between SY 2009–2010 and SY 2014–2015 (Figure ES.17).
 - The largest increases in scores for the adequacy components for SBP breakfasts were observed for whole grains and whole fruit. Between SY 2009–2010 and SY 2014–2015, the score for whole grains increased by 58 percentage points (from 38 to 96 percent of the maximum score), and the score for whole fruit increased by 39 percentage points (from 50 to 89 percent of the maximum score).
 - In addition, the scores for total fruit and fatty acids increased by 5 to 9 percentage points (from 95 to 100 percent of the maximum score for total fruit; and from 36 to 45 percent of the maximum score for fatty acids)
 - Scores for the remaining adequacy components (total protein foods, dairy, total vegetables, seafood and plant proteins, and greens and beans) remained relatively constant over time for SBP breakfasts.

Figure ES.17. Comparison of Healthy Eating Index-2010 Component Scores, as a Percentage of Maximum Scores, for SBP Breakfasts Served in SY 2009–2010 and SY 2014–2015: All Schools



Note: Higher scores for the adequacy components indicate higher concentrations in SBP breakfasts; whereas higher scores for the moderation components indicate lower concentrations in SBP breakfasts.

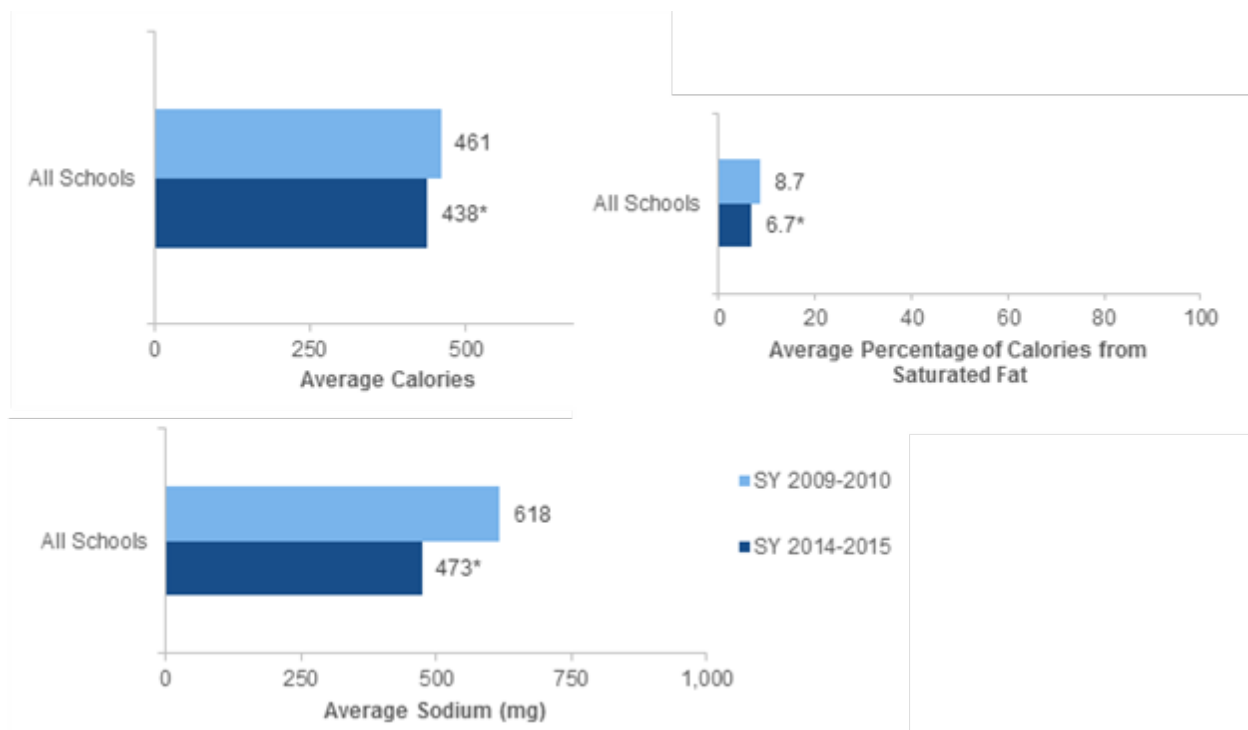
*Difference between SY 2009–2010 and SY 2014–2015 is significantly different from zero at the 0.05 level.

- Scores for the three moderations components increased significantly between SY 2009–2010 and SY 2014–2015 (Figure ES.17), indicating that the concentrations of refined grains, empty calories, and sodium in SBP breakfasts decreased over time.
 - The score for refined grains for SBP breakfasts served increased by 50 percentage points (from 45 to 95 percent of the maximum score).
 - There were also substantial increases (21 to 29 percentage points) in the scores for empty calories (from 54 to 83 percent of the maximum score) and sodium (from 72 to 93 percent of the maximum score).

Trends in the Calorie, Saturated Fat, and Sodium Content of SBP Breakfasts Served (Figure ES.18)

- Between SY 2009–2010 and SY 2014–2015, the average calorie content of SBP breakfasts served overall decreased significantly (by roughly 20 calories). The average calorie content of SBP breakfasts served decreased significantly in both middle and high schools (by roughly 50 calories), but there was no significant change in elementary schools. This suggests that the maximum calorie levels included in the updated nutrition standards have influenced the calorie content of SBP breakfasts in secondary schools.
- However, it is important to note that a decrease in calories may not be desirable for some schools, particularly high schools where students' calorie needs are greatest. As reported previously (Figure ES.9), almost 1 in 5 (18 percent) average weekly breakfast menus in high schools in SY 2014-2015 did not meet the minimum calorie level specified in the updated nutrition standards. The same was true for 5 to 6 percent of average weekly menus in elementary and middle schools.
- Overall, the saturated fat content of SBP breakfasts served decreased significantly between SY 2009–2010 and SY 2014–2015. The average percentage of calories provided by saturated fat decreased by 23 percent.
- On average, the sodium content of SBP breakfasts served decreased by 23 percent overall (from 618 mg to 473 mg).

Figure ES.18. Comparison of Average Calorie, Saturated Fat, and Sodium Content of SBP Breakfasts Served in SY 2009–2010 and SY 2014–2015: All Schools



*Difference between SY 2009–2010 and SY 2014–2015 is significantly different from zero at the 0.05 level.

1. INTRODUCTION

The National School Lunch Program (NSLP) and School Breakfast Program (SBP) form the cornerstone of the nation's nutrition safety net for low-income children. These programs, which are administered by the U.S. Department of Agriculture (USDA), Food and Nutrition Service (FNS), provide 30 million Federally subsidized lunches and 15 million Federally subsidized breakfasts to children each school day (USDA, FNS 2018a and 2018b). Children whose families are living below 130 percent of the Federal poverty level (FPL) are eligible for free meals, although schools in high-poverty areas may provide free meals on a universal basis regardless of households' income. For children whose families earn between 130 and 185 percent of the FPL, meals can be purchased at a reduced price. Children who do not apply or qualify for free or reduced-price meals must pay full price for the meals.

At the State level, the NSLP and SBP are administered by State child nutrition (CN) agencies and at the local level by school food authorities (SFAs). State CN agencies are responsible for ensuring that SFAs comply with Federal regulations, but SFAs and schools have operational discretion in how they administer the programs within Federal and State guidelines. For example, SFAs and schools have options in how they set meal prices, plan their menus, select methods of food production, and use nutrition promotion techniques.

In school year (SY) 2012–2013, the school meal programs began to undergo widespread changes, mainly stemming from the Healthy, Hunger-Free Kids Act of 2010 (HHFKA, Public Law 111-296). Key reforms included more fruits, vegetables, and whole grains in the school menu; updated nutrition standards to improve the nutritional quality of school meals and students' diets in order to reduce children's risk of developing chronic diseases; a new requirement that students select at least 1/2 cup of fruit or vegetables in order for their meal to be eligible for Federal reimbursement; equitable price-setting for full-price (also called "paid") meals; and the introduction of nutrition standards for all foods and beverages sold in competition with reimbursable meals in schools during the school day (competitive foods).

All of these reforms have important implications for the school meal programs. The updated nutrition standards are intended to improve the nutritional quality of school meals. However, complying with the updated standards may affect the costs schools face in producing school meals. In addition, meals that comply with the updated standards and new menu options developed by schools may not be as acceptable to students as some of the former options that were served. This could lead to changes in student participation if student acceptability is not taken into account. Students' decisions to eat school meals may also be affected by the requirement to take at least 1/2 cup of fruit or vegetables or the prices charged for paid meals. The updated nutrition standards for competitive foods may affect students' consumption of these foods as well as the likelihood of purchasing reimbursable meals. Ultimately, changes in school meal participation and consumption of competitive foods may affect the quality of students' diets.

There is a critical need for information about how SFAs and schools are doing in implementing the changes made in response to the HHFKA and about whether and how these changes are affecting school foodservice operations; the nutritional quality, cost, and acceptability of meals; student participation and satisfaction; plate waste; and the quality of

students' diets. To ensure this information would be available to policymakers and other stakeholders, FNS sponsored the School Nutrition and Meal Cost Study (SNMCS). The SNMCS continues FNS's long-standing commitment to periodically assess the school meal programs and is the first nationally representative, comprehensive assessment of these programs since major reforms began in SY 2012–2013.

Relative to prior studies of the school meal programs, the SNMCS is unique in three important ways. No previous national study of the school meal programs has (1) simultaneously examined the cost of producing school meals and the nutritional quality of those meals; (2) examined students' acceptance of school meals in a quantitative way, using data on the amount of food students waste (plate waste); or (3) examined associations between major outcomes of interest, for example, the association between the nutritional quality of school meals and student participation and the association between the cost and nutritional quality of school meals.

The goal of the SNMCS was to describe the following after implementation of the updated nutrition standards:

- *School meal program operations and school nutrition environments*
- *Food and nutrient content of school meals and afterschool snacks and overall nutritional quality of school meals*
- *School meal costs and school foodservice revenues*
- *Student participation, student and parent satisfaction, plate waste, and students' dietary intakes.*

A. Overview of the School Nutrition and Meal Cost Study

The SNMCS addressed a broad array of research questions of interest to stakeholders at the national, State, and local levels. The research questions are grouped under four broad domains:

- School meal program operations and school nutrition environments
- Food and nutrient content of school meals and afterschool snacks and overall nutritional quality of meals
- School meal costs and school foodservice revenues
- Student participation, student and parent satisfaction, plate waste, and students' dietary intakes.

To address these research questions, the SNMCS collected data from nationally representative samples of public SFAs and public, non-charter schools participating in the NSLP, students enrolled in these schools, and their parents. The sections that follow describe the SNMCS data collection instruments and activities, followed by the response rates and sample sizes for the components of the study covered in this report volume. Readers who are interested in technical details about the study design, sampling, and data collection procedures should refer to the SNMCS methodology report (Zeidman et al. 2019).

1. Data Collection Instruments and Activities

The SNMCS data collection instruments are summarized in Table 1.1 and the data collection activities are described below, organized by the four domains. With the exception of follow-up cost interviews, data collection activities were completed in the spring of SY 2014–2015.

Table 1.1. Data Collection Instruments

Instrument	Respondent	Mode
School Meal Program Operations and School Nutrition Environments		
SFA Director Survey	SFA directors	Web
School Nutrition Manager Survey	School nutrition managers	Web
A la Carte Checklist	School nutrition managers	Web
Principal Survey	Principals	Web
Competitive Foods Checklists	School liaisons	Hard copy
Vending Machine Checklist		
Other Sources of Foods and Beverages Checklist		
Cafeteria Observation Guide	Field staff, with school nutrition manager input	On-site observation
Nutritional Quality of School Meals		
Menu Survey	School nutrition managers	Web
School Meal Costs and School Foodservice Revenues		
State Education Agency Finance Officer Indirect Cost Survey	State Child Nutrition directors and State education agency finance officers	Telephone
Expanded Menu Survey	School nutrition managers	Web
SFA Director and Business Manager Cost Interview	SFA directors and business managers	In-person (plus telephone for follow-up interviews)
Principal Cost Interview	Principals	In-person
School Nutrition Manager Cost Interview	School nutrition managers	In-person
Student Participation, Student and Parent Satisfaction, Plate Waste, and Students' Dietary Intakes		
24-hour Dietary Recall	Students	In-person (plus telephone for second recalls in a subsample)
Child/Youth Interview	Students	In-person
Height and Weight Measurements	Students	In-person
Parent Interview	Parents	In-person or telephone
Reimbursable Meal Sales Administrative Data	Field staff	Hard copy
Plate Waste Observations	Field staff, with school nutrition manager input	On-site observation

Source: School Nutrition and Meal Cost Study, school year 2014–2015.

SFA = school food authority.

To describe **SFA and school characteristics, foodservice operations, and school nutrition environments:**

- SFA directors (staff who are responsible for the oversight of school meal operations across one or more schools within an SFA) completed the web-based SFA Director Survey, which asked about SFA-level foodservice operations and policies, implementation of the updated nutrition standards, nutrition promotion and outreach, and SFA directors' backgrounds. Although some SFAs were selected to complete only the SFA Director Survey, the majority of SFAs selected to participate in the SNMCS had schools that were also selected to participate in school-level data collection.
- School nutrition managers (SNMs; staff who are responsible for school-level foodservice operations, including the provision of meals to students) completed the web-based SNM Survey.⁹ Topics included school-level foodservice operations, implementation of the updated nutrition standards, meal pricing, provision of afterschool snacks and suppers, and nutrition promotion and outreach. SNMs also completed the A la Carte Checklist to describe items available for a la carte purchase at breakfast or lunch.
- Principals completed the web-based Principal Survey, which asked about school characteristics, school meal policies, competitive foods sources and policies, and nutrition education and promotion.
- School liaisons (non-foodservice staff who were identified during school recruitment) completed two forms known collectively as the Competitive Foods Checklists. These forms captured information about the nonreimbursable items available for sale to students in locations such as vending machines or school stores.
- Trained field interviewers completed observations of the cafeteria environment (for example, serving line configurations and the availability of potable water) during breakfast and lunch. SNMs provided input to answer some of the questions on the form, called the Cafeteria Observation Guide.

To describe **the food and nutrient content of school meals and afterschool snacks and the overall nutritional quality of meals**, SNMs completed the web-based Menu Survey.¹⁰ The Menu Survey collected detailed information about the foods prepared for and served in reimbursable meals and offered afterschool snacks during one school week, referred to as the "target week." Most SNMs completed an expanded version of the Menu Survey that collected additional information needed for cost analyses, including information on nonreimbursable foods and the total quantity of food used at each meal.

To describe **the costs of producing school meals and school foodservice revenues**, trained field interviewers completed cost interviews with SFA directors and business managers, SNMs, and school principals to capture the labor costs associated with producing school meals. SFA directors and business managers also answered questions related to SFA staffing and operations

⁹ The term *school nutrition manager* is updated from prior SNDA studies, which used *foodservice manager* to refer to these staff.

¹⁰ In some schools, other respondents, such as SFA directors or other SFA staff, completed the Menu Survey.

and indirect costs as part of their interview. During follow-up interviews, researchers reviewed each SFA's SY 2014–2015 annual financial statement with SFA and school district officials to verify reported costs, identify unreported costs, obtain information to impute the value of unreported costs, and determine the SFA's annual revenues. These cost interview data were combined with the data collected in the Menu Survey, as noted above, to determine the composition of school foodservice costs and revenues.

Finally, to describe **student participation, parent and student satisfaction, plate waste, and students' dietary intakes**, respondents participated in a variety of activities:

- Sampled students in participating schools completed a 24-hour dietary recall and the Child/Youth Interview, and had their height and weight measured by trained field interviewers.
- The parents/guardians of students participating in the study completed the Parent Interview in person (for parents of elementary school students) or by telephone (for parents of middle and high school students).
- School foodservice staff provided administrative data, typically generated by point-of-sale systems, on whether the school recorded sampled students as having received a reimbursable breakfast or lunch on the day referenced in the 24-hour dietary recall.
- Trained field interviewers conducted plate waste observations on a sample of breakfasts and lunches in participating schools. These observations documented the foods and beverages taken by students and the amounts of these foods that students wasted (did not consume).

Findings from the extensive analyses of data collected in the SNMCS are presented in four report volumes, plus a summary report (Fox and Gearan 2019) that highlights key findings across the volumes. Volume 1 (Forrestal et al. 2019) provides updated information about school meal program operations and school nutrition environments. Volume 2 (this volume) focuses on the food and nutrient content of reimbursable meals and afterschool snacks and overall nutritional quality of meals. Volume 3 (Logan et al. 2019) describes school meal costs and school foodservice revenues. Volume 4 (Fox et al. 2019) addresses students' participation in school meals, parents' and students' satisfaction with the meals, amounts of plate waste, and the influence of school meals on students' dietary intakes. A separate methodology report (Zeidman et al. 2019) provides technical details about the study design, sampling, and data collection procedures.

2. Response Rates and Sample Sizes

Table 1.2 shows initial and completed sample sizes and response rates for recruitment of SFAs and schools into the study for the Menu Survey—the data collection instrument used for this report volume. All response rates are weighted using raw sampling weights, which correct for unequal probability of selection.¹¹

¹¹ The methodology report (Zeidman et al. 2019) provides response rates for all data collection instruments.

The recruitment effort included gaining approval for the SFA and its sampled schools (one to six schools per SFA) to participate. A total of 633 SFAs were invited to participate in the SNMCS and a total of 548 agreed (87 percent weighted response rate). At the school level, 1,282 of the 1,284 sampled schools were successfully recruited (100 percent weighted response rate). The completed sample for the Menu Survey was 1,207 schools and the weighted response rate was 96 percent. Out of the 1,207 schools that completed the Menu Survey, 1,111 schools also participated in the SBP and provided menu data for breakfasts.

Table 1.2. Completed Sample Sizes and Response Rates

Instrument	Initial Sample	Completed Sample	Weighted Response Rate (%)
Recruitment			
SFAs	633	548	86.6
Schools	1,284	1,282	99.8
Data Collection			
Menu Survey	1,282	1,207	96.2

Source: School Nutrition and Meal Cost Study, school year 2014-2015.

Notes: The response rates are weighted using raw sampling weights—that is, weights that correct for unequal probability of selection before any nonresponse adjustments. The response rate for the Menu Survey reflects the percentage of eligible schools that completed the survey, given that the SFA/school had been recruited and agreed to participate in the study.

SFA = school food authority.

3. Subgroup Analyses

All data are presented for all schools combined and separately for three subgroups of schools: elementary, middle, and high schools.¹² Tables that present data for additional subgroups of schools based on school size, urbanicity, and district child poverty rate are presented in appendices, but are generally not discussed in the report. The statistical significance of differences between schools in these subgroups was tested using two-tailed t-tests.¹³ All differences between school types that are discussed in the report are statistically significant, unless otherwise noted.

4. Statistical Reporting Standards

To help readers assess the reliability of estimates, reporting standards based on those of the joint USDA/National Center for Health Statistics Working Group (Federation of American Societies for Experimental Biology 1995) were applied. Specifically, based on a broadly estimated average design effect of 1.9, data are not reported for any subgroup with fewer than 57 schools (30 * average design effect of 1.9). In addition, in tables presenting data on the food and nutrient content of meals and afterschool snacks, estimated means are flagged (with ^) when the coefficient of variation is greater than 30 percent. Estimated percentages in the tails of the distribution (less than 25 percent or greater than 75 percent) are similarly flagged (with ^) when

¹² Table A.1 presents data on the specific grade-level configurations within each type of school.

¹³ The t-statistics were derived from means and standard errors calculated via the PROC SURVEYMEANS statement in SAS (with a weight variable, PSU variable, and stratum variable) to properly account for the study's complex sample design.

the number of observations represented by the percentage is less than 15 (8 * average design effect of 1.9). When these rules are applied, percentages close to 0 or 100 are often flagged.

In this report, flagged percentages between 0 and 3 percent and between 97 and 100 percent are displayed as <3 and >97, respectively. In discussing findings from the study's many analyses, authors generally did not cite flagged point estimates in the text. However, in some cases this was unavoidable. Because flagged point estimates are less precise, readers should interpret them with caution. If a figure or table shows that a difference in means or percentages between two groups is statistically significant, the finding is valid even if one or both of the point estimates is considered to be imprecise.

B. Updated Nutrition Standards for School Meals

The updated nutrition standards for NSLP lunches and SBP breakfasts were phased in over several years, beginning in SY 2012–2013 (USDA, FNS 2012). SY 2014–2015 (when data for this study were collected) was the first year school meals were required to meet all of the requirements for both NSLP lunches and SBP breakfasts. The updated standards, which were based on recommendations from the Institute of Medicine¹⁴ (IOM), were designed to better reflect the *Dietary Guidelines for Americans* (IOM 2010; USDA and DHHS 2010). The updated standards included substantial changes to school meal requirements, relative to the former standards, which were implemented in 1995 as part of the School Meals Initiative for Healthy Children (SMI).

The nutrition standards for NSLP lunches and SBP breakfasts, presented in Tables 1.3 and 1.4, include four different types of requirements: (1) daily meal pattern requirements, (2) weekly meal pattern requirements, (3) dietary specifications, and (4) restrictions on specific forms of some foods. Separate standards are defined for three grade groups—kindergarten to grade 5, grades 6 to 8, and grades 9 to 12—the most common grade spans for elementary, middle, and high schools, respectively (IOM 2010):

The nutrition standards for NSLP lunches and SBP breakfasts include four different types of requirements: (1) daily meal pattern requirements, (2) weekly meal pattern requirements, (3) dietary specifications, and (4) restrictions on specific forms of some foods.

- The daily and weekly meal pattern requirements specify minimum amounts of foods to be offered each day and over the course of a week. Requirements for NSLP lunches include five meal components (fruits, vegetables, grains, meats/meat alternates, and milk), and requirements for SBP breakfasts include three meal components (fruits, grains, and milk).
- The weekly meal pattern requirements for NSLP lunches also specify weekly minimum amounts for five vegetable subgroups (dark green, red and orange, legumes, starchy, and other).
- The dietary specifications set average weekly minimum and maximum calorie levels, limits on saturated fat and sodium content, and require foods to contain zero grams (less than 0.5 grams) of synthetic *trans* fat per serving (that is, *trans* fat that is not naturally occurring in

¹⁴ The Institute of Medicine (IOM) is now referred to as the Health and Medicine Division (HMD) of the National Academies of Science. Throughout this report, we refer to the IOM because that was the name of the organization when it developed recommendations for the updated nutrition standards for school meals.

foods). The standard for sodium was designed to be phased in over several years. In SY 2014–2015, schools were expected to not exceed Target 1 levels for sodium.

- In addition, the meal patterns include the following restrictions on the types of foods included in school meals:
 - Fluid milk must be fat-free (flavored or unflavored) or low-fat (1% or less) unflavored, and at least two choices must be offered daily¹⁵
 - No more than 50 percent of fruit and vegetable offerings over the course of a week can be in the form of juice
 - All grains must be whole grain-rich¹⁶; however in SY 2014–2015, SFAs that demonstrated a hardship in meeting this requirement could seek an exemption that allowed for meeting a relaxed requirement that at least 50 percent of all grains must be whole grain-rich¹⁷
 - For NSLP lunches, no more than two ounce equivalents of grains can be provided by grain-based desserts over the course of a week.

Table 1.3. Nutrition Standards for NSLP Lunches

	Grade Group		
	K-5	6-8	9-12
Daily Meal Pattern Requirements: Minimum Amount of Food			
Fruits (cups)	0.5	0.5	1
Vegetables (cups)	0.75	0.75	1
Grains (oz eq)	1	1	2
Meats/Meat Alternates (oz eq)	1	1	2
Milk (cups)	1	1	1
Allowed milk types ^a	Fat-free, flavored or unflavored; or low-fat (1% or less), unflavored		
Weekly Meal Pattern Requirements: Minimum Amount of Food ^b			
Fruits (cups)	2.5	2.5	5
Fruit juice limit		≤ 50 percent of fruit	
Vegetables (cups)	3.75	3.75	5
Dark green	0.5	0.5	0.5
Red/orange	0.75	0.75	1.25
Legumes	0.5	0.5	0.5
Starchy	0.5	0.5	0.5
Other	0.5	0.5	0.75
Vegetable juice limit		≤ 50 percent of vegetables	
Grains (oz eq)	8	8	10
Whole grain-rich ^c		All grains	
Grain-based desserts (oz eq)	≤ 2	≤ 2	≤ 2
Meats/Meat Alternates (oz eq)	8	9	10
Milk (cups)	5	5	5

¹⁵ In November 2017, USDA published an interim final rule that provides flexibility in meeting the milk requirement by allowing schools to offer low-fat flavored milk in reimbursable meals.

¹⁶ The requirement that all grains must be whole grain-rich went into effect in SY 2014–2015.

¹⁷ To be whole grain-rich, a food item must contain at least 50 percent whole grains. Any non-whole grain portion must be enriched meal and/or flour (USDA, FNS 2014).

	Grade Group		
	K-5	6-8	9-12
Dietary Specifications: Average for a Week			
Calories (kcal)	550-650	600-700	750-850
Saturated Fat (% of total calories)		< 10	
Sodium Target 1 (mg) ^d	≤ 1,230	≤ 1,360	≤ 1,420

Source: U.S. Department of Agriculture, Food and Nutrition Service. "Final Rule: Nutrition Standards in the National School Lunch and School Breakfast Programs." Federal Register, vol. 77, no. 17, Thursday, January 26, 2012.

^aAt least two milk choices must be offered.

^bWeekly meal pattern requirements for fruits, vegetables, vegetable subgroups, grains, meats/meat alternates, and milk are based on a 5-day week.

^cIn school year 2014-2015, when the SNMCS data were collected, SFAs could seek an exemption from the whole grain-rich requirement if they demonstrated a hardship in procuring specific whole grain-rich products. If SFAs were granted an exemption, they were required to meet the previous requirement that at least 50 percent of grains offered be whole grain-rich.

^dSodium target for school year 2014-2015.

K = kindergarten; NSLP = National School Lunch Program; oz eq = ounce equivalent; SFA = school food authority.

Table 1.4. Nutrition Standards for SBP Breakfasts

	Grade Group		
	K-5	6-8	9-12
Daily Meal Pattern Requirements: Minimum Amount of Food			
Fruits (cups)	1	1	1
Grains (oz eq)	1	1	1
Milk (cups)	1	1	1
Allowed milk types ^a	Fat-free, flavored or unflavored; or low-fat (1% or less), unflavored		
Weekly Meal Pattern Requirements: Minimum Amount of Food ^b			
Fruits (cups)	5	5	5
Fruit juice limit	≤ 50 percent of fruit		
Grains (oz eq)	7	8	9
Whole grain-rich ^c	All grains		
Milk (cups)	5	5	5
Dietary Specifications: Average for a Week			
Calories (kcal)	350-500	400-550	450-600
Saturated Fat (% of total calories)		< 10	
Sodium Target 1 (mg) ^d	≤ 540	≤ 600	≤ 640

Source: U.S. Department of Agriculture, Food and Nutrition Service. "Final Rule: Nutrition Standards in the National School Lunch and School Breakfast Programs." Federal Register, vol. 77, no. 17, Thursday, January 26, 2012.

^aAt least two milk choices must be offered.

^bWeekly meal pattern requirements for fruit, grains, and milk are based on a 5-day week.

^cIn school year 2014-2015, when the SNMCS data were collected, SFAs could seek an exemption from the whole grain-rich requirement if they demonstrated a hardship in procuring specific whole grain-rich products. If SFAs were granted an exemption, they were required to meet the previous requirement that at least 50 percent of grains offered be whole grain-rich.

^dSodium target for school year 2014-2015.

oz eq = ounce equivalent; SBP = School Breakfast Program; SFA = school food authority.

C. Overview of the Volume 2 Report

This report describes (1) the extent to which daily and weekly menus for school meals met the updated nutrition standards; (2) the nutrient and USDA Food Pattern food group content of NSLP lunches, SBP breakfasts, and afterschool snacks; and (3) the overall nutritional quality of these lunches and breakfasts and factors associated with nutritional quality. All findings are based on analysis of data from the Menu Survey, which collected detailed information about the foods and beverages offered in daily menus for reimbursable meals and afterschool snacks for a typical school week in SY 2014–2015.¹⁸ For each menu item available to students, SNMs provided: (1) a description of the food, including details needed for accurate nutrient coding, (2) a portion size, (3) contributions to the various meal pattern requirements, and (4) the total number of portions prepared for and served in reimbursable meals. SNMs also provided information on the number of reimbursable meals that were planned and served each day.

To assess the extent to which NSLP lunches and SBP breakfasts met the daily and weekly meal pattern requirements and restrictions on specific types of food, the study team compared the types and amounts of food offered in each daily menu and across a school week to daily and weekly meal pattern requirements. To obtain information about the nutrient and USDA Food Pattern food group content of NSLP lunches and SBP breakfasts, the study team linked foods and beverages reported in the Menu Survey to the Food and Nutrient Database for Dietary Studies (FNDDS; version 2011–2012) to obtain data on calorie and nutrient content, and to the Food Patterns Equivalents Database and Food Patterns Equivalents Ingredients Database (FPED and FPID; versions 2011–2012) to obtain data on food group content (based on USDA Food Pattern food groups). USDA’s Agricultural Research Service (ARS) provided data on the nutrient and USDA Food Pattern food group content of commonly reported commercial products that are manufactured specifically for school foodservice (for example, pizza that is modified to include more whole grains, less fat or sodium, added protein, or more vitamins and minerals).

To assess the nutrient and USDA Food Pattern food group content of NSLP lunches and SBP breakfasts and the extent to which these meals met dietary specifications for calories, saturated fat, and sodium and other nutrient targets, the study team computed the average nutrient and USDA Food Pattern food group content of NSLP and SBP menus prepared for each school, based on an average across the school week. These estimates take into account the amounts of food prepared (number of servings) for reimbursable meals and give greater weight to menu items that were prepared in larger quantities.

The study team also computed the average nutrient and USDA Food Pattern food group content of NSLP and SBP menus served in each school. These estimates, which are very similar to estimates of menus prepared, take student selection patterns into account and give greater weight to menu items that were most frequently selected by (or served to) students as part of reimbursable meals. Findings for menus served are presented in appendices, but generally are not discussed in the text (with the exception of analyses that examined changes over time in the nutrient content and nutritional quality of school meals).

¹⁸ Most schools provided five days of menu data at breakfast and lunch. However, due to school holidays and closures or poor quality data, some schools provided data for only three or four days. At lunch, 184 schools provided four days of data and 75 schools provided three days of data. At breakfast, 166 schools provided four days of data and 62 provided three days of data.

Finally, the study team estimated the average nutrient and USDA Food Pattern food group content of afterschool snacks, reflecting what was offered to students. Because students are generally offered few choices (if any) in afterschool snacks, the analysis assumed that every student takes one serving of each meal component offered, and equal weight is given to choices within a meal component group.

Analyses of NSLP and SBP Menus Offered, Prepared, and Served

All analyses reflect the menu items that were available to students as part of reimbursable meals (NSLP lunches and SBP breakfasts).

- ***Menus offered reflect the menu items prepared and offered to students as part of reimbursable meals. Used for analyses that examined the types of foods offered in daily menus and compliance with daily and weekly meal pattern requirements.***
- ***Menus prepared reflect the menu items prepared and offered to students as part of reimbursable meals, but these analyses take into account the amount of food prepared (number of servings of each menu item prepared for reimbursable meals). This approach gives greater weight to menu items that were prepared in larger quantities. Most of the findings presented in this report focus on findings for menus prepared, including analyses that examined the nutrient and USDA Food Pattern food group content and nutritional quality of meals and compliance with dietary specifications.***
- ***Menus served reflect the menu items that were actually served to or selected by students as part of reimbursable meals. In schools that use the offer-versus-serve option, students may not be required to take all menu items offered. This approach gives greater weight to menu items that were more frequently selected by or served to students. Estimates for menus served were used in analyses that examined changes over time in the nutrient content and nutritional quality of meals. Supplementary tabulations of the nutrient and USDA Food Pattern food group content and nutritional quality of menus served are provided in appendices.***

The rest of this report presents findings on nutritional characteristics of school meals and afterschool snacks.

- Chapter 2 describes the characteristics of foods offered in reimbursable lunches and breakfasts.
- Chapters 3 and 4 present data on the extent to which daily and weekly NSLP lunch and SBP breakfast menus, respectively, satisfied specific aspects of the nutrition standards that govern these meals. These chapters also assess how well weekly lunch and breakfast menus comply with other targets for the nutrient content of meals.

- Chapter 5 describes the overall nutritional quality of school meals and relationships between the nutritional quality of these meals and key characteristics of the meals, foodservice operations, school food environments, and population demographics.
- Chapter 6 describes the potential contribution of school meals to the dietary patterns recommended in USDA's Food Patterns.
- The major food sources of calories and key nutrients in school lunches and breakfasts are described in Chapter 7.
- Chapter 8 presents data on the nutrient and USDA Food Pattern food group content of reimbursable afterschool snacks.
- Finally, Chapter 9 describes changes in the nutritional quality and the food and nutrient content of school meals since the implementation of the updated nutrition standards.

2. FOODS OFFERED IN NSLP LUNCHES AND SBP BREAKFASTS

This chapter describes the characteristics of foods offered in NSLP lunch and SBP breakfast menus. Chapters 3 and 4 summarize analyses that examined the extent to which NSLP lunch and SBP breakfast menus, respectively, met the various meal pattern requirements specified in the nutrition standards for school meals. The findings presented here focus more generally on the amount of choice offered to students in selecting a reimbursable lunch or breakfast and the types and frequency of foods offered within various food groups. Characteristics of foods offered in NSLP lunches are presented first, followed by characteristics of foods offered in SBP breakfasts. For each type of school meal, the analysis examined the amount of choice and variety offered and the prevalence with which specific types of foods were offered. The analysis also examined the prevalence of fresh fruits and vegetables, and for NSLP lunches, the availability of salad bars and other self-serve food bars.

All findings presented are based on analysis of data from the Menu Survey, which was completed by SNMs over the course of one school week in the spring of SY 2014–2015. Data are presented for all schools and separately by school type: elementary, middle, and high schools. The statistical significance of differences between schools in these subgroups was tested using two-tailed t-tests. All differences between school types that are discussed in the text are statistically significant unless otherwise noted. Tables in the chapter present key results; supplementary tables appear in Appendix B, as noted throughout the chapter.

A. Foods Offered in NSLP Lunches

NSLP lunches are required to include five meal components—fruits, vegetables, grains, meats/meat alternates, and fluid milk—in daily and weekly quantities as specified for three grade groups that represent typical elementary, middle, and high schools. The findings presented in this section describe characteristics of daily lunch menus with a focus on the amount of choice and variety offered to students in selecting a reimbursable lunch and the types and frequency of foods offered within various food groups.

For these analyses, the study team first categorized foods reported in the Menu Survey into seven major food groups: milk, vegetables (including 100% vegetable juice), fruits and 100% fruit juices, combination entrées, grains/breads, meats/meat alternates, and desserts/other menu items. The study team then further subdivided foods in each major food group into minor food groups that classified foods based on characteristics that affect nutrient content, including ingredients and preparation methods. Table B.1 provides examples of the specific types of foods included in each minor food group category.

1. Amount of Choice and Variety Offered in NSLP Lunches

To assess the amount of choice and variety offered in NSLP lunches, the study team examined the number of choices offered in daily lunch menus, as well as the number of different items offered over the course of the five-day school week for which Menu Survey data were reported. Schools with fewer than five days of lunch menus were excluded from the weekly analysis. The analysis estimated the number of choices that were offered on daily menus for the following major food groups: milk, vegetables (including 100% vegetable juice), fruits (including 100% fruit juices), entrées (which typically include a combination of meats/meat alternates and grains/breads, and sometimes a vegetable component) and meats/meat alternates,

separate grains/breads, and other menu items.¹⁹ For this analysis, the fruit group was further divided into separate subgroups for whole fruits and 100% fruit juices to highlight the number of choices within each of these subgroups. Within each major group or subgroup, the number of different choices offered on daily menus were counted. For example, if three different types of milk were offered (low-fat unflavored milk, fat-free chocolate milk, and fat-free strawberry milk), each item was counted as a separate milk choice. Likewise, if cheese pizza and meat pizza were offered, these were counted as two separate entrée choices.

The choice and variety of food items offered within each of these groups are presented in Table 2.1. The table shows the proportion of daily lunch menus that offered different numbers of choices within each major food group and subgroups, as well as the median number of choices offered per day and over the course of a 5-day week (variety). Key findings for each food group are discussed below.

Milk

Virtually all daily lunch menus offered more than one type of milk, including milks with different flavors or fat contents. Most daily lunch menus included two or three types of milk (42 to 47 percent and 34 to 41 percent of daily menus, respectively). There was little variation across school types in choice and variety for milk.

Vegetables and 100% Vegetable Juices

A large proportion (84 percent) of all daily lunch menus included at least two types of vegetables (including 100% vegetable juice). Daily lunch menus in middle and high schools offered significantly more vegetable choices than daily menus in elementary schools. Daily menus in one-third of middle and high schools offered at least four vegetable choices (34 percent and 33 percent, respectively), compared with 19 percent of daily menus in elementary schools. The median number of vegetable choices offered for all school types was two per day. The median number of different types of vegetables offered over the course of a five-day week was nine.

Fruits and 100% Fruit Juices

Almost three-quarters (72 percent) of all daily lunch menus included two or more types of fruits (including 100% fruit juices). As with vegetable choices, daily menus in middle schools and high schools offered significantly more fruit choices than did daily menus in elementary schools. About one-quarter of daily lunch menus in middle and high schools (24 percent and 29 percent, respectively) offered five or more fruit choices, compared with 13 percent of daily menus in elementary schools. Across all school types, the median number of daily fruit choices was two to three. The median number of different types of fruits offered over the five-day school week was seven to eight.

Overall, the median number of vegetable choices offered per day was two, and the median number of fruit choices offered per day was two to three.

¹⁹ For this analysis and others in this chapter, the “desserts and other menu items” group includes grain-based, dairy-based, and other desserts; fruit drinks that are not 100% juice; non-vegetable/non-entrée soups; and other items such as snacks and bacon.

Table 2.1. Choice and Variety in NSLP Lunches

	Percentage of Daily Lunch Menus			
	Elementary Schools	Middle Schools	High Schools	All Schools
Number of Types of Milk Offered per Day				
0 or 1	<3	<3	<3	0.3
2	42.0	39.1	47.0	42.6
3	40.9	39.9	34.1	39.2
4 or more	16.8	20.9	18.6	17.9
<i>Median number of different items per day</i>	2.2	2.3	2.1	2.2
<i>Median number of different items per week^a</i>	2.4	2.4	2.4	2.4
Number of Vegetables/100% Vegetable Juices Offered per Day ^b				
0 or 1	17.8	14.3	12.1 [#]	15.9
2	43.8*	31.0	32.2 [#]	38.9
3	19.2	20.7	22.3	20.2
4	9.5*	14.4	13.7 [#]	11.3
5 or more	9.7*	19.5	19.6 [#]	13.6
<i>Median number of different items per day</i>	1.7	2.2	2.3	1.9
<i>Median number of different items per week^a</i>	8.5	9.3	9.3	8.8
Number of Fruits/100% Fruit Juices Offered per Day ^c				
0 or 1	34.7*	21.9	17.3 [#]	28.5
2	24.9	21.5	24.4	24.2
3	17.8	19.0	16.1	17.7
4	9.6*	13.2	12.8	11.0
5 or more	13.0*	24.4	29.3 [#]	18.6
<i>Median number of different items per day</i>	1.6	2.3	2.5	1.9
<i>Median number of different items per week^a</i>	6.5	7.4	7.6	7.0
Number of Whole Fruits Offered per Day ^c				
0 or 1	43.3*	29.3	27.3 [#]	37.2
2	26.0	23.6	25.6	25.5
3	15.4	18.3	16.0	16.1
4	8.0*	13.7	14.6 [#]	10.5
5 or more	7.3*	15.1	16.4 [#]	10.7
<i>Median number of different items per day</i>	1.3	1.9	1.9	1.5
<i>Median number of different items per week^a</i>	5.4	5.8	6.5	5.8
Number of 100% Fruit Juices Offered per Day ^c				
0 or 1	90.9*	85.7	80.8 [#]	87.7
2	4.3	7.0	8.3 [#]	5.7
3	4.0	6.4	8.8	5.5
4	<3	<3	1.6	0.9
5 or more	<3	<3	<3	<3
<i>Median number of different items per day</i>	0.0	0.0	0.0	0.0
<i>Median number of different items per week^a</i>	1.1	1.4	1.6	1.3
Number of Entrées Offered per Day ^d				
1	21.7*	10.0	14.3 [#]	17.9
2 or 3	43.8*	25.7	26.6 [#]	36.8
4 or 5	22.6	18.6	16.8	20.6
6 or more	11.8*	45.6	42.3 [#]	24.6
<i>Median number of different items per day</i>	2.1	4.5	4.1	2.7
<i>Median number of different items per week^a</i>	10.0	13.8	12.9	10.7

	Percentage of Daily Lunch Menus			
	Elementary Schools	Middle Schools	High Schools	All Schools
Number of Separate Grains/Breads Offered per Day ^e				
None	75.2	73.6 [†]	65.3 [#]	72.7
1	20.9	21.1 [†]	26.7 [#]	22.2
2 or more	3.9	5.3 [†]	8.0 [#]	5.0
<i>Median number of different items per day</i>	0.0	0.0	0.0	0.0
<i>Median number of different items per week^a</i>	1.1	1.4	1.3	1.2
Number of Desserts and Other Menu Items Offered per Day ^f				
None	89.1	85.9	81.1 [#]	87.0
1	10.3	12.1	17.0 [#]	12.1
2 or more	<3 [*]	2.0	0.9	0.9
<i>Median number of different items per day</i>	0.0	0.0	0.0	0.0
<i>Median number of different items per week^a</i>	1.0	1.0	1.0	1.0
Number of Daily Menus	2,123	1,820	1,758	5,701
Number of Schools	451	384	372	1,207

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Note: Differences in medians were not tested for statistical significance.

^aIncludes only schools that provided menu information for five days.

^bVegetables not included in combination entrées..

^cFruits not included in combination entrées.

^dIncludes meats and meat alternates as well as combination entrées.

^eGrains and breads not included in combination entrées or served solely with a specific menu item; does not include grain-based desserts.

^fIncludes grain-based, dairy-based, and other desserts; fruit drinks (not 100 percent juice); non-vegetable/non-entrée soups; and other items.

^{*}Difference between elementary and middle schools is significantly different from zero at the 0.05 level.

[†]Difference between middle and high schools is significantly different from zero at the 0.05 level.

[#]Difference between elementary and high schools is significantly different from zero at the 0.05 level.

NSLP = National School Lunch Program.

<3 = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 0 and 3 percent are displayed as <3.

Looking at only whole fruits (which includes any fresh, canned, dried, or frozen fruit), nearly two-thirds (63 percent) of all daily lunch menus offered two or more whole fruit choices. Daily menus in middle and high schools were significantly more likely than those in elementary schools to offer five or more whole fruit choices (15 percent and 16 percent, respectively, versus 7 percent). Most daily lunch menus (88 percent) offered no more than one type of 100% fruit juice. However, daily menus in high schools were twice as likely as daily menus in elementary schools to offer two choices of 100% fruit juice per day (8 percent versus 4 percent).

Entrées (including Meats and Meat Alternates and Combination Entrées)

More than three-quarters (82 percent) of all daily lunch menus offered a choice of entrée. Daily menus in middle and high schools offered significantly more entrée choices than daily menus in elementary schools. Almost half of daily lunch menus in middle and high schools (46 percent and 42 percent, respectively) included six or more entrée choices. In comparison, only 12 percent of daily menus elementary schools offered six or more entrée choices. The median number of daily entrée choices was five and four for middle and high schools, respectively, and two for elementary schools. The median numbers of different entrées offered per week in middle and high schools were 14 and 13, respectively, compared with 10 for elementary schools.

Separate Grains/Breads

About one-quarter (27 percent) of all daily lunch menus included at least one separate grain/bread item—that is, a grain or bread item that was offered separately from an entrée item and was available to all students, regardless of their entrée choice.²⁰ Daily menus in high schools were significantly more likely than daily menus in elementary or middle schools to offer at least one separate grain/bread item (35 percent versus 25 percent and 26 percent, respectively). The median number of different grain/bread choices offered per week was one for all school types.

Desserts and Other Menu Items

Desserts and other menu items, which mainly included grain-based desserts, were offered in few menus, ranging from 11 percent of daily menus in elementary schools to 19 percent of daily menus in high schools. The median number of different desserts and other menu items offered per week was one for all school types. This finding is consistent with the fact that the updated nutrition standards for NSLP lunches limit grain-based desserts to 2 ounce equivalents per week.

2. Types and Frequency of Foods Offered in NSLP Lunches

The study team used the major and minor food groups mentioned previously to describe the types and frequency of foods offered in daily NSLP lunch menus. Table 2.2 summarizes the foods/food groups that were offered in at least 5 percent of daily lunch menus for one or more school types. Key findings within each major food group are discussed below.

Milk

Milk was offered in virtually all daily lunch menus. Flavored fat-free milk and unflavored low-fat milk were the most commonly offered types of milk for all school types (91 percent of all daily menus). This is consistent with the fact that the nutrition standards allow only fat-free (flavored or unflavored) and low-fat unflavored milk to be offered in school meals. Unflavored fat-free milk was offered in half (50 percent) of all daily lunch menus. Only 7 percent of daily lunch menus included flavored low-fat milk. There were no significant differences across school types in the types of milks offered.

²⁰ Grains/breads that were served solely with another menu item (and thus not available to all students) were not counted as a separate choice in this analysis.

Table 2.2. Foods Offered in NSLP Lunches

	Percentage of Daily Lunch Menus			
	Elementary Schools	Middle Schools	High Schools	All Schools
Milk	>97	>97	>97	>97
Fat-free	95.3	96.2	95.2	95.4
Flavored	90.3	92.4	91.6	91.0
Unflavored	50.3	53.6	46.5	50.0
Low-fat (1%)	92.5	90.5	92.0	92.0
Unflavored	91.8	90.1	90.3	91.1
Flavored	7.2	6.9	7.3	7.2
Vegetables^a	98.4	99.1	98.4	98.5
Cooked vegetables	82.4*	87.8	85.9	84.2
Starchy vegetables	40.8*	53.2	52.7 [#]	45.7
French fries and similar potato products	15.4*	25.5	24.4 [#]	19.2
Corn	13.6	15.2	16.9 [#]	14.6
White potatoes	8.8*	14.2	15.3 [#]	11.2
Green peas	6.0	7.8	6.9	6.5
Beans and peas ^b	21.0*	24.8	24.9 [#]	22.5
Black, baked, and other beans ^c	15.3	18.0	15.0	15.7
Pinto/kidney beans	5.7*	8.0 [†]	11.1 [#]	7.3
Red/orange vegetables	15.4*	19.3	20.2 [#]	17.2
Carrots	7.5	8.9	9.0	8.1
Sweet potato	5.6*	8.1	8.0 [#]	6.6
Other vegetables	15.3	17.6	17.4	16.2
String bean	13.4	14.7	15.3	14.0
Dark green vegetables	11.0	12.4	12.9	11.7
Broccoli	9.5	10.8	10.8	10.0
Vegetable mixtures ^d	8.2	10.1	10.5	9.1
Raw vegetables	73.3	76.6	77.0	74.7
Red/orange vegetables	37.6	37.2	38.3	37.6
Carrots	33.1	32.8	34.9	33.5
Tomatoes	6.8	7.2	6.8	6.9
Vegetable mixtures ^d	28.7*	43.4	40.9 [#]	34.1
Side salads	12.9*	19.6	15.4	14.6
Other raw mixtures	9.9*	16.9	16.5 [#]	12.5
Side salad bar	7.2*	12.8	14.1 [#]	9.7
Dark green vegetables	28.4	23.8	27.5	27.4
Side salads	18.2	15.9	17.0	17.5
Broccoli	12.7	10.9	14.4	12.7
Other vegetables	25.9	27.5	29.2	27.0
Cucumber	10.7	13.4	12.3	11.5
Celery	10.5	12.1	13.7	11.5
Fruits and 100% Fruit Juices	97.7	97.9	97.8	97.7
Fresh fruit	68.7*	77.9	77.5 [#]	72.3
Apple	38.2*	56.3	56.5 [#]	45.5
Orange	27.3*	37.5	39.4 [#]	31.8
Banana	19.7*	27.4	26.5 [#]	22.6
Pear	4.7*	11.5	11.0 [#]	7.3
Grapes	5.4	7.7	7.9	6.4
Canned fruit	60.9*	67.3	69.6 [#]	64.0
Peaches	18.8	22.2	22.7	20.3
Applesauce	18.2	21.7	21.0	19.4
Fruit cocktail	14.3	16.1	16.6	15.1
Pear	13.0	14.8	17.0 [#]	14.2
Pineapple	12.3	14.6	15.2	13.4
Mandarin oranges	5.0	7.0	7.5	5.9

	Percentage of Daily Lunch Menus			
	Elementary Schools	Middle Schools	High Schools	All Schools
Juice	26.4*	33.7	39.7 [#]	30.7
Apple	14.4*	20.1	25.7 [#]	17.9
Orange	13.8	17.9	22.6 [#]	16.5
Grape	5.3	8.6	10.8 [#]	7.1
Fruit juice blend	4.1	5.1	6.5	4.8
Dried fruit	9.5	9.5	12.3	10.2
Raisins	7.0	8.1	10.0	7.9
Frozen fruit	4.0	5.0	5.3	4.5
Combination Entrées	90.9*	95.3	94.7 [#]	92.5
Entrée salads	28.7*	53.5	47.3 [#]	37.3
Sandwich with plain meat or poultry	30.7*	45.5	43.0 [#]	36.1
Pizza	19.2*	48.8	47.8 [#]	30.9
Without meat	14.8*	41.1	37.1 [#]	24.5
With meat	10.0*	37.5	36.4 [#]	21.0
Mixtures with grain, meat/meat alternate and/or vegetables	15.8*	20.6	23.3 [#]	18.3
Spaghetti with sauce; macaroni and cheese; and lasagna, ravioli, and stuffed shells	10.8	13.3	13.2	11.8
Mixtures with poultry, beef, or pork with rice	1.6*	3.8	5.1 [#]	2.8
Mixtures with meat/meat alternate and vegetables ^e	5.0	6.5 [†]	9.8 [#]	6.3
Peanut butter sandwich	25.0	19.9	16.9 [#]	22.3
Sandwich with breaded meat, poultry, or fish	10.5*	36.3	37.3 [#]	21.1
Mexican-style entrées ^f	14.9*	22.9	25.4 [#]	18.7
Hamburgers and similar beef/pork sandwiches	11.2*	23.9	20.8 [#]	15.6
Cheeseburgers and similar beef/pork sandwiches with cheese	7.4*	23.0	24.5 [#]	14.0
Hot dogs and corn dogs	11.7*	15.5	12.8	12.6
Entrée salad bar	4.1	6.7 [†]	13.2 [#]	6.6
Sandwich with only cheese	10.1	9.5	8.2	9.6
Pizza pockets, pizza sticks, and calzones	6.0*	10.0	13.7 [#]	8.4
Prepackaged meal	5.1	5.6	5.0	5.2
Sandwich or deli bar	<3*	9.6	14.3 [#]	5.2
Sandwich with mayonnaise-based poultry, tuna, or egg salads	3.8	6.0	7.7 [#]	5.0
Parfait	0.9*	5.8	5.1 [#]	2.7
Nacho or taco bar	<3*	2.7 [†]	5.9 [#]	1.8
Separate Grains/Breads	61.2*	70.9	72.9 [#]	65.6
Breads, rolls, bagels, and other plain breads	38.0*	49.2	47.3 [#]	42.1
Crackers, croutons, and pretzels	17.6*	25.9	21.9	20.1
Rice	8.2	10.3	13.3 [#]	9.7
Corn/tortilla chips	5.1	6.4	8.8 [#]	6.2
Biscuits and cornbread	3.5	4.4 [†]	8.5 [#]	4.8
Meats/Meat Alternates	50.8	55.5	50.3	51.5
Chicken and turkey	24.4*	34.5	32.1 [#]	27.9
Breaded/fried chicken nuggets, patties, and similar products	18.1*	27.3	24.8 [#]	21.2
Plain (not breaded or fried) chicken and turkey	4.2	5.9	6.1	4.9
Other protein ^g	19.3	17.0	12.5 [#]	17.4
Cheese	16.3	15.0	10.9 [#]	14.9
Yogurt, low-fat/fat-free	11.7*	7.2	5.5 [#]	9.5
Meat (plain or breaded/fried beef, pork)	7.4	8.8	7.6	7.7

	Percentage of Daily Lunch Menus			
	Elementary Schools	Middle Schools	High Schools	All Schools
Desserts/Other Menu Items	13.5	15.3	20.1 [#]	15.3
Grain-based desserts	9.6	8.5 [†]	12.4	10.0
Cookies, cakes, brownies	8.1	7.1	9.6	8.2
Number of Daily Menus	2,123	1,820	1,758	5,701
Number of Schools	451	384	372	1,207

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: Table is limited to food groups offered in at least 5 percent of menus for one or more school types. The table does not account for individual food items offered as part of food bars or prepackaged meals.

^aIncludes 100% vegetable juices.

^bIncludes beans and peas credited as a vegetable on the Menu Survey.

^cIncludes other beans such as white beans, chickpeas, and hummus.

^dIncludes mixtures of vegetables from the dark green, red/orange, other, starchy and beans/peas groups.

^eIncludes chili with meat/meat alternate; baked potato with cheese and/or meat; egg rolls; and stir fry with poultry, beef, pork, or tofu

^fIncludes burritos, tacos, nachos, quesadillas, fajitas, and enchiladas.

^gIncludes cheese, eggs, nuts and seeds, and beans and peas credited as a meat alternate on the Menu Survey.

*Difference between elementary and middle schools is significantly different from zero at the 0.05 level.

†Difference between middle and high schools is significantly different from zero at the 0.05 level.

#Difference between elementary and high schools is significantly different from zero at the 0.05 level.

NSLP = National School Lunch Program.

<3 and >97 = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 0 and 3 percent are displayed as <3 and flagged percentages between 97 and 100 percent are displayed as >97.

Vegetables

Nearly all (99 percent) daily lunch menus included one or more vegetables that were not part of a combination entrée or an entrée salad bar. Most (84 percent) daily lunch menus included cooked vegetables, and three-quarters (75 percent) of menus included raw vegetables. Starchy vegetables, including French fries, corn, white potatoes, and green peas, were the most commonly offered cooked vegetables, offered in 46 percent of all daily lunch menus. Beans and peas (including black, baked beans, and other beans—such as white beans, chickpeas, and hummus—as well as pinto and kidney beans) were the next most commonly offered cooked vegetables, offered in 23 percent of all daily lunch menus. Among the raw vegetables, red and orange vegetables, including carrots and tomatoes, were most commonly offered (38 percent of daily lunch menus). Vegetable mixtures were also prevalent among raw vegetables, offered in one-third (34 percent) of all daily lunch menus.

Several types of vegetables were more likely to be offered in daily menus in middle and/or high schools than in daily menus in elementary schools. Among cooked vegetables, starchy vegetables (particularly French fries and similar potato products), beans and peas, and red and orange vegetables, were more likely to be offered in daily middle school and high school menus than in elementary school menus (for starchy vegetables, 53 percent of daily menus in middle

and high schools versus 41 percent in elementary schools; for beans and peas, 25 percent versus 21 percent; and for red and orange vegetables, 19 to 20 percent versus 15 percent). The same was true for raw vegetable mixtures, which include side salads, side salad bars, and other raw mixtures (43 percent and 41 percent of daily menus in middle and high schools, respectively, versus 29 percent in elementary schools).

Fruits and 100% Fruit Juices

Nearly all daily lunch menus offered fruit or 100% fruit juice (98 percent). Almost three-quarters (72 percent) of all daily lunch menus included fresh fruit, and almost two-thirds (64 percent) included canned fruit. Fruit juice was offered in less than one-third (31 percent) of daily lunch menus. Dried fruits, mainly raisins, were offered in 10 percent of daily lunch menus. The most commonly offered types of fruits were fresh apples, followed by fresh oranges, bananas, canned peaches, and applesauce. Daily menus in elementary schools were less likely than those in middle or high schools to offer fresh fruit (69 percent versus 78 percent). Similarly, 100% fruit juice was less commonly offered in daily menus in elementary schools than in daily menus in middle or high schools (26 percent versus 34 percent and 40 percent, respectively).

Fresh fruit was the most common type of fruit offered in daily lunch menus. Fruit juice was included in roughly one-third of daily menus.

Combination Entrées

Combination entrées were offered in most (93 percent) daily lunch menus. Overall, entrée salads were the most frequently offered combination entrée, offered in 37 percent of daily lunch menus. There were, however, some variations by school type in the combination entrées that were most frequently offered:

- In elementary schools, sandwiches with plain meat or poultry, such as ham or turkey, were the most commonly offered combination entrée (31 percent of daily lunch menus), followed by entrée salads (29 percent); peanut butter sandwiches (25 percent); pizza (19 percent); and mixtures with grains, meats/meat alternates and/or vegetables, such as spaghetti, macaroni and cheese, lasagna, and ravioli (16 percent).
- In middle schools, the leading combination entrée was entrée salads, offered in more than half (54 percent) of daily lunch menus, followed by pizza (49 percent); sandwiches with plain meat or poultry (46 percent); sandwiches with breaded meat, poultry, or fish (36 percent); and hamburgers and similar types of beef or pork sandwiches (24 percent).
- The most commonly offered combination entrée in high schools was pizza, offered in almost half of daily lunch menus (48 percent), followed closely by entrée salads (47 percent); sandwiches with plain meat or poultry (43 percent); sandwiches with breaded meat, poultry, or fish (37 percent); and Mexican-style entrées, including burritos, tacos, nachos, quesadillas, fajitas, and enchiladas (25 percent).

Many of the differences between daily lunch menus in elementary schools and those in middle and high school were statistically significant. Most of the combination entrées included in Table 2.2 were offered more frequently in daily lunch menus in middle and high school than in daily menus in elementary schools. This is consistent with the previously reported finding that

lunch menus in middle and high schools offer more entrée choices per day and a wider variety of entrées over the course of a five-day week than menus in elementary schools (Table 2.1).

Separate Grains/Breads

Two-thirds (66 percent) of all daily lunch menus included grains or breads that were offered separately from combination entrées.²¹ Separate grains and breads were offered less frequently in daily menus in elementary schools than in daily menus in middle or high school menus (61 percent versus 71 percent and 73 percent, respectively). Breads, rolls, bagels, and other plain breads were offered more than twice as frequently in all daily lunch menus as crackers, croutons, and pretzels, the next most commonly offered item in the grains/breads group (42 percent versus 20 percent).

Meats and Meat Alternates

About half (52 percent) of all daily lunch menus included meats/meat alternates that were offered separately—that is, not as part of a combination entrée. Chicken and turkey, mainly breaded chicken products, such as chicken nuggets and patties, were the leading meats/meat alternate offered in daily lunch menus (28 percent). Breaded/fried chicken products were offered less frequently in daily menus in elementary schools than in daily menus in middle or high schools (18 percent versus 27 percent and 25 percent, respectively). Other protein items, which were mainly cheese but also included eggs, seeds, nuts, and beans and peas credited as a meats/meat alternates, were offered in 17 percent of daily lunch menus. Other proteins were offered more frequently in daily menus in elementary schools than in those in high schools (19 percent versus 13 percent). Low-fat or fat-free yogurt was offered in 10 percent of all daily lunch menus and was more frequently offered in daily menus in elementary schools than middle or high school menus (12 percent versus 7 percent and 6 percent, respectively).

Desserts and Other Menu Items

Relatively few (15 percent) daily lunch menus included desserts or other menu items. Most of the desserts/other menu items included in daily lunch menus were grain-based desserts (10 percent of daily menus). Daily menus in high schools were more likely than those in elementary schools to offer desserts or other menu items (20 percent versus 14 percent).

3. Frequency of Whole Grain-Rich Foods Offered in NSLP Lunches

In SY 2014–2015, the nutrition standards required that all grains offered in NSLP lunches be whole grain-rich, instead of at least 50 percent required in the prior two SYs.²² However, State agencies had the option of granting exemptions to this requirement if an SFA demonstrated hardship in procuring compliant whole grain-rich products that were acceptable to students. This exemption was directed by Congress in response to difficulties some SFAs had in procuring and/or serving whole grain-rich foods, and to give industry additional time to develop a broader

²¹ This analysis includes all separate grain/bread items, regardless of whether the item was available to all students or served solely with another menu item. The previous choice and variety analysis counted separate grain/bread items that were offered only in combination with one or more other item as a single entree “choice.”

²² To be whole grain-rich, a food item must contain at least 50 percent whole grains. Any non-whole grain portion must be enriched meal and/or flour (USDA, FNS 2014).

range of whole grain-rich products that are widely accepted by students (USDA, FNS 2015b). In SFAs that were granted this exemption, at least half of all grains offered had to be whole grain-rich.

Table 2.3 presents detailed information about the prevalence of whole grain-rich foods in daily NSLP lunch menus for food items in the four major food groups that include grains: combination entrées, separate grains/breads, meats/meat alternates, and desserts and other menu items. For each of these major food groups and all associated minor food groups, Table 2.3 shows the percentage of daily lunch menus that included one or more whole grain-rich option and the percentage that included one or more options that were not whole grain-rich. Similar to findings reported in Table 2.2, minor food groups included in the table are limited to those for which at least 5 percent of daily menus in one or more school types included whole grain-rich or non-whole-grain-rich options. Key findings are summarized below.

Combination Entrées

As described above, combination entrées were offered in most (93 percent) daily lunch menus (Table 2.2). With the exception of mixtures with meats/meat alternates and vegetables (these include chili and baked potato with cheese and/or meat), whole grain-rich versions of all types of combination entrées were offered more frequently on daily lunch menus than non-whole-grain-rich versions (Table 2.3). This was true for all three school types. For many combination entrées, daily lunch menus in middle and high schools were significantly more likely than those in elementary schools to offer whole grain-rich versions of these items. This is driven by the fact that lunch menus in middle and high schools offered more entrée choices per day and a wider variety of entrées during a five-day week (Table 2.1).

Separate Grains and Breads

Separate grains/breads were offered as individual items, not as part of a combination entrée, in 66 percent of all daily lunch menus (Table 2.2). For all of the minor food groups in this category, whole grain-rich versions were offered more frequently in daily lunch menus than non-whole-grain-rich versions (Table 2.3). Breads, rolls, bagels and other plain breads were the most commonly offered type of grains/breads, and whole grain-rich versions were offered more frequently than non-whole-grain-rich versions (39 percent of daily lunch menus versus 4 percent). Daily lunch menus in middle and high schools were significantly more likely than those in elementary schools to offer whole grain-rich versions of these items (45 percent and 44 percent, respectively versus 35 percent).

Whole grain-rich versions of most combination entrées and all separate grains/breads were offered more frequently in daily lunch menus than non-whole-grain-rich versions.

Table 2.3. Whole Grain-Rich Foods Offered in NSLP Lunches

	Percentage of Daily Lunch Menus			
	Elementary Schools	Middle Schools	High Schools	All Schools
Combination Entrées				
Entrée salads ^a				
Whole grain-rich	1.4*	5.0	4.9 [#]	2.8
Not whole grain-rich	1.8	1.0	1.1	1.2
Sandwich with plain meat or poultry				
Whole grain-rich	28.4*	41.4	40.5 [#]	33.4
Not whole grain-rich	2.5*	5.1	3.6	3.2
Pizza				
Whole grain-rich	15.7*	42.4	41.8 [#]	26.3
Not whole grain-rich	3.6*	7.1	7.3 [#]	5.1
Without meat				
Whole grain-rich	12.7*	36.3	33.0 [#]	21.5
Not whole grain-rich	2.2*	4.9	4.4 [#]	3.2
With meat				
Whole grain-rich	7.8*	32.8	32.5 [#]	17.8
Not whole grain-rich	2.2*	4.9	5.0 [#]	3.3
Mixtures with grain, meat/meat alternate and/or vegetables				
Whole grain-rich	9.0*	12.9	14.7 [#]	11.0
Not whole grain-rich	3.2	4.0	3.4	3.4
Spaghetti with sauce, macaroni and cheese, and lasagna, ravioli, and stuffed shells				
Whole grain-rich	7.9	10.0	10.3	8.8
Not whole grain-rich	2.9	3.3	3.0	3.0
Mixtures with poultry, beef or pork with rice				
Whole grain-rich	1.3*	3.1	4.7 [#]	2.4
Not whole grain-rich	<3	<3	<3	0.4
Mixtures with meat/meat alternate and vegetables ^b				
Whole grain-rich	0.9	1.4	2.2 [#]	1.3
Not whole grain-rich	4.2	5.2 [†]	7.8 [#]	5.1
Peanut butter sandwich				
Whole grain-rich	21.8*	17.0	15.1 [#]	19.4
Not whole grain-rich	3.3	3.0	1.8	2.9
Sandwich with breaded/fried meat, poultry, or fish				
Whole grain-rich	9.3*	33.3	33.5 [#]	19.0
Not whole grain-rich	1.3*	3.0	4.0 [#]	2.2
Mexican-style entrées ^c				
Whole grain-rich	10.7*	17.1	20.1 [#]	13.9
Not whole grain-rich	4.6	6.7	6.3	5.3
Hamburgers and similar beef/pork sandwiches				
Whole grain-rich	9.9*	21.4	18.9 [#]	14.0
Not whole grain-rich	1.2*	2.6	2.0	1.7
Cheeseburgers and similar beef/pork sandwiches with cheese				
Whole grain-rich	6.7*	21.5	22.5 [#]	12.9
Not whole grain-rich	<3	1.5	1.9 [#]	1.1
Hot dogs and corn dogs				
Whole grain-rich	9.3*	12.6	10.7	10.2
Not whole grain-rich	2.6	2.9	2.1	2.6
Entrée salad bar				
Whole grain-rich	1.6	2.6 [†]	6.1 [#]	2.8
Not whole grain-rich	1.0	1.4	3.6 [#]	1.6
Sandwich with only cheese				
Whole grain-rich	8.9	8.0	7.4	8.4
Not whole grain-rich	1.2	1.4	<3	1.2

	Percentage of Daily Lunch Menus			
	Elementary Schools	Middle Schools	High Schools	All Schools
Pizza pockets, pizza sticks, and calzones				
Whole grain-rich	4.4*	7.5†	11.8#	6.6
Not whole grain-rich	1.7	2.5	2.0	1.9
Prepackaged meal				
Whole grain-rich	4.2	3.9	3.8	4.1
Not whole grain-rich	1.5	2.2	2.0	1.7
Sandwich or deli bar				
Whole grain-rich	<3*	7.9†	12.6#	4.4
Not whole grain-rich	<3*	1.7	1.8#	0.7
Sandwich with mayonnaise-based poultry, tuna or egg salads				
Whole grain-rich	3.6	5.5	7.0#	4.7
Not whole grain-rich	<3	<3	<3	0.3
Parfait				
Whole grain-rich	<3*	3.7	2.9#	1.6
Not whole grain-rich	<3*	2.1	2.2#	1.1
Nacho or taco bar				
Whole grain-rich	<3*	1.6†	4.4#	1.3
Not whole grain-rich	<3*	1.1	1.7#	0.6
Separate Grains/Breads				
Breads, rolls, bagels, and other plain breads				
Whole grain-rich	34.7*	45.1	43.6#	38.5
Not whole grain-rich	3.9	5.2	4.3	4.2
Crackers, croutons, and pretzels				
Whole grain-rich	12.3	16.9	13.6	13.5
Not whole grain-rich	6.4	9.6	8.6	7.5
Rice				
Whole grain-rich	7.0*	9.6	12.3#	8.6
Not whole grain-rich	1.2	<3	1.1	1.1
Corn/tortilla chips				
Whole grain-rich	3.6	4.3	5.7	4.2
Not whole grain-rich	1.5	2.2	3.2#	2.0
Biscuits and cornbread				
Whole grain-rich	2.1	3.2	6.6#	3.3
Not whole grain-rich	1.4	1.2	2.0	1.5
Meats/Meat Alternates				
Breaded/fried chicken nuggets, patties, and similar products				
Whole grain-rich	12.1*	19.7	17.2#	14.6
Not whole grain-rich	6.1	7.7	7.9	6.8
Breaded/fried beef and pork				
Whole grain-rich	0.8	1.6	1.6	1.1
Not whole grain-rich	6.6	7.2	6.0	6.6
Desserts/Other Menu Items				
Grain-based desserts				
Whole grain-rich	7.0	5.6†	9.2	7.2
Not whole grain-rich	2.7	3.0	3.3	2.9
Cookies, cakes, brownies				
Whole grain-rich	6.1	4.9	7.2	6.1
Not whole grain-rich	2.0	2.3	2.4	2.1
Number of Daily Menus	2,123	1,820	1,758	5,701
Number of Schools	451	384	372	1,207

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: Table is limited to food groups offered in at least 5 percent of menus for one or more school types. The table does not account for individual food items offered as part of food bars or prepackaged meals. Respondents identified whole grain-rich foods when completing the Menu Survey.

^aIncludes grains from breaded meat/meat alternates.

^bIncludes chili with meat/meat alternate; baked potato with cheese and/or meat; egg rolls; and stir fry with poultry, beef, pork, or tofu.

^cIncludes burritos, tacos, nachos, quesadillas, fajitas, and enchiladas.

*Difference between elementary and middle schools is significantly different from zero at the 0.05 level.

†Difference between middle and high schools is significantly different from zero at the 0.05 level.

#Difference between elementary and high schools is significantly different from zero at the 0.05 level.

NSLP = National School Lunch Program.

<3 = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 0 and 3 percent are displayed as <3.

Meats/Meat Alternates

The most commonly offered item in the meats/meat alternates group that contained grains was breaded/fried chicken nuggets, patties, and similar products (Table 2.2). Whole grain-rich versions of these items were offered twice as frequently in daily lunch menus than non-whole-grain-rich versions (15 percent versus 7 percent) (Table 2.3). These whole grain-rich options were offered more frequently in daily lunch menus in middle and high schools than in daily menus in elementary schools (20 percent and 17 percent, respectively, versus 12 percent). Although not commonly offered in daily lunch menus, breaded/fried beef and pork products were more likely to be offered in the non-whole-grain-rich form than in the whole grain-rich form.

Desserts and Other Menu Items

Grain-based desserts—mainly cookies, cakes, and brownies—were the most frequently reported foods in the desserts/other menu items group (10 percent of all menus; Table 2.2). Like combination entrées, separate grains/breads, and breaded poultry products, whole grain-rich versions of grain-based desserts were offered more frequently in daily lunch menus than non-whole-grain-rich versions (7 percent versus 3 percent) (Table 2.3).

4. Availability of Self-Serve Food Bars in NSLP Lunches

Self-serve food bars, particularly those that include fruits and vegetables, have been encouraged by USDA and other groups as a way of increasing the amount and variety of fruits and vegetables consumed by children (USDA, FNS 2013a; Harris et al. 2012). Almost one-quarter (23 percent) of all schools offered some type of self-serve food bar at least once per week in NSLP lunches (Table 2.4). A smaller percentage of schools (16 percent) offered self-serve food bars every day. Elementary schools were significantly less likely than either middle or high schools to offer self-serve food bars either daily or weekly. Only 8 percent of elementary schools offered a self-serve food bar every day, compared with 23 percent of middle schools and 29 percent of high schools. In addition, only 15 percent of elementary schools offered food bars at least once per week, compared with 32 percent of middle schools and 40 percent of high schools.

Table 2.4. Availability of Self-Serve Food Bars in NSLP Lunches

	Percentage of Schools			
	Elementary Schools	Middle Schools	High Schools	All Schools
Any Self-Serve Food Bar				
At least once per week	14.6*	31.5	39.6#	23.2
Every day	8.2*	22.8	29.8#	15.6
Any Salad Bar ^a				
At least once per week	14.5*	30.6	38.1#	22.7
Every day	8.1*	20.2†	28.5#	14.9
Side Salad Bar ^a				
At least once per week	11.1*	25.6	28.5#	17.6
Every day	4.9*	16.4	21.1#	10.6
Salad Bar as Entrée				
At least once per week	5.2	8.4†	16.9#	8.4
Every day	<3	4.6†	10.3#	4.7
Sandwich/Deli Bar				
At least once per week	<3*	11.5	16.8#	6.2
Every day	<3*	7.3†	12.4#	4.3
Other Entrée Food Bars ^b				
At least once per week	<3*	6.6†	12.5#	4.2
Every day	<3*	<3*	5.5#	1.6
Number of Schools	451	384	372	1,207

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

^aIncludes fruit and vegetable bars, bars with only fruit, and bars with only vegetables.

^bIncludes nacho and taco bars, baked potato bars, and Italian/pasta bars.

*Difference between elementary and middle schools is significantly different from zero at the 0.05 level.

†Difference between middle and high schools is significantly different from zero at the 0.05 level.

#Difference between elementary and high schools is significantly different from zero at the 0.05 level.

NSLP = National School Lunch Program.

<3 = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 0 and 3 percent are displayed as <3.

Salad bars, including both side salad bars and entrée salad bars, were more commonly offered than sandwich/deli bars or other entrée type food bars. Almost one-quarter (23 percent) of schools offered some type of salad bar at least once per week, but only 6 percent of schools offered deli/sandwich bars, and only 4 percent offered other entrée bars—such as taco bars, baked potato bars, and Italian/pasta bars—at least once per week. Among salad bars, side salad bars, which typically include a variety of vegetables and/or fruit, were twice as common as

Almost one-quarter (23 percent) of schools offered some type of salad bar at least once per week in NSLP lunches. High schools and middle schools were significantly more likely than elementary schools to offer side salad bars. High schools were also more likely than other school types to offer entrée salad bars.

entrée salad bars, which include additional meal components such as meats/meat alternates and grains/breads. Eighteen percent of schools offered a side salad bar at least once per week, and 11 percent offered a side salad bar every day; whereas only 8 percent of schools offered entrée salad bars at least once per week, and only 5 percent offered an entrée salad bar every day.

High schools and middle schools were significantly more likely than elementary schools to offer side salad bars. One-quarter or more of middle schools (26 percent) and high schools (29 percent) offered side salad bars at least once per week, compared to only 11 percent of elementary schools. Similarly, 16 percent of middle schools and one-fifth (21 percent) of high schools offered side salad bars every day, compared with 5 percent of elementary schools. In addition, high schools were significantly more likely than middle schools or elementary schools to offer entrée salad bars. Entrée salad bars were offered in 17 percent of high schools at least once per week, compared with only 8 percent of middle schools and 5 percent of elementary schools.

5. Availability of Fresh Fruits and Vegetables in NSLP Lunches

In recent years, USDA has been working to increase schools' access to fresh fruits and vegetables. The Department of Defense (DoD) Fresh Fruit and Vegetable Program allows schools to use their USDA Foods entitlement dollars to buy fresh produce. USDA has continued to expand the amount and variety of locally sourced fresh fruits and vegetables available to schools using DoD's purchasing and distribution system for fresh fruits and vegetables (USDA, FNS 2013b). In addition, the Farm to School program has gained popularity in schools nationwide, providing them with easier access to locally-grown produce, as well as school-grown produce through the cultivation of school gardens (USDA, FNS 2016).

Virtually all schools offered some type of fresh fruit and/or vegetable (raw or cooked from fresh) in NSLP lunches at least one day per week, and the majority of schools (81 percent) offered fresh fruits and/or vegetables every day (Table 2.5). Fresh vegetables were offered more frequently than fresh fruits. Two-thirds of all schools (68 percent) offered fresh vegetables (raw or cooked) every day, whereas less than half of all schools (48 percent) offered fresh fruits every day. Raw fresh vegetables were offered more frequently than cooked fresh vegetables. Two-thirds of schools (66 percent) offered raw vegetables every day, but virtually no schools offered cooked fresh vegetables every day. In fact, almost three-quarters (72 percent) of all schools did not offer cooked fresh vegetables.

The majority of schools (81 percent) offered fresh fruits and/or vegetables (raw or cooked from fresh) in NSLP lunches every day. Fresh vegetables were offered more frequently than fresh fruit, and raw fresh vegetables were offered more frequently than cooked fresh vegetables.

Middle and high schools were more likely than elementary schools to offer fresh fruits and/or vegetables every day (86 percent and 90 percent, respectively, versus 76 percent). This pattern was also observed for raw and cooked vegetables combined, raw vegetables, and fresh fruits.

Table 2.5. Availability of Fresh Fruits and Vegetables in NSLP Lunches

	Percentage of Schools			
	Elementary Schools	Middle Schools	High Schools	All Schools
Number of Days Any Fresh Fruits or Vegetables Were Offered				
None	<3	<3	<3	<3
1 or 2	4.0 [^]	<3	<3	3.0
3 or 4	19.9 [*]	11.5	9.3 [#]	16.1
5	75.8 [*]	86.0	89.6 [#]	80.7
<i>Average number of days offered</i>	4.6 [*]	4.8	4.9 [#]	4.7
<i>Median number of days offered</i>	4.3	4.4	4.4	4.4
Number of Days Any Fresh Vegetables (Served Raw or in Cooked Form) Were Offered ^a				
None	<3	<3	<3	<3
1 or 2	11.6	7.6	<3 [#]	8.9
3 or 4	25.5 [*]	15.7	18.8	22.2
5	61.1 [*]	76.0	77.7 [#]	67.5
<i>Average number of days offered</i>	4.2 [*]	4.5	4.6 [#]	4.3
<i>Median number of days offered</i>	4.2	4.3	4.4	4.3
Number of Days Any Raw Fresh Vegetables Were Offered ^a				
None	<3	<3	<3	<3
1 or 2	13.5	7.6	<3 [#]	10.1
3 or 4	24.9 [*]	17.4	19.6	22.4
5	59.9 [*]	74.3	76.8 [#]	66.2
<i>Average number of days offered</i>	4.1 [*]	4.4	4.6 [#]	4.3
<i>Median number of days offered</i>	4.2	4.3	4.3	4.2
Number of Days Any Cooked Fresh Vegetables Were Offered ^a				
None	75.9 [*]	66.0	66.3 [#]	72.0
1 or 2	22.9	30.7	29.8	25.8
3 or 4	<3	<3	<3	1.8
5	<3	<3	<3 [#]	<3
<i>Average number of days offered</i>	0.3 [*]	0.5	0.5 [#]	0.4
<i>Median number of days offered</i>	0.0	0.0	0.0	0.0
Number of Days Any Fresh Fruits Were Offered ^b				
None	5.5	4.2 [^]	4.2 [^]	5.0
1 or 2	24.2 [*]	13.6	10.9 [#]	19.4
3 or 4	28.8	26.2	27.8	28.1
5	41.5 [*]	56.0	55.1 [#]	47.5
<i>Average number of days offered</i>	3.5 [*]	4.0	4.1 [#]	3.7
<i>Median number of days offered</i>	3.4	4.1	4.1	3.8
Number of Schools	347	307	294	948

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: Includes only schools that provided menu information for five days. Differences in medians were not tested for statistical significance. None of the differences between middle schools and high schools were statistically significant.

^aExcludes canned and frozen vegetables.

^bExcludes canned, frozen, and dried fruits and fruit juices.

^{*}Difference between elementary and middle schools is significantly different from zero at the 0.05 level.

[#]Difference between elementary and high schools is significantly different from zero at the 0.05 level.

NSLP = National School Lunch Program.

^ Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 0 and 3 percent are displayed as <3.

B. Foods Offered in SBP Breakfasts

SBP breakfasts are required to include three meal components—fruits, grains, and fluid milk—in daily and weekly quantities as specified for three grade groups that represent typical elementary, middle, and high schools. Vegetables can sometimes be offered in place of fruits, and meats/meat alternates can sometimes be offered in place of or in addition to grains.²³ The findings presented in this section describe the characteristics of foods offered in SBP breakfasts, focusing on the amount of choice and variety offered to students in selecting a reimbursable breakfast and the types and frequency of foods offered within various food groups. The major and minor food groups described previously were used for these analyses.

1. Amount of Choice and Variety Offered in SBP Breakfasts

To determine the amount of choice and variety offered in SBP breakfasts, the study team examined the number of choices offered in daily breakfast menus, as well as the number of different items offered over the course of the five-day school week for which Menu Survey data were reported. Schools with fewer than five days of breakfast menus were excluded from the weekly analysis. The number of choices that were offered on daily menus was estimated for the following major food groups: milk; fruits (including 100% fruit juices); separate grains/breads; meats/meat alternates; and combination entrées, which typically include a combination of grains/breads and meats/meat alternates. For this analysis, the fruit group was further divided into separate subgroups for whole fruits and 100% fruit juices to highlight the number of choices within each of these subgroups. Within each major group or subgroup, the number of different choices offered on daily menus was counted. For example, if three different types of milk were offered (low-fat unflavored milk, fat-free chocolate milk, and fat-free strawberry milk), each item was counted as a separate milk choice. Likewise, if an apple, orange juice, and apple juice were offered, these were counted as three separate fruit choices, one whole fruit choice, and two juice choices. Different types of cold cereal, however, were counted as a single choice in the grains/bread group.

The choice and variety of food items offered within each of these groups are presented in Table 2.6. The table shows the proportion of daily breakfast menus that offered different numbers of choices within each major food group and subgroups, as well as the median number of choices offered per day and the variety of foods offered per week. Key findings are discussed below. As part of this analysis, the availability of self-serve food bars at breakfast was also examined, and those results are presented in Table B.2.

²³ Additional information about the rules related to offering vegetables and meats/meat alternates at breakfast is available in FNS guidance (USDA, FNS 2015a).

Table 2.6. Choice and Variety in SBP Breakfasts

	Percentage of Daily Breakfast Menus			
	Elementary Schools	Middle Schools	High Schools	All Schools
Number of Types of Milk Offered per Day				
0 or 1	5.2	2.3	2.5	4.1
2	54.8	46.6	53.0	53.0
3	28.2	35.2	30.0	29.9
4 or more	11.7	16.0	14.5	13.1
<i>Median number of different items per day</i>	1.8	2.0	1.9	1.9
<i>Median number of different items per week^a</i>	2.0	2.3	2.2	2.1
Number of Fruits/100% Juices Offered per Day ^{b,c}				
0 or 1	8.6	4.5	6.6	7.4
2	30.7	24.3	19.0 [#]	27.0
3	24.4	21.6	24.8	24.0
4	16.7	16.9	17.4	16.9
5 or more	19.7 [*]	32.7	32.2 [#]	24.7
<i>Median number of different items per day</i>	2.4	3.0	3.0	2.6
<i>Median number of different items per week^a</i>	6.2	6.6	6.4	6.3
Number of Whole Fruits Offered per Day ^{c,d}				
0 or 1	62.5 [*]	47.7	46.2 [#]	56.3
2	20.8	21.7	23.7	21.6
3	9.0 [*]	14.3	14.0 [#]	11.0
4	4.9 [*]	9.3	9.8 [#]	6.7
5 or more	2.8 [*]	7.0	6.3 [#]	4.3
<i>Median number of different items per day</i>	0.8	1.1	1.2	0.9
<i>Median number of different items per week^a</i>	3.9	4.1	3.9	3.9
Number of 100% Juices Offered per Day ^e				
0 or 1	50.9	43.7	41.0 [#]	47.5
2	29.9	33.0	34.5	31.4
3	15.3	20.3	19.4	17.0
4	3.7	2.6	4.2	3.6
5 or more	<3	<3	1.0	0.4
<i>Median number of different items per day</i>	1.0	1.2	1.3	1.1
<i>Median number of different items per week^a</i>	1.9	1.9	1.9	1.9
Number of Separate Grains/Breads Offered per Day ^f				
0 or 1	31.6 [*]	20.7	21.2 [#]	27.4
2	20.6	17.4	16.2	19.1
3	15.8	13.7	11.8	14.6
4	10.8	11.3	11.0	10.9
5 or more	21.3 [*]	37.0	39.7 [#]	28.1
<i>Median number of different items per day</i>	1.9	2.9	3.1	2.2
<i>Median number of different items per week^a</i>	6.0	6.8	7.0	6.3
Number of Separate Meats/Meat Alternates Offered per Day ^g				
None	56.4 [*]	47.5	45.6 [#]	52.5
1	36.0	38.6	39.0	37.1
2 or more	7.6 [*]	13.9	15.4 [#]	10.4
<i>Median number of different items per day</i>	0.0	0.1	0.1	0.0
<i>Median number of different items per week^a</i>	1.3	1.4	1.4	1.3

	Percentage of Daily Breakfast Menus			
	Elementary Schools	Middle Schools	High Schools	All Schools
Number of Combination Entrées Offered per Day				
None	64.1*	44.0	41.7 [#]	55.7
1	30.4*	38.0	37.1 [#]	33.2
2 or more	5.5*	18.0	21.2 [#]	11.1
<i>Median number of different items per day</i>	0.0	0.2	0.2	0.0
<i>Median number of different items per week^a</i>	1.3	1.8	2.1	1.6
Number of Daily Menus	1,971	1,671	1,623	5,265
Number of Schools	415	352	344	1,111

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: Differences in medians were not tested for statistical significance. None of the differences between middle schools and high schools were statistically significant.

^aIncludes only schools that provided menu information for five days.

^bIncludes fruit, 100% juice, and any vegetables that were offered in place of fruit at breakfast.

^cFruits not included in combination entrées.

^dIncludes whole fruit (fresh, canned, dried, or frozen), and any whole vegetables that were offered in place of fruit at breakfast.

^eIncludes 100% fruit juice or any 100% vegetable juice that was offered in place of fruit at breakfast.

^fGrains and breads not included in combination entrées. All varieties of cold cereal, including sweetened and unsweetened cereals, were counted as one grain/bread choice.

^gMeats and meat alternates not included in combination entrées.

*Difference between elementary and middle schools is significantly different from zero at the 0.05 level.

[#]Difference between elementary and high schools is significantly different from zero at the 0.05 level.

SBP = School Breakfast Program.

<3 = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 0 and 3 percent are displayed as <3.

Milk

Nearly all (96 percent) daily breakfast menus offered more than one type of milk at breakfast, including milks with different flavors or fat contents. Most (83 percent) breakfast menus offered a choice of two or three types of milk per day. Only 13 percent of daily breakfast menus included four or more types of milk. The median number of different types of milk offered at breakfast per day and per week was two for all school types.

Fruits/100% Juices/Vegetables

Ninety-three percent of all daily breakfast menus included two or more fruits, 100% juices, or vegetables at breakfast (mostly hash browns and raw carrots). Daily breakfast menus in middle and high schools offered the more fruit choices than those in elementary schools. Roughly one-third of daily menus in middle and high schools (33 percent and 32 percent, respectively) offered five or more items from this group, compared with significantly smaller proportions (20 percent) of elementary school menus. The median number of different fruit items offered per week was at least six for each school type.

Looking only at whole fruits (which include any fresh, canned, dried, or frozen fruit), one-third (33 percent) of all daily breakfast menus included two or three whole fruit choices. About 11 percent of daily breakfast menus included four or more whole fruit choices. Daily menus in middle and high schools were significantly more likely than those in elementary schools to offer four or more whole fruit choices (16 percent versus 7 percent). For all school types, the median number of different whole fruit choices was one per day and four per week. Just over half (53 percent) of all daily breakfast menus offered more than one type of 100% juice. Although schools had the option to offer 100% vegetable juice, very few schools did so. Daily menus in elementary schools were more likely than those in high schools to offer only one type of 100% juice (51 percent versus 41 percent). Across all school types, the median number of different 100% juice choices offered was one per day and two per week.

Separate Grains/Breads

More than one-quarter (27 percent) of daily breakfast menus offered one or no separate grain/bread item, and a nearly equal number (28 percent) offered five or more options. Daily menus in elementary schools were significantly more likely than those in middle or high schools to offer one or no separate grain/bread at breakfast (32 percent versus 21 percent for middle and high schools). Alternatively, daily menus in middle and high schools were significantly more likely than those in elementary schools to offer five or more separate grains/breads at breakfast (37 percent and 40 percent, respectively, versus 21 percent). The median number of separate grain/bread items offered per day was two for elementary schools and three for middle and high schools. The median number of different items offered throughout the week was six for elementary schools and seven for middle and high schools.

Meats/Meat Alternates

About half (53 percent) of daily breakfast menus did not offer a meat or meat alternate at breakfast, whereas more than one-third (37 percent) of menus offered one meat/meat alternate option each day. Daily menus in elementary schools were significantly more likely than daily menus in middle or high schools to offer no meats/meat alternates (56 percent versus 48 percent and 46 percent, respectively). Daily menus in middle and high schools were more likely than those in elementary schools to offer two or more choices (14 percent and 15 percent, respectively, versus 8 percent). The median number of different meat or meat alternate items offered per week across all school types was one. The nutrition standards for SBP breakfasts do not include a quantity requirement for meats/meat alternates, but they can be included or substituted for grains once the daily quantity requirement for grains (1 ounce equivalent) is met.

Combination Entrées

Combination entrées offered in daily breakfast menus typically include grains/breads and meats/meat alternates—for example, a breakfast burrito, a breakfast sandwich with egg, or a sausage and pancake on a stick. Over half (56 percent) of all daily breakfast menus did not include a combination entrée, whereas one-third (33 percent) of menus included one combination entrée. Daily menus in elementary schools were less likely than those in middle or high schools to offer one combination entrée (30 percent versus 38 and 37 percent, respectively). Only 18 percent of daily menus in middle schools and 21 percent in high schools offered two or more choices of combination entrées, compared with 6 percent of daily menus in elementary schools.

Throughout the week, the median number of different combination entrées offered was two for middle and high school and one for elementary schools.

2. Types and Frequency of Foods Offered in SBP Breakfasts

To describe the types and frequency of foods offered in daily SBP breakfast menus, the study team categorized foods reported in the Menu Survey into major and minor food groups, as described earlier in this chapter (Section A). Table B.1 provides examples of the specific types of foods included in each minor food group.

Table 2.7 summarizes the foods/food groups that were offered in at least 5 percent of daily breakfast menus for one or more school types. Key findings within each of the major food groups are discussed below.

Milk

Milk was offered in virtually all daily breakfast menus. Unflavored low-fat milk was the most commonly offered type of milk for all schools types (91 percent of all daily menus). Flavored fat-free milk was offered in more than three-quarters of daily menus (76 percent), whereas unflavored fat-free milk was offered in about half of menus (51 percent). Only 6 percent of daily breakfast menus included flavored low-fat milk. There was little variation in the types of milks offered at breakfast across school types; however, daily menus in elementary schools were less likely than those in middle or high schools to offer flavored fat-free milk (71 percent versus 83 and 85 percent, respectively).

Vegetables

Vegetables—which are not a required meal component in SBP breakfasts but can sometimes be substituted for fruit—were offered in only 4 percent of daily breakfast menus. These were mainly hash-brown potatoes, but also included raw carrots. Daily menus in middle schools were more likely than those in elementary schools to include vegetables (7 percent versus 3 percent).

Fruits and 100% Fruit Juices

Virtually all daily breakfast menus included fruits or 100% fruit juices. Ninety percent of all daily breakfast menus included 100% fruit juice, and the most commonly offered types were apple juice and orange juice (64 and 62 percent, respectively). Fresh fruits were more commonly offered than canned or dried fruits. Two-thirds (66 percent) of all daily breakfast menus included fresh fruit, 44 percent included canned fruit, and 12 percent included dried fruit (mostly raisins). The five most commonly offered types of fruit on daily breakfast menus were fresh apples (41 percent), followed by fresh oranges (26 percent), bananas (23 percent), canned peaches and pears (18 percent), and applesauce (15 percent). Daily menus in elementary schools were less likely than those in middle schools to offer 100% fruit juices (88 percent versus 93 percent). Daily menus in elementary schools were also less likely than daily menus in middle or high schools to offer fresh fruit at breakfast (62 percent versus 72 percent and 75 percent, respectively).

Table 2.7. Foods Offered in SBP Breakfasts

	Percentage of Daily Breakfast Menus			
	Elementary Schools	Middle Schools	High Schools	All Schools
Milk	>97	>97	>97	>97
Fat-free	91.2	94.5	94.3	92.4
Flavored	70.8*	83.1	84.7#	76.0
Unflavored	51.7	53.6	45.0	50.6
Low-fat (1%)	92.5	89.8	91.1	91.7
Unflavored	91.7	89.4	90.1	90.9
Flavored	5.7	6.3	6.3	5.9
Vegetables^a	2.9*	6.5	5.2	4.1
Fruits and 100% Fruit Juices	>97	>97	>97	>97
Juice	87.8*	92.6	91.8	89.5
Apple	62.0	66.5	68.9	64.3
Orange	59.2	65.0	67.4#	62.0
Grape	21.5	27.3	26.3	23.5
Blend	13.4	13.0	12.4	13.1
Fresh fruit	61.6*	71.8	75.0#	66.3
Apple	34.6*	47.8	52.5#	40.8
Orange	21.2*	34.2	34.4#	26.4
Banana	20.5*	26.1	27.8#	23.1
Pear	3.4*	6.7	7.6#	4.9
Canned fruit	43.5	47.4	41.8	43.8
Peaches and pears	18.3	19.2	16.2	18.0
Applesauce	15.1	17.2	14.9	15.4
Fruit cocktail	9.4	7.5	8.8	8.9
Pineapple	4.9*	8.2	5.9	5.7
Dried fruit	12.8	10.6	10.5	11.9
Raisins	9.8	7.8	7.8	9.0
Combination Entrées	35.9*	56.0	58.3#	44.3
Breakfast sandwich	10.7*	22.7	28.3#	16.6
Pizza (with or without meat)	10.2*	15.8	14.8#	12.2
Sausage with pancake, corn dog, and similar products	6.4*	11.1	10.9#	8.2
Breakfast burrito	5.2*	8.1	11.4#	7.1
Peanut butter sandwich	2.2*	5.6	7.8#	4.0
Parfait	2.2*	5.5	5.2#	3.4
Separate Grains/Breads	93.8*	96.4	95.4	94.6
Cold cereal	72.5	78.3	75.5	74.2
Sweetened	67.7	74.2	71.8	69.7
Unsweetened	27.5	27.2	27.6	27.5
Pastries	21.1*	39.6	36.2#	28.3
Toaster pastries	9.8*	18.9	17.9#	13.1
Cinnamon buns	9.5*	16.3	17.5#	12.5
Strudels, turnovers, and Danishes	4.3*	9.1	9.3#	6.2
Donuts	2.3*	6.4	6.2#	3.9
Pancakes, waffles, and French toast	23.5	27.2	28.7#	25.3
Breads, rolls, bagels, and other plain breads	17.2*	27.8	33.3#	22.6
Muffins and sweet/quick breads	16.2*	26.1	31.5#	21.2
Granola bars and breakfast bars	16.6*	25.2	29.4#	20.9
Crackers, croutons, and pretzels	21.3	19.9	20.9	20.9
Buttered toast and bagels with cream cheese	13.8	14.8	13.3	13.9
Buttered toast	12.6	13.5	11.4	12.5
Biscuits and cornbread	9.1	11.3	11.3	10.0
Hot cereal	3.8	6.6	8.2#	5.3

	Percentage of Daily Breakfast Menus			
	Elementary Schools	Middle Schools	High Schools	All Schools
Meats/Meat Alternates	43.6*	52.5	54.4 [#]	47.5
Yogurt	21.3*	30.4	29.6 [#]	24.7
Low-fat/fat-free	19.1*	27.1	25.3	21.9
Other protein ^b	20.0	20.5	24.2	21.0
Cheese	11.2	13.2	15.2	12.4
Eggs	7.9	6.5	8.8	7.9
Sausage, frankfurters, and cold cuts	7.6*	12.4	12.6 [#]	9.5
Sausage	7.5*	12.0	12.4 [#]	9.4
Number of Daily Menus	1,971	1,671	1,623	5,265
Number of Schools	415	352	344	1,111

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: Table is limited to food groups offered in at least 5 percent of menus for one or more school types. The table does not account for individual food items offered as part of food bars or prepackaged meals. None of the differences between middle schools and high schools were statistically significant.

^aIncludes 100% vegetable juices.

^bIncludes cheese, eggs, and nuts and seeds.

*Difference between elementary and middle schools is significantly different from zero at the 0.05 level.

[#]Difference between elementary and high schools is significantly different from zero at the 0.05 level.

SBP = School Breakfast Program.

>97 = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 97 and 100 percent are displayed as >97.

Combination Entrées

Combination entrées were offered in more than one-third (36 percent) of daily breakfast menus in elementary schools and more than half of daily menus in middle and high schools (56 and 58 percent, respectively). Daily menus in elementary schools were significantly less likely than those in middle or high schools to include combination entrées. Across all school types, breakfast sandwiches and pizza were the most commonly offered combination entrées in daily breakfast menus (17 percent and 12 percent, respectively), followed by pancake on a stick (8 percent), and breakfast burritos (7 percent).

Separate Grains/Breads

Separate grains and breads that were not part of a combination entrée were offered in 95 percent of all daily breakfast menus. Daily menus in elementary schools were less likely to include separate grains and breads than daily menus in middle schools (94 percent versus 96 percent). The most commonly offered grain/bread item was cold cereal, offered in three-quarters (74 percent) of daily breakfast menus. Across all school types, sweetened cold cereal was offered more than twice as often as unsweetened cold cereal (70 percent of daily breakfast menus versus 28 percent). Other commonly offered grain/bread items in daily breakfast menus included pastries (28 percent); pancakes, waffles, and French toast (25 percent); breads, rolls, bagels and other plain breads (23 percent); granola and breakfast bars (21 percent); and muffins and quick

bread (21 percent). Daily menus in elementary schools were significantly less likely than daily menus in middle or high schools to include most of these items.

Meats and Meat Alternates

Meats and meat alternates, though not a required component in SBP breakfasts, were included in nearly half (48 percent) of all daily breakfast menus. Meats/meat alternates were less commonly offered in daily menus in elementary schools than in those in middle or high schools (44 percent versus 53 and 54 percent, respectively). Yogurt (mostly low-fat or fat-free) was the most frequently offered meat/meat alternate item and was included in one-quarter (25 percent) of all daily breakfast menus. Daily menus in elementary schools were less likely than those in middle or high schools to offer yogurt (21 percent versus 30 percent). Other protein items—including cheese, eggs, and nuts and seeds—were offered in 21 percent of daily breakfast menus. Sausage was offered in 10 percent of all daily breakfast menus, and daily menus in elementary schools were less likely to offer sausage than those in middle or high schools (8 percent versus 12 percent).

3. Frequency of Whole Grain-Rich Foods Offered in SBP Breakfasts

In SY 2014–2015, the nutrition standards required that all grains offered in SBP breakfasts be whole grain-rich, instead of at least 50 percent required in the prior two SYs.^{24,25} Table 2.8 presents detailed information about the prevalence of whole grain-rich foods in daily SBP breakfast menus in the two food groups that include grains/breads: combination entrées and separate grains/breads. For each of these major food groups and all associated minor food groups, Table 2.8 shows the percentage of daily menus that included one or more whole grain-rich option and the percentage that included one or more options that were not whole grain-rich. As in Table 2.7, minor food groups included in the table are limited to those for which at least 5 percent of daily menus in one or more school types included whole grain-rich or non-whole-grain-rich options. Key findings are summarized below.

Combination Entrées

Combination entrées were offered in almost half (44 percent) of all daily breakfast menus (Table 2.7). Whole grain-rich versions of all types of combination entrées were offered more frequently on daily breakfast menus than non-whole-grain-rich versions for virtually all school types (Table 2.8). The whole grain-rich versions of most combination entrées were offered more frequently in daily menus in middle and high schools than daily menus in elementary schools, and many of the differences were statistically significant.

Whole grain-rich versions of combination entrées and separate grains/breads were offered more frequently in daily breakfast menus than non-whole-grain-rich versions.

²⁴ To be whole grain-rich, a food item must contain at least 50 percent whole grains. Any non-whole grain portion must be enriched meal and/or flour (USDA, FNS 2014).

²⁵ State agencies had the option of granting exemptions to this requirement if an SFA demonstrated hardship in procuring compliant whole grain-rich products that were acceptable to students. This exemption was directed by Congress in response to difficulties some SFAs had in procuring and/or serving whole grain-rich foods, and to give industry additional time to develop a broader range of whole grain-rich products that are widely accepted by students (USDA, FNS 2015b).

This is consistent with the previously reported finding that daily menus in elementary schools were significantly less likely than those in middle or high schools to include one or more combination entrée choices per day (Table 2.6).

Table 2.8. Whole Grain-Rich Foods Offered in SBP Breakfasts

	Percentage of Daily Breakfast Menus			
	Elementary Schools	Middle Schools	High Schools	All Schools
Combination Entrées				
Breakfast sandwich				
Whole grain-rich	9.0*	20.1	25.4 [#]	14.5
Not whole grain-rich	1.7	2.6	2.9	2.1
Pizza (with or without meat)				
Whole grain-rich	7.6*	12.6	11.2 [#]	9.3
Not whole grain-rich	2.6	3.3	3.5	2.9
Sausage with pancake, corn dog, and similar products				
Whole grain-rich	5.1*	9.1	9.5 [#]	6.8
Not whole grain-rich	1.3	2.0	1.4	1.4
Breakfast burrito				
Whole grain-rich	3.8	6.3	9.7 [#]	5.5
Not whole grain-rich	1.5	1.8	1.7	1.6
Peanut butter sandwich				
Whole grain-rich	2.0*	4.6	7.1 [#]	3.6
Not whole grain-rich	<3	1.0	<3	0.5
Parfait				
Whole grain-rich	<3*	3.3	2.9 [#]	1.7
Not whole grain-rich	1.5	2.1	2.3	1.8
Separate Grains/Breads				
Cold cereal				
Whole grain-rich	71.5	76.9	74.1	73.1
Not whole grain-rich	4.0	6.0	6.8	5.0
Sweetened				
Whole grain-rich	67.0	73.0	70.1	68.8
Not whole grain-rich	3.0	5.0	6.4	4.1
Unsweetened				
Whole grain-rich	26.4	25.8	26.8	26.4
Not whole grain-rich	1.5	2.0	1.2	1.5
Pastries				
Whole grain-rich	19.6*	35.0	34.3 [#]	25.5
Not whole grain-rich	2.7*	6.0 [†]	3.0	3.4
Toaster pastries				
Whole grain-rich	9.1*	18.1	17.5 [#]	12.5
Not whole grain-rich	<3	<3	<3	0.7
Cinnamon buns				
Whole grain-rich	7.8*	13.9	15.9 [#]	10.7
Not whole grain-rich	1.7	2.5	1.6	1.8
Strudels, turnovers, and Danishes				
Whole grain-rich	3.9*	7.3	8.6 [#]	5.5
Not whole grain-rich	<3	1.8	<3	0.7
Donuts				
Whole grain-rich	2.1*	4.9	5.8 [#]	3.4
Not whole grain-rich	<3*	1.6	<3	0.5
Pancakes, waffles, and French toast				
Whole grain-rich	19.4	22.7	24.2 [#]	21.0
Not whole grain-rich	4.1	4.9	5.6	4.6
Breads, rolls, bagels, and other plain breads				
Whole grain-rich	15.4*	25.3	30.2 [#]	20.3
Not whole grain-rich	1.8	2.6	3.3	2.3

	Percentage of Daily Breakfast Menus			
	Elementary Schools	Middle Schools	High Schools	All Schools
Granola bars and breakfast bars				
Whole grain-rich	14.1*	20.6	25.6#	17.7
Not whole grain-rich	2.6	4.9	3.9	3.3
Muffins and sweet/quick breads				
Whole grain-rich	14.5*	24.0	29.4#	19.4
Not whole grain-rich	1.7	2.3	2.3	1.9
Crackers, croutons, and pretzels				
Whole grain-rich	18.4	18.0	19.3	18.5
Not whole grain-rich	2.9	2.0	1.6	2.5
Buttered toast and bagels with cream cheese				
Whole grain-rich	12.8	14.1	13.0	13.1
Not whole grain-rich	1.1	0.9	<3	0.9
Buttered toast				
Whole grain-rich	11.9	12.9	11.1	11.9
Not whole grain-rich	<3	<3	<3	0.6
Biscuits and cornbread				
Whole grain-rich	7.1	9.4	8.6	7.8
Not whole grain-rich	2.0	2.0	2.8	2.2
Hot cereal				
Whole grain-rich	3.1	5.7	7.2#	4.4
Not whole grain-rich	<3	0.9	1.1	0.8
Number of Daily Menus	1,971	1,671	1,623	5,265
Number of Schools	415	352	344	1,111

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: Table is limited to food groups offered in at least 5 percent of menus for one or more school types. The table does not account for individual food items offered as part of food bars or prepackaged meals. Respondents identified whole grain-rich foods when completing the Menu Survey.

*Difference between elementary and middle schools is significantly different from zero at the 0.05 level.

†Difference between middle and high schools is significantly different from zero at the 0.05 level.

#Difference between elementary and high schools is significantly different from zero at the 0.05 level.

SBP = School Breakfast Program.

<3 = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 0 and 3 percent are displayed as <3.

Separate Grains/Breads

As noted above, separate grains and breads that were not part of a combination entrée were offered in nearly all (95 percent) daily breakfast menus (Table 2.7). Similar to combination entrées, whole grain-rich versions of all types of grains/breads were offered more frequently in daily menus than non-whole-grain-rich versions for all school types (Table 2.8). The two items offered most frequently in daily breakfast menus—cold cereal and pastries—were most frequently offered in whole grain-rich varieties. Only 5 percent of all daily breakfast menus offered non-whole-grain-rich versions of cold cereal, and 3 percent offered non-whole-grain-rich versions of pastries.

4. Availability of Fresh Fruits and Vegetables SBP Breakfasts

Table 2.9 presents data on the availability of fresh fruits and vegetable in SBP breakfasts. Fresh vegetables were rarely offered in SBP breakfasts (2 percent of schools offered a fresh vegetable one or more days per week). More than four in 10 schools offered fresh fruits every day at breakfast. Elementary schools were significantly less likely than either middle or high schools to offer fresh fruit every day at breakfast (33 percent versus 54 percent and 56 percent, respectively).

Elementary schools were significantly less likely than either middle or high schools to offer fresh fruits every day at breakfast (33 percent versus 54 and 56 percent, respectively).

Conversely, elementary schools were more likely than either middle or high schools to offer fresh fruits only 1 to 2 days per week (22 percent versus 13 percent, respectively) and more likely than high schools to offer no fresh fruit (13 percent versus 6 percent).

Table 2.9. Availability of Fresh Fruits and Vegetables in SBP Breakfasts

	Percentage of Schools			
	Elementary Schools	Middle Schools	High Schools	All Schools
Number of Days Any Fresh Fruits or Vegetables Were Offered				
None	12.6	7.9	5.8 [#]	10.3
1 or 2	22.6 [*]	13.0	13.2 [#]	18.4
3 or 4	31.7	24.7	24.3	28.9
5	32.2 [*]	54.4	56.7 [#]	42.4
<i>Average number of days offered</i>	3.2 [*]	3.8	3.9 [#]	3.4
<i>Median number of days offered</i>	3.0	4.1	4.1	3.5
Number of Days Any Fresh Fruits Were Offered ^a				
None	12.9	7.9	5.8 [#]	10.5
1 or 2	22.0 [*]	13.3	13.3 [#]	18.7
3 or 4	31.7	25.0	24.5	29.1
5	33.4 [*]	53.8	56.4 [#]	41.7
<i>Average number of days offered</i>	3.1 [*]	3.8	3.9 [#]	3.4
<i>Median number of days offered</i>	2.9	4.1	4.1	3.4
Number of Days Any Fresh Vegetables (Served Raw or in Cooked Form) Were Offered ^b				
None	>97	96.0 [^]	>97	97.7
1 or 2	<3	3.0 [^]	<3	<3
3 or 4	<3	<3	<3	<3
5	<3	<3	<3	<3
<i>Average number of days offered</i>	0.1 [^]	0.1 [^]	0.1 [^]	0.1 [^]
<i>Median number of days offered</i>	0.0	0.0	0.0	0.0
Number of Schools	331	283	269	883

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: Includes only schools that provided menu information for five days. Differences in medians were not tested for statistical significance. None of the differences between middle schools and high schools were statistically significant.

^aExcludes canned, frozen, and dried fruits and fruit juices.

^bExcludes canned and frozen vegetables.

^{*}Difference between elementary and middle schools is significantly different from zero at the 0.05 level.

#Difference between elementary and high schools is significantly different from zero at the 0.05 level.

SBP = School Breakfast Program.

^ Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 0 and 3 percent are displayed as <3 and flagged percentages between 97 and 100 percent are displayed as >97

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3. COMPLIANCE OF DAILY AND WEEKLY LUNCH MENUS WITH NSLP NUTRITION STANDARDS AND OTHER NUTRIENT TARGETS

The final rule to improve school meals required implementation of the updated nutrition standards for NSLP lunches starting in SY 2012–2013; however, several requirements were phased in over time. SY 2014–2015 was the first year NSLP lunches were required to meet all of the requirements defined in the nutrition standards. The updated standards (see Table 1.3) were designed to better reflect the *Dietary Guidelines for Americans* and included substantial changes to school meal requirements, relative to the former standards, which were implemented in 1995 as part of the SMI. This chapter presents findings about the extent to which daily and weekly NSLP menus complied with the updated nutrition standards. The chapter also examines the extent to which the average nutrient content of weekly NSLP menus was consistent with nutrient targets that were used in developing the nutrition standards.

All findings are based on analysis of data from the Menu Survey, which was completed by SNMs over the course of one school week in the spring of SY 2014–2015. Data are presented for all schools and separately by school type: elementary, middle, and high schools. The statistical significance of differences between schools in these subgroups was tested using two-tailed t-tests. All differences between school types that are discussed in the text are statistically significant, unless otherwise noted. Tables and figures in the chapter present key results; supplementary tables appear in Appendix C, as noted throughout the chapter.

To assess the extent to which NSLP lunches met daily and weekly meal pattern requirements, the study team compared the types and amounts of food offered in each daily menu and across a school week to daily and weekly meal pattern requirements. To assess the extent to which NSLP lunches met the dietary specifications for calories, saturated fat, and sodium and other nutrient targets, the study team computed the average nutrient content of NSLP menus prepared for each school, based on an average across the school week. These estimates take into account the amounts of food prepared (number of servings) for reimbursable meals and give greater weight to menu items that were prepared in larger quantities.

The study team also computed the average nutrient content of NSLP menus served for each school. These estimates, which are provided in Appendix C and are very similar to estimates of NSLP menus prepared, take student selection patterns into account and give greater weight to menu items that were most frequently selected by (or served to) students as part of reimbursable meals.²⁶ Appendix D provides additional information on the methods used to estimate the calorie and nutrient content of NSLP menus prepared and served.

²⁶ Appendix C (Appendix Tables C.28–C.51) provides additional data on the average calorie and nutrient content of NSLP menus prepared and served, including standard errors, percentile distributions, and concentrations of nutrients per 1,000 calories. These tabulations also provide data on the average calorie and nutrient content of NSLP menus prepared and served by school size, urbanicity, and district child poverty rate.

A. Percentage of Daily and Weekly Lunch Menus That Met Nutrition Standards for NSLP Lunches

As described in Chapter 1, NSLP lunches in SY 2014–2015 were required to meet all of the updated nutrition standards (Table 1.3). The nutrition standards include meal pattern requirements that specify minimum amounts of foods to be offered each day and over the course of a week, as well as dietary specifications that set average weekly minimum and maximum calorie levels and limits on saturated fat and sodium content.^{27,28} Standards are defined for three different grade groups—kindergarten to grade 5, grades 6 to 8, and grades 9 to 12—the most common grade spans for elementary, middle and high schools, respectively (IOM 2010).

This section provides information on the extent to which daily and weekly lunch menus complied with the nutrition standards for NSLP lunches.²⁹ The general approach used in assessing compliance was based on the approach FNS uses in determining whether an SFA is eligible to receive an additional 6-cent reimbursement per lunch.³⁰ However, because the data collected in the Menu Survey were used to address multiple research questions not related to compliance, there were some differences in how the data were collected and analyzed. These differences, which are described in Appendix D, mean that the findings from this analysis are not entirely comparable to findings based on the 6-Cents Tool. The study team assessed compliance separately for daily meal pattern requirements, weekly meal pattern requirements, and dietary specifications. The sections below include a description of the methods used in assessing compliance with each type of requirement. Appendix D provides additional details.

1. Daily Meal Pattern Requirements

To assess compliance of lunch menus with daily meal pattern requirements for NSLP lunches, the study team compared each school’s daily menus to daily meal pattern requirements consistent with its grade group. If a daily menu included a choice of foods for students to select from (for example, 2 milk choices or 4 entrée choices), each choice had to meet the relevant daily meal pattern requirement. Thus, a single food could cause a daily menu to be noncompliant with a daily meal pattern requirement. Daily menus that are more complex and include more choices for students to select from provide more opportunities for a daily menu to be noncompliant. For example, as described in Chapter 2, daily lunch menus in middle and high

²⁷ The standard for sodium was designed to be phased in over ten years, with the first target taking effect in SY 2014–2015.

²⁸ The standards also call for the elimination of synthetic *trans* fat. Compliance with this requirement could not be assessed in the analysis of Menu Survey data because the nutrient database used for the study—the Food and Nutrient Database for Dietary Studies (FNDDS, version 2011–2012)—does not provide data on *trans* fat. Instead the study collected information on food purchasing practices used to eliminate *trans* fat. These data are summarized in Volume 1 of the SNMCS final report (Forrestal et al. 2019).

²⁹ Appendix C provides data on the percentage of daily and weekly lunch menus meeting the nutrition standards and the percentage of weekly menus that came close to meeting the standards by school size, urbanicity, and district child poverty rate (Tables C.2–C.4; Tables C.7–C.9; Tables C.11–13; Tables C.15–17).

³⁰ Under HHSFKA, schools that provide meals that comply with the updated nutrition standards for both lunch and breakfast (if offered) are eligible to receive an additional reimbursement of 6 cents per lunch. Additional information on the certification process is available at <http://www.fns.usda.gov/school-meals/certification-compliance>.

schools offered more fruit, vegetable, and entrée choices to students than daily menus in elementary schools (Table 2.1). The analysis considered a daily menu to be compliant if the minimum amount of a given meal component was equal to or greater than the daily requirement. The analysis took into account all menu items that contributed to the meal component, and the menu item that contributed the smallest amount for a given meal component determined the minimum amount. For example, if a daily menu included a choice of 1.5 ounce equivalents of meats/meat alternates from an entrée salad or 2 ounce equivalents of meats/meat alternates from a turkey sandwich, the daily minimum for meats/meat alternates was 1.5 ounce equivalents. When computing daily minimum amount for fruits and vegetables, the analysis also took into account the maximum number of servings students were allowed to select. For example, if a school indicated that students could select up to two servings of fruits at lunch, the daily minimum amount of fruits was computed by summing the meal pattern contributions of the two fruit offerings with the smallest contributions.

For grains and meats/meat alternates, the analysis also took into account information about foods that were offered only with specific foods on a daily menu (referred to as “linked foods”) when computing daily minimum amounts. The analysis involved summing amounts for foods that were linked, and then used this sum in ranking menu items to determine the item with the smallest amount of grains and/or meats/meat alternates. For example, if a daily menu offered two entrée choices—(1) a pizza with 2.5 ounce equivalents of meats/meat alternates, or (2) a peanut butter and jelly sandwich (1 ounce equivalent) served with a cheese stick (1 ounce equivalent) for a total of 2 ounce equivalents—the peanut butter and jelly sandwich/cheese stick choice would be considered the menu item with the smallest amount of meats/meat alternates. For lunch menus that included a separate bread/grain that was available to all students regardless of the entrée choice (referred to as an “unlinked grain”), the analysis assumed that each entrée choice included a serving of the unlinked grain. Thus, the grain contribution for each entrée was equivalent to the contribution of the unlinked grain plus the contribution of the entrée. If the menu day included multiple unlinked grains, the unlinked grain with the largest amount of grains was used to compute the grain contribution of each entrée item.³¹

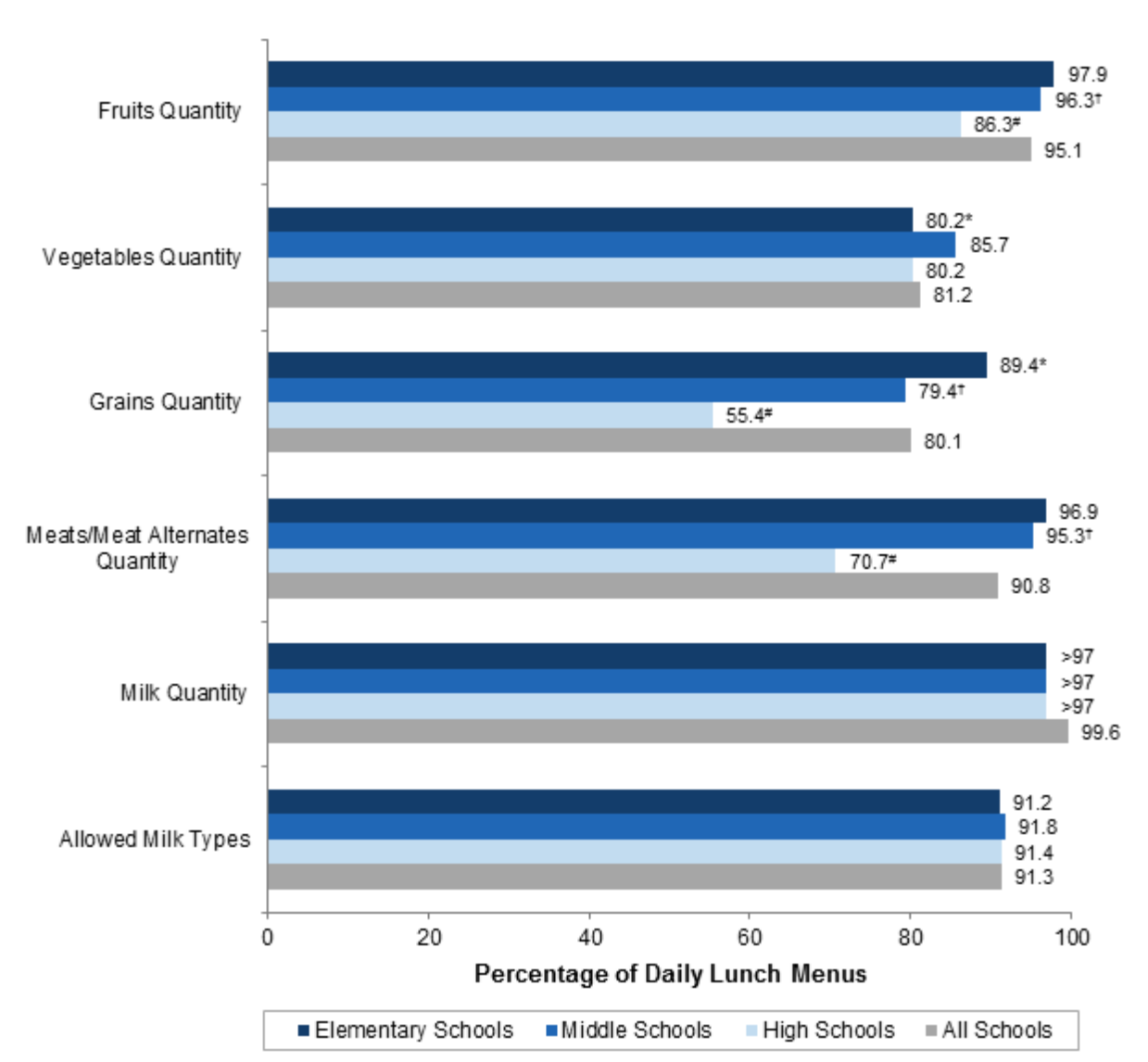
Findings from this analysis are summarized in Figure 3.1 and discussed below.³²

Fruits. Overall, 95 percent of daily lunch menus met the daily quantity requirement for fruits (Figure 3.1). Ninety-six percent or more of daily lunch menus in elementary and middle schools (98 and 96 percent, respectively) met the daily quantity requirement for fruits, and 86 percent of daily menus in high schools met this requirement. Daily lunch menus in high schools were significantly less likely than those in elementary or middle schools to meet the daily quantity requirement for fruits. The daily quantity requirement for fruits for high schools is double that of elementary and middle schools (1 cup versus 1/2 cup).

³¹ As described in Appendix D, the Menu Survey did not collect information on the maximum number of separate grain items students could select. This assumption reflects a middle-of-the-road approach between including only one unlinked grain with the smallest amount of grains and including all unlinked grains.

³² Table C.5 provides data on the percentage of *schools* that met the daily NSLP meal pattern requirements.

Figure 3.1. Percentage of Daily Lunch Menus That Met Daily NSLP Meal Pattern Requirements



Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

* Difference between elementary and middle schools is significantly different from zero at the 0.05 level.

† Difference between middle and high schools is significantly different from zero at the 0.05 level.

Difference between elementary and high schools is significantly different from zero at the 0.05 level.

NSLP = National School Lunch Program.

>97 = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this figure, flagged percentages between 97 and 100 percent are displayed as >97.

Daily menus in medium-sized schools (500 to 999 students) were more likely than those in small (fewer than 500 students) or large schools (1,000 students or more) to meet the daily quantity requirement for fruits (98 percent versus 94 and 93 percent, respectively; Table C.2). In addition, daily menus in urban and suburban schools were significantly more likely than daily menus in rural schools to meet the daily quantity requirement for fruits (98 and 96 percent, respectively, versus 93 percent; Table C.3).

Vegetables. Overall, 81 percent of daily lunch menus met the daily quantity requirement for vegetables (Figure 3.1). Eighty percent of daily menus in elementary schools and high schools and 86 percent of daily menus in middle schools met this requirement. Although the daily quantity requirement for vegetables is the same for elementary and middle schools (3/4 cup), daily menus in middle schools were significantly more likely than those in elementary schools to meet this requirement.

Grains. Overall, 80 percent of daily lunch menus met the daily quantity requirement for grains; however, there was substantial and statistically significant variation across school types in the proportion of daily menus meeting this requirement (Figure 3.1). Roughly 9 in 10 daily menus in elementary schools (89 percent) and 8 in 10 daily menus in middle schools (79 percent) met the daily quantity requirement for grains. However, less than 6 in 10 daily menus in high schools (55 percent) met this requirement. The daily quantity requirement for grains in high schools is double the requirement for elementary and middle schools (2 ounce equivalents versus 1 ounce equivalent). In addition, daily lunch menus in small and medium-sized schools were significantly more likely than those in large schools to meet the daily grains quantity requirement (85 and 81 percent, respectively, versus 59 percent; Table C.2).

Daily menus in high schools were significantly less likely than those in elementary or middle schools to meet the daily quantity requirements for fruits, grains, and meats/meat alternates.

Given that a single food could cause a daily menu to be noncompliant with the daily quantity requirement for grains, the study team conducted a supplementary analysis to examine whether foods that were planned for a small proportion of reimbursable meals were causing a menu to be noncompliant. In planning for meal production, SNMs use food production records of students' past selection patterns to determine or forecast how many servings of a given menu item to prepare. For example, in planning for 200 reimbursable lunches on a given day, an SNM might plan for 100 portions of pizza, 95 portions of lasagna, and only 5 portions of an entrée salad—assuming that the entrée salad would be infrequently selected by students as part of a reimbursable meal. For each daily menu, the study team used data on the number of reimbursable meals planned and the number of servings planned for each menu item to identify foods that SNMs assumed would be infrequently selected, that is, foods that were planned for less than 5 percent of reimbursable meals. If these foods were excluded from daily lunch menus in middle and high schools, the percentage of daily menus that met the daily quantity requirement for grains would increase by 10 to 11 percentage points (data not shown). For daily menus in elementary schools, the increase would be much smaller (3 percentage points).

Meats/Meat Alternates. Roughly 9 in 10 daily lunch menus (91 percent) met the daily quantity requirement for meats/meat alternates (Figure 3.1). Most daily menus in elementary schools (97 percent) and middle schools (95 percent) met the daily quantity requirement for

meats/meat alternates; however, only 71 percent of daily menus in high schools met this requirement. Daily menus in high schools were significantly less likely than those in elementary or middle schools to meet the daily quantity requirement for meats/meat alternates. Similar to vegetables and grains, the daily quantity requirement for meats/meat alternates in high schools is double that of elementary and middle schools (2 ounce equivalents versus 1 ounce equivalent).

Daily lunch menus in small and medium-sized schools were significantly more likely than those in large schools to meet the daily quantity requirement for meats/meat alternates (92 and 94 percent, respectively, versus 76 percent; Table C.2). In addition, daily menus in urban and suburban schools were significantly more likely than those in rural schools to meet the daily quantity requirement for meats/meat alternates (93 percent of daily menus in both urban and suburban schools versus 87 percent in rural schools; Table C.3).

The study team conducted a supplementary analysis (described in the preceding section on grains) to examine whether foods that were infrequently selected by students as part of a reimbursable meal were causing a menu to be noncompliant. If foods that were planned for less than 5 percent of reimbursable meals were excluded from daily menus in high schools, the percentage of daily menus that met the daily quantity requirement for meats/meat alternates would increase by 7 percentage points (data not shown). The increase for daily menus in elementary and middle schools would be much smaller (0 to 1 percentage point).

Milk. Virtually all daily lunch menus met the daily quantity requirement for milk (Figure 3.1). In addition, the vast majority (91 to 92 percent) of daily menus offered only allowed types of milk (fat-free milk or unflavored low-fat milk).³³ There were no statistically significant differences across school types in the percentage of daily menus that met the milk requirements.

The study team conducted a supplementary analysis to examine how the percentage of daily lunch menus that met the allowed milk types requirement would change if low-fat flavored milk was allowed. Virtually all daily lunch menus would meet the allowed milk type requirement with the inclusion of low-fat flavored milk (data not shown).

All Daily Meal Pattern Requirements. To meet all of the daily NSLP meal pattern requirements, a daily menu must meet the daily quantity requirements for all meal components (fruits, vegetables, grains, meats/meat alternates, and milk), as well as the allowed milk types requirement. If a daily menu includes a choice of foods for students to select from (for example, 2 milk choices or 4 entrée choices), each choice must meet the relevant daily meal pattern requirement. Thus, a single food could cause a daily menu to be noncompliant with all of the daily meal pattern requirements.

Overall, just over half (56 percent) of daily lunch menus met all of the daily meal pattern requirements (Table C.1). Sixty-four percent of daily menus in elementary schools and 60 percent of daily menus in middle schools met all of these requirements. Less than one-third (30 percent) of daily menus in high schools met all of the daily meal pattern requirements. Daily

³³ To meet the requirement for allowed milks, daily menus must include at least two allowed milk choices and no unallowed milks.

menus in high schools were significantly less likely than those in elementary or middle schools to meet all of the daily meal pattern requirements.

Daily lunch menus in small and medium-sized schools were significantly more likely than those in large schools to meet all of the daily meal pattern requirements (59 percent of daily menus in both small and medium-sized schools versus 35 percent in large schools; Table C.2). In addition, daily menus in suburban schools were significantly more likely than those in rural schools to meet all of the daily meal pattern requirements (59 percent versus 50 percent; Table C.3).

The study team conducted a supplementary analysis to examine the combinations of daily meal pattern requirement that were causing daily lunch menus to be noncompliant with all of the daily requirements. For daily menus in elementary and middle schools that did not meet all of the daily meal pattern requirements, the three leading causes of noncompliance were not meeting (1) the daily quantity requirement for vegetables only; (2) the daily quantity requirement for grains only; or (3) the allowed milk types requirement only (data not shown). For daily menus in high schools, the three leading causes of noncompliance were not meeting (1) the daily quantity requirement for grains only; (2) the daily quantity requirement for both grains and meats/meat alternates; or (3) the daily quantity requirement for meats/meat alternates only (data not shown).

2. Weekly Meal Pattern Requirements

To assess compliance of lunch menus with weekly meal pattern requirements for NSLP lunches, the study team compared each school's weekly menu to weekly meal pattern requirements consistent with its grade group.³⁴ For each meal component, the study team computed weekly minimums by summing the daily minimums across all daily menus. For each of the vegetable subgroups, the analysis identified the menu item with the largest amount on each daily menu and then summed these amounts across the week.³⁵ To assess whether weekly menus complied with the requirement that no more than half of the fruits offered be in the form of juice, the analysis involved computing the total weekly amounts of fruit and fruit juice by summing across all daily menus. The total weekly amount of fruit juice was then divided by the total weekly amount of fruit. The analysis used the same approach to assess whether weekly menus were compliant with requirements for vegetable juice (no more than half of all vegetables) and whole grain-rich grains. For whole grain-rich grains, the analysis assessed compliance with the requirement that all grains must be whole grain-rich as well as the relaxed requirement that at least half of all grains must be whole grain-rich. Findings are summarized in Figures 3.2–3.4 and discussed below. For weekly menus that did not meet a weekly meal pattern requirement, the study team also estimated the percentage of the shortfall (for example, within 5 percent of the requirement or between 5 and 10 percent of the requirement; Table C.14).

³⁴ For schools that provided data for three or four days, the weekly meal pattern requirements were adjusted according to FNS guidance on shorter school weeks (USDA, FNS 2015a).

³⁵ This is consistent with the approach used in the 6-Cents Tool, which requires vegetable subgroup information to be entered each day and uses the largest amount of each vegetable subgroup offered each day to indicate the greatest combination of vegetables available for students to select.

Fruits. Overall, 92 percent of weekly lunch menus met the weekly quantity requirement for fruits (Figure 3.2). The vast majority of weekly menus in elementary and middle schools (95 and 94 percent, respectively) met this weekly quantity requirement. A smaller proportion (83 percent) of weekly menus in high schools met the weekly quantity requirement for fruits. Weekly menus in high schools were significantly less likely than those in elementary or middle schools to meet the weekly quantity requirement for fruits. Similar to the daily quantity requirement for fruits, the weekly fruit quantity requirement for high schools is double that of elementary and middle schools (5 cups versus 2 1/2 cups for a five-day week). In addition, weekly lunch menus in medium-sized schools were significantly more likely than those in large schools to meet the weekly quantity requirement for fruits (95 percent versus 90 percent; Table C.7).

Almost all (97 percent) weekly lunch menus complied with the requirement that no more than half of the fruits offered be in the form of juice (Table C.6). There were no statistically significant differences across school types in the proportion of weekly menus that met this requirement.

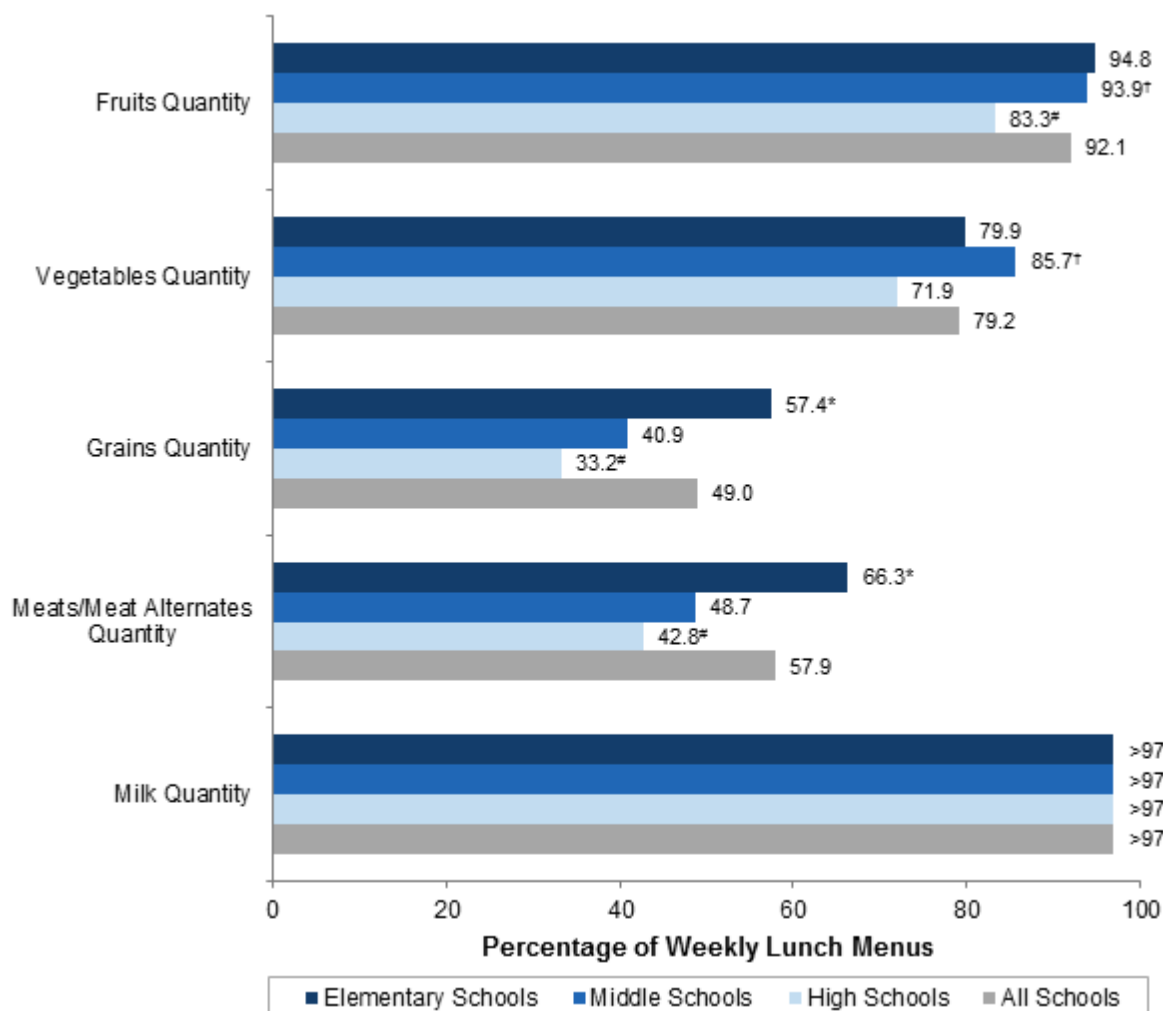
Vegetables. Overall, nearly 4 out of 5 (79 percent) weekly lunch menus met the weekly quantity requirement for vegetables (Figure 3.2). Eighty percent of weekly menus in elementary schools and 86 percent in middle schools met the weekly quantity requirement for vegetables. A smaller proportion (72 percent) of weekly menus in high schools met this requirement, and weekly menus in high schools were significantly less likely to do so than weekly menus in middle schools. An additional 8 percent of weekly menus in high schools came close (within 10 percent) to meeting the weekly quantity requirement for vegetables (Table C.14). As with the daily quantity requirement for vegetables, high schools are required to offer more vegetables (an additional 1 1/4 cups in a five-day week) than elementary and middle schools.

Virtually all weekly lunch menus met the requirement that no more than half of the vegetables offered be in the form of juice (Table C.6). There were no statistically significant differences across school types in the proportion of weekly menus that met this requirement.

Vegetable Subgroups. Overall, between 92 and 95 percent of weekly lunch menus met the weekly quantity requirements for dark green vegetables, red and orange vegetables, starchy vegetables, and other vegetables (Figure 3.3). A smaller proportion (79 percent) of weekly menus met the weekly quantity requirement for legumes. Weekly menus in middle schools were significantly more likely than those in elementary schools to meet the weekly quantity requirements for dark green vegetables and starchy vegetables (virtually all weekly menus in middle schools versus 94 percent in elementary schools). Weekly menus in middle schools were also significantly more likely than those in elementary or high schools to meet the weekly quantity requirement for red and orange vegetables (virtually all weekly menus in middle schools versus 93 percent in elementary and high schools).

Overall, between 92 and 95 percent of all weekly lunch menus met the weekly quantity requirements for dark green vegetables, red and orange vegetables, starchy vegetables, and other vegetables.

Figure 3.2. Percentage of Weekly Lunch Menus That Met Weekly NSLP Meal Pattern Quantity Requirements



Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

* Difference between elementary and middle schools is significantly different from zero at the 0.05 level.

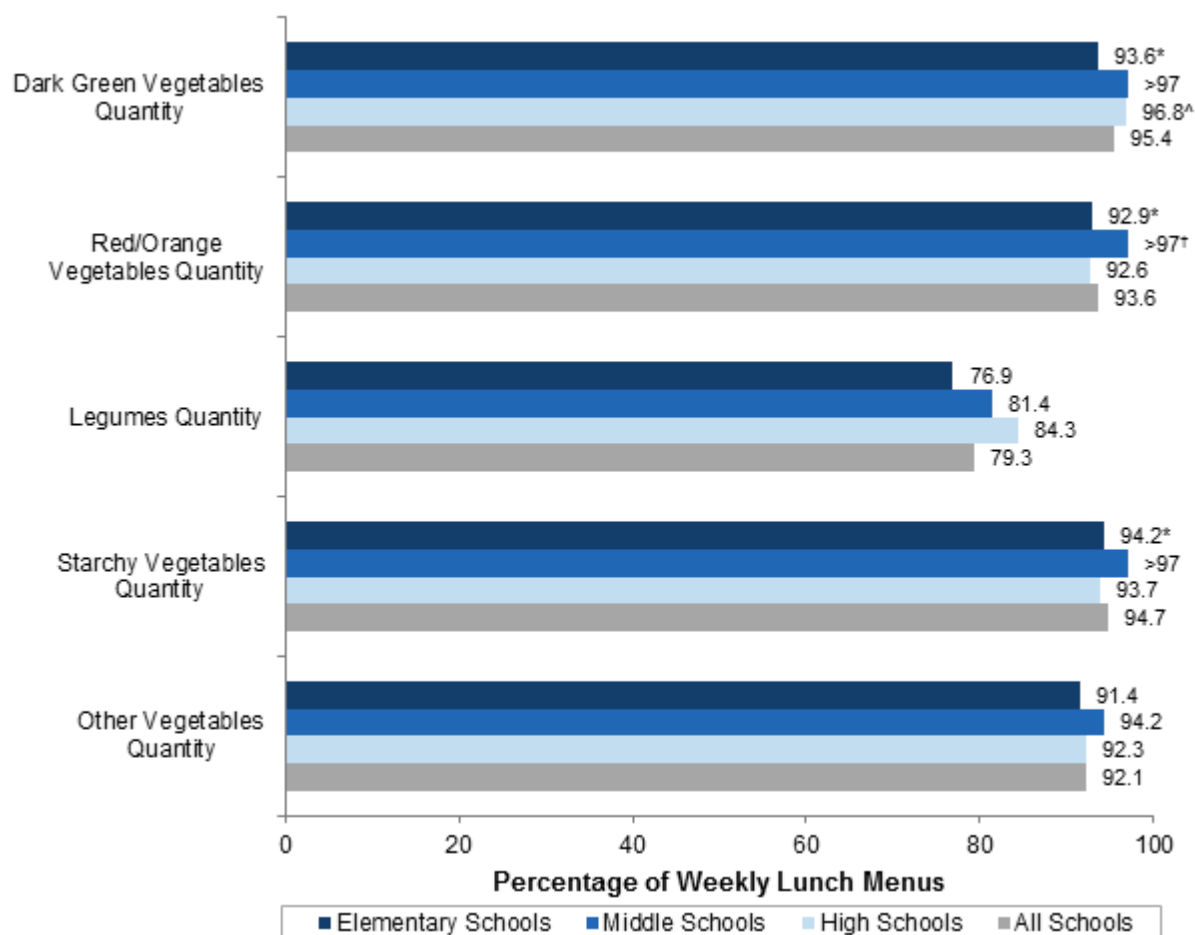
† Difference between middle and high schools is significantly different from zero at the 0.05 level.

Difference between elementary and high schools is significantly different from zero at the 0.05 level.

NSLP = National School Lunch Program.

>97 = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this figure, flagged percentages between 97 and 100 percent are displayed as >97.

Figure 3.3. Percentage of Weekly Lunch Menus That Met Weekly NSLP Meal Pattern Quantity Requirements for Vegetable Subgroups



Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Note: None of the differences between elementary and high schools were statistically significant.

* Difference between elementary and middle schools is significantly different from zero at the 0.05 level.

[†] Difference between middle and high schools is significantly different from zero at the 0.05 level.

NSLP = National School Lunch Program.

>97 = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this figure, flagged percentages between 97 and 100 percent are displayed as >97.

In addition, weekly menus in medium-sized and large schools were more likely than those in small schools to meet the weekly quantity requirement for dark green vegetables (virtually all weekly menus in medium-sized and large schools versus 93 percent in small schools; Table C.7). Weekly lunch menus in large schools were also significantly more likely than those in small schools to meet the weekly quantity requirement for legumes (86 percent versus 76 percent; Table C.7). Weekly menus in urban and suburban schools were significantly more likely than those in rural schools to meet the weekly quantity requirement for red and orange vegetables (virtually all weekly menus in urban schools and 96 percent in suburban schools versus 88 percent in rural schools; Table C.8). However, weekly menus in urban schools were significantly more likely than those in suburban or rural schools to meet the weekly quantity requirement for starchy vegetables (virtually all weekly menus in urban schools versus 95 and 92 percent of suburban and rural schools, respectively; Table C.8).

Grains. Just under half (49 percent) of all weekly lunch menus met the weekly quantity requirement for grains, but there was some variation across school types (Figure 3.2). In elementary schools, more than half (57 percent) of weekly lunch menus met the weekly quantity requirement for grains. Notably smaller proportions of weekly menus in middle and high schools (41 percent and 33 percent, respectively) met this requirement. The differences between elementary schools and middle and high schools were statistically significant. Among weekly menus that did not meet the weekly quantity requirement for grains, 10 percent of menus in elementary schools and middle schools were within 10 percent of meeting the requirement, and another 10 percent of menus in these schools were between 10 and 20 percent of meeting the requirement (Table C.14). Among weekly menus in high schools that did not meet the weekly quantity requirement for grains, 15 percent of menus were within 10 percent of meeting the requirement and another 17 percent of menus were between 10 and 20 percent of meeting the requirement. As with the daily quantity requirements for grains, high schools are required to offer more grains (an additional 2 ounce equivalents in a five-day week) than elementary or middle schools.

In addition, weekly lunch menus in small and medium-sized schools were significantly more likely than those in large schools to meet the weekly quantity requirement for grains (55 and 47 percent, respectively, versus 32 percent; Table C.7).

The vast majority (96 percent) of all weekly lunch menus met the grain-based dessert restriction, which sets a limit on the maximum amount of grains allowed as grain-based desserts (Figure 3.4). Weekly menus in high schools were significantly less likely than weekly menus in middle schools to meet this restriction (93 percent in high schools versus virtually all weekly menus in middle schools). Weekly lunch menus in urban schools were significantly more likely than those in suburban schools to meet the restriction on grain-based desserts (virtually all weekly menus in urban schools versus 94 percent in suburban schools; Table C.8).

Whole Grains. Beginning in SY 2014–2015, the nutrition standards required that all grains offered in NSLP lunches be whole grain-rich, instead of at least 50 percent required in the prior two SYs.³⁶ However, State agencies had the option of granting exemptions to this requirement if

³⁶ To be whole grain-rich, a food item must contain at least 50 percent whole grains. Any non-whole grain portion must be enriched meal and/or flour (USDA, FNS 2014).

an SFA demonstrated hardship in procuring compliant whole grain-rich products that were acceptable to students (USDA, FNS 2015b). This exemption was directed by Congress in response to difficulties some SFAs had in procuring and/or serving whole grain-rich foods, and to give industry additional time to develop a broader range of whole grain-rich products that are widely accepted by students (USDA, FNS 2015b). In SFAs that were granted this exemption, at least half of all grains offered had to be whole grain-rich.

Overall, more than one-quarter (27 percent) of all weekly lunch menus offered only whole grain-rich grain items (Figure 3.4). This was true for about 3 in 10 weekly menus in elementary and middle schools (30 percent and 26 percent, respectively) and 2 in 10 weekly menus in high schools (21 percent). Weekly menus in elementary schools were significantly more likely than those in high schools to offer only whole grain-rich grain items. An additional 22 percent of weekly menus in elementary schools, 31 percent of weekly menus in middle schools, and 30 percent of weekly menus in high schools came close (within 10 percent) to meeting this requirement (Table C.14).

Overall, more than one-quarter (27 percent) of all weekly lunch menus offered only whole grain-rich grain items.

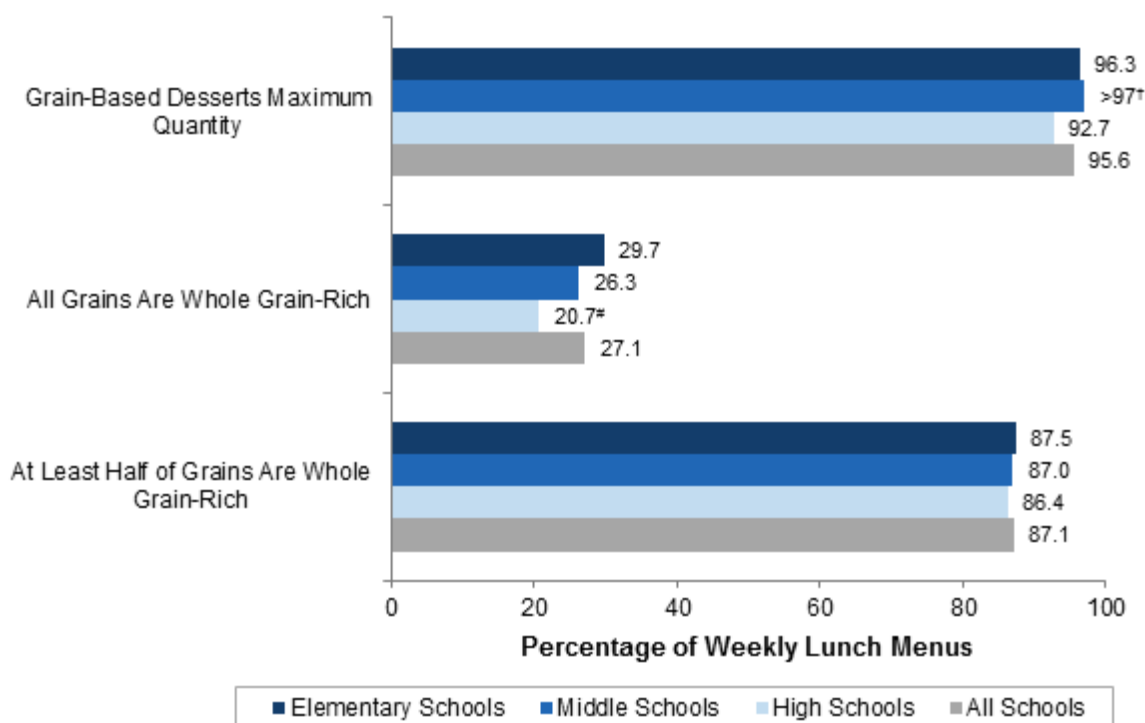
Overall, 87 percent of weekly lunch menus met the requirement that at least 50 percent of the grains offered must be whole grain-rich (Figure 3.4). There were no significant differences across school types in the proportions of weekly menus that met this requirement.

Meats/Meat Alternates. Overall, 58 percent of weekly lunch menus met the weekly quantity requirement for meats/meat alternates, but there was some variation across school types (Figure 3.2). Two-thirds (66 percent) of weekly menus in elementary schools met the weekly quantity requirement for meats/meat alternates, but less than half of weekly menus in middle schools and high schools (49 percent and 43 percent, respectively) met this requirement. The differences between elementary schools and middle and high schools were statistically significant. Among weekly menus that did not meet the weekly quantity requirement for meats/meat alternates, 9 percent of menus in elementary schools were within 10 percent of meeting the requirement, and about another 6 percent were between 10 and 20 percent of meeting the requirement (Table C.14). Among weekly menus in middle and high schools that did not meet the weekly quantity requirement for meats/meat alternates, 16 to 20 percent of menus were within 10 percent of meeting the requirement, and another 13 to 14 percent were between 10 and 20 percent of meeting the requirement. The weekly quantity requirement for meats/meat alternates for middle schools and high schools is 1 and 2 ounce equivalents larger, respectively, than the weekly requirement for elementary schools (9 and 10 ounce equivalents versus 8 ounce equivalents).

In addition, weekly lunch menus in small and medium-sized schools were significantly more likely than those in large schools to meet the weekly quantity requirement for meats/meat alternates (65 and 54 percent, respectively, versus 42 percent; Table C.7).

Milk. Virtually all weekly lunch menus met the weekly quantity requirement for milk (Figure 3.2). There were no statistically significant differences across school types in the proportions of weekly menus that met this requirement.

Figure 3.4. Percentage of Weekly Lunch Menus That Met Weekly NSLP Meal Pattern Requirements for Grain-Based Desserts and Whole Grain-Rich Grains



Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Note: None of the differences between elementary and middle schools were statistically significant.

[†] Difference between middle and high schools is significantly different from zero at the 0.05 level.

[#] Difference between elementary and high schools is significantly different from zero at the 0.05 level.

NSLP = National School Lunch Program.

>97 = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this figure, flagged percentages between 97 and 100 percent are displayed as >97.

All Weekly Meal Pattern Requirements. To meet all of the weekly NSLP meal pattern requirements, weekly lunch menus must meet all 14 requirements (see Table 1.3). Given the number of weekly requirements and the fact that a single noncompliant food on one daily menu could cause a weekly menu to be noncompliant with all of the weekly meal pattern requirements, it is challenging for weekly menus to meet all of the weekly meal pattern requirements. Another challenge is that elementary and middle schools must provide more than the daily minimum amount of grains and meats/meat alternates in at least some daily menus to meet the weekly quantity requirements for these meal components. For example, daily menus in elementary and middle schools must provide at least 1 ounce equivalent of grains to meet the daily quantity requirement for grains. However, to meet the weekly quantity requirement for grains of 8 ounce equivalents, daily menus in elementary and middle schools must provide an average of 1.6 ounce equivalents each day (8 ounce equivalents ÷ 5 days), or at least three daily menus must offer 2 ounce equivalents of grains.

Overall, 7 percent of weekly lunch menus met all of the weekly meal pattern requirements (Table C.6). Weekly menus in elementary schools were significantly more likely than those in middle or high schools to meet all of the weekly meal pattern requirements (9 percent versus 5 and 3 percent, respectively). If the whole grain-rich requirement is relaxed to require that only 50 percent of all grains be whole grain-rich, the proportion of weekly menus that met all of the weekly meal pattern requirements increases to 22 percent in elementary schools, 15 percent in middle schools, and 7 percent in high schools.

3. Dietary Specifications

To assess compliance with the dietary specifications, the study team compared average weekly amounts of calories, saturated fat (as a percentage of total calories), and sodium in NSLP menus prepared to the relevant specification.^{37,38} Findings are summarized in Figures 3.5–3.7 and discussed below. For average weekly NSLP menus that did not meet a dietary specification, the study team examined how close the weekly averages came to meeting the specification (for example, within 5 percent of the specification or between 5 and 10 percent of the specification; Table C.14).

Calories. The average calorie content of weekly lunch menus must fall within a specified range, defined by a minimum and maximum amount of calories. That is, the average amount of calories in NSLP lunches over the week must provide at least the minimum amount of calories specified for the grade groups included in the school while not exceeding the maximum calorie

³⁷ As described previously, estimates of NSLP menus prepared take into account the amounts of food prepared (number of servings) for reimbursable meals and give greater weight to menu items that were prepared in larger quantities.

³⁸ It is possible that *available* lunch options could have met the dietary specifications, even if the nutrient content of the *average* weekly NSLP lunch prepared in a school did not meet the specifications. Appendix F presents results from a supplementary analysis that examined the availability of NSLP lunches that met the dietary specifications, as well as other nutrient targets.

level.³⁹ For example, NSLP lunches in a school with grades K–5 are required to provide, on average across the week, between 550 and 650 calories.

Overall, 41 percent of average weekly lunch menus fell within the specified calorie range (that is, they met both the minimum and maximum calorie levels) (Figure 3.5). Average weekly lunch menus in elementary and middle schools were significantly more likely than those in high schools to fall within the specified calorie range (47 percent and 42 percent for elementary and middle schools, respectively, versus 21 percent for high schools). In addition, average weekly menus in small and medium-sized schools were significantly more likely than those in large schools to fall within the specified calorie range (40 and 47 percent, respectively, versus 29 percent; Table C.11).

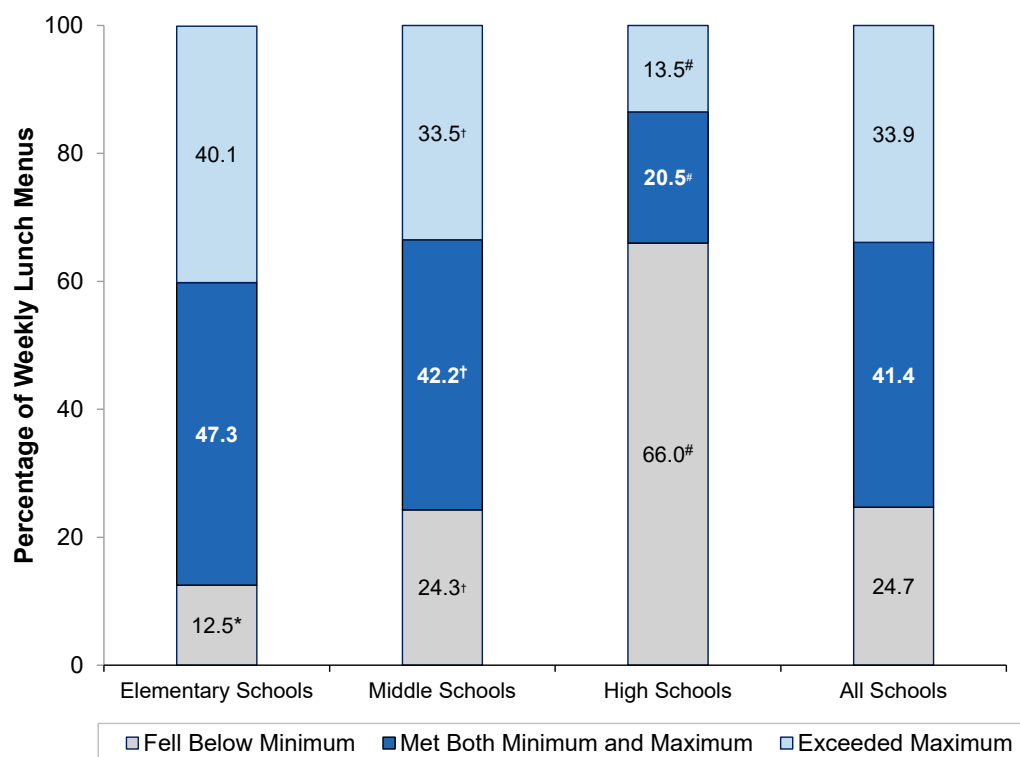
Forty-seven percent of average weekly lunch menus in elementary schools and 42 percent in middle schools fell within the specified calorie range. In contrast, only 21 percent of average weekly lunch menus in high schools fell within the specified calorie range. Two-thirds (66 percent) of average weekly menus in high schools fell below the minimum calorie level.

Average weekly lunch menus in elementary and middle schools were more likely to exceed the maximum calorie level (40 percent and 34 percent, respectively) than to fall below the minimum calorie level (13 percent and 24 percent, respectively) (Figure 3.5). The pattern of findings was reversed for high schools. Among high schools, it was more common for average weekly lunch menus to fall below the minimum calorie level than exceed the maximum calorie level (66 percent versus 14 percent).

For weekly average lunch menus that either fell below the minimum calorie level or exceeded the maximum calorie level, the study team also examined whether the weekly averages were close (within 10 percent) to meeting these specifications. As described previously and shown in Figure 3.6, 41 percent of average weekly lunch menus met both the minimum and maximum calorie levels. In addition, 15 percent of weekly menus came close to meeting (within 10 percent) the minimum calorie level and another 19 percent of weekly menus came close to meeting the maximum calorie level. Thus, overall, three-quarters of average weekly lunch menus either met both the minimum and maximum calorie levels or came close to meeting these specifications.

³⁹ The range between the minimum and maximum amounts of calories for NSLP lunches is 100 calories for each grade group (see Table 1.3). For schools that have grades that span more than one of the established grade groups (K–5, 6–8, and 9–12), average weekly menus must meet the calorie minimum for the oldest grade group and the calorie maximum for the youngest grade group. For schools that include both the K–5 and 6–8 grade groups, the calorie range for NSLP lunches is very narrow, with a minimum of 600 calories and a maximum of 650 calories. The calorie minimums and maximums for NSLP lunches for the oldest and youngest grade groups do not overlap for schools that span all three grade groups or schools that include both the 6–8 and 9–12 grade groups. For this reason, weekly menus in schools that spanned these grade groups (n=90) were excluded from this analysis.

Figure 3.5. Percentage of Weekly Lunch Menus That Met and Did Not Meet NSLP Dietary Specifications for Minimum and Maximum Calorie Levels



Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

* Difference between elementary and middle schools is significantly different from zero at the 0.05 level.

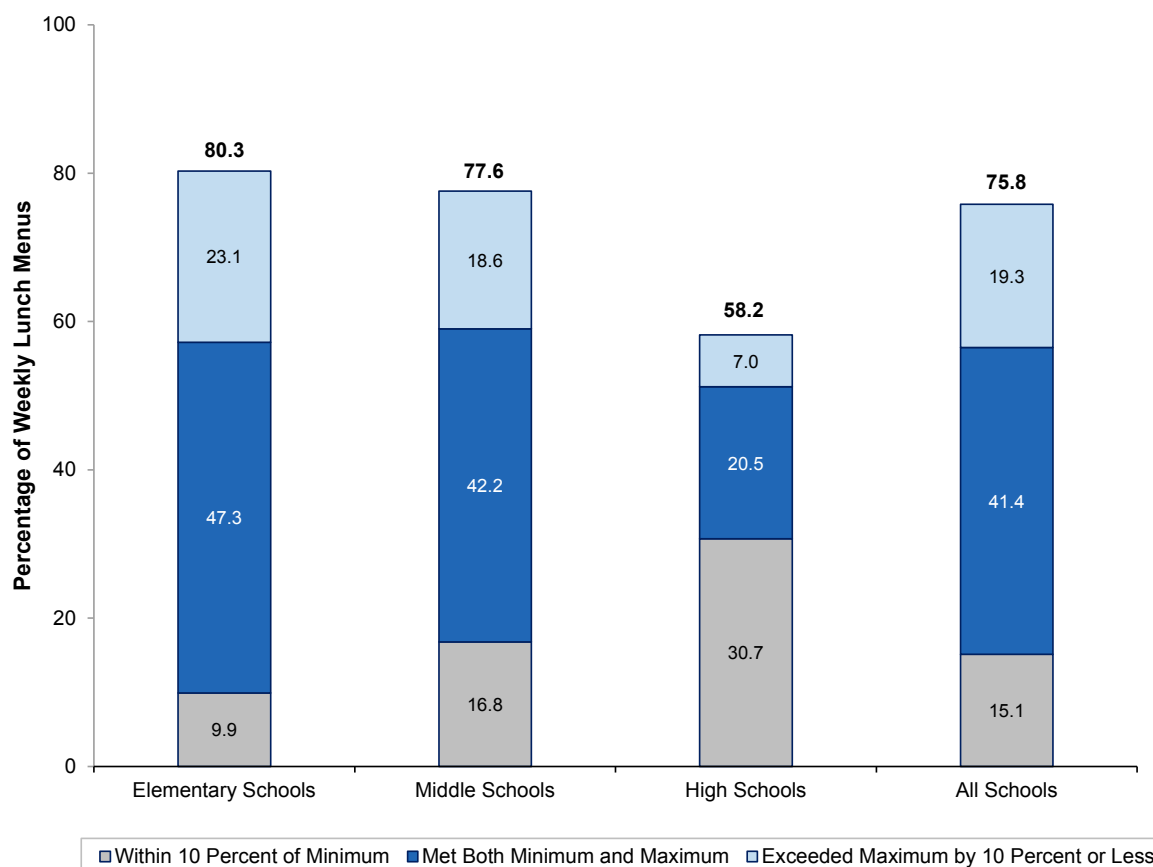
† Difference between middle and high schools is significantly different from zero at the 0.05 level.

Difference between elementary and high schools is significantly different from zero at the 0.05 level.

NSLP = National School Lunch Program.

Among elementary schools, 47 percent of average weekly lunch menus met both the minimum and maximum calorie levels, while 10 percent came close to meeting the minimum calorie level and 23 percent came close to meeting the maximum calorie level (Figure 3.6). In total, 80 percent of average weekly menus in elementary schools either met both the minimum and maximum calorie levels or came close to meeting these specifications. Forty-two percent of average weekly lunch menus in middle schools met both the minimum and maximum calorie levels. In addition, 17 percent of weekly menus were close to meeting the minimum calorie level, and another 19 percent were close to meeting the maximum calorie level. Thus, more than three-quarters (78 percent) of average weekly menus in middle schools either met both the minimum and maximum calorie levels or came close to meeting these specifications. Among high schools, one-fifth (21 percent) of average weekly lunch menus met both the minimum and maximum calorie levels. An additional 31 percent of weekly lunch menus were close to meeting the minimum calorie level, and 7 percent were close to meeting the maximum calorie level. In total, 58 percent of average weekly menus in high schools either met both the minimum and maximum calorie levels or came close to meeting these specifications.

Figure 3.6. Percentage of Weekly Lunch Menus that Met or Came Close to Meeting NSLP Dietary Specifications for Minimum and Maximum Calorie Levels



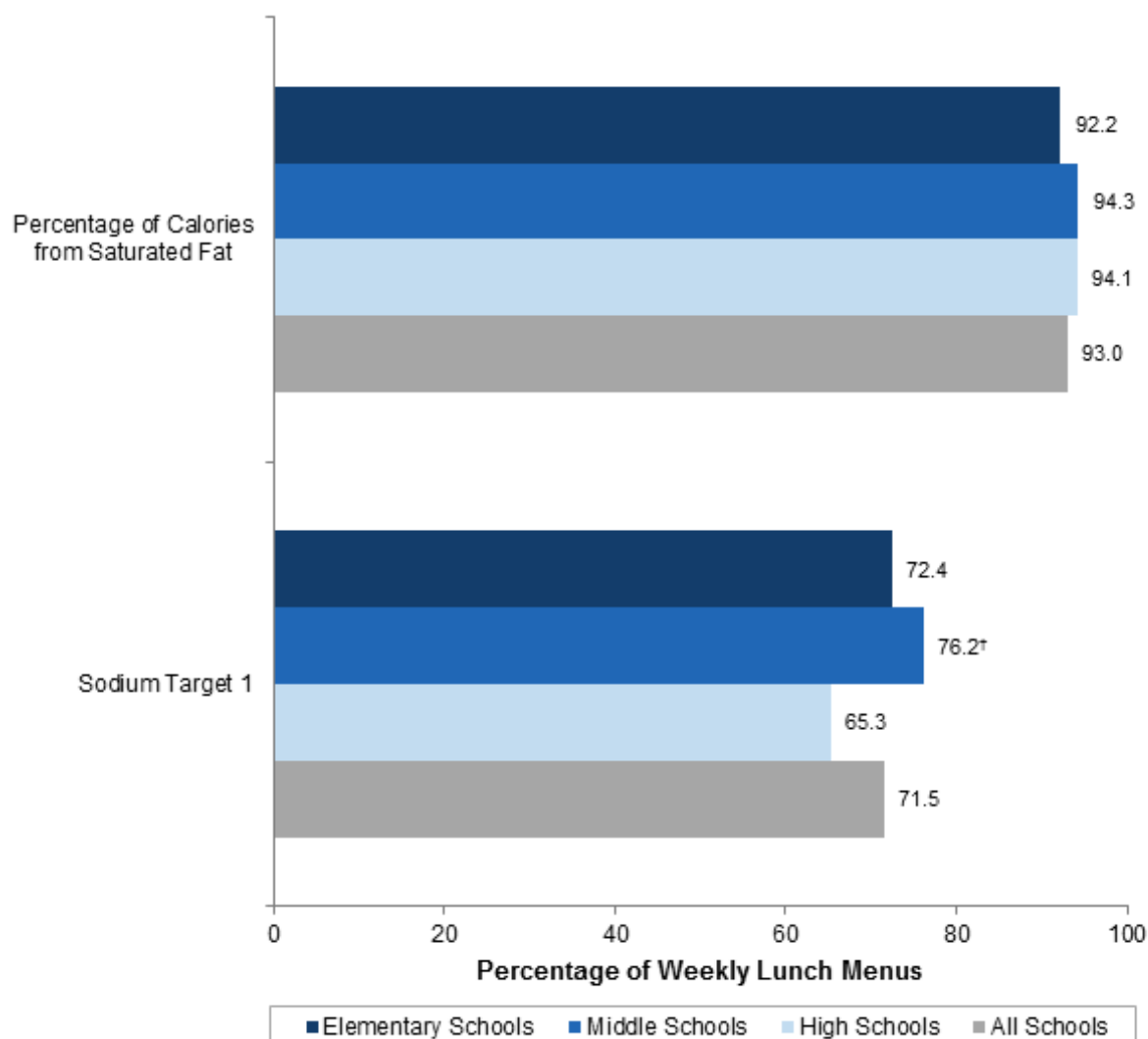
Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Note: Average weekly lunch menus that were close to meeting the minimum or maximum calorie levels were within 10 percent of these specifications.

NSLP = National School Lunch Program.

Saturated Fat. The vast majority (93 percent) of average weekly lunch menus met the limit on the percentage of calories from saturated fat (Figure 3.7). There were no statistically significant differences across school types in the proportions of average weekly menus that met this limit. Almost all of the average weekly menus that exceeded the saturated fat limit came close (within 10 percent) to meeting it (Table C.14).

Figure 3.7. Percentage of Weekly Lunch Menus That Met NSLP Dietary Specifications for Saturated Fat and Sodium



Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Note: None of the differences between elementary schools and middle or high schools were statistically significant.

† Difference between middle and high schools is significantly different from zero at the 0.05 level.

NSLP = National School Lunch Program.

Sodium. Roughly 7 in 10 average weekly lunch menus (72 percent) met the Target 1 sodium limit that was in place in SY 2014–2015 (Figure 3.7). About three-quarters of average weekly menus in elementary schools and middle schools (72 and 76 percent, respectively) met the sodium limit. Among high schools, about two-thirds (65 percent) of average weekly menus met the sodium limit. Average weekly menus in middle schools were significantly more likely than those in high schools to meet the sodium limit. Another 12 to 14 percent of average weekly menus were within 10 percent of the sodium limit (Table C.14).

About three-quarters of average weekly lunch menus in elementary and middle schools and two-thirds of average weekly lunch menus in high schools met the sodium limit.

In addition, average weekly lunch menus in medium-sized and large schools were significantly more likely than those in small schools to meet the sodium limit (82 and 79 percent, respectively, versus 61 percent; Table C.11). Average weekly menus in urban and suburban schools were significantly more likely than those in rural schools to meet the sodium limit (84 and 78 percent, respectively, versus 56 percent; Table C.12).

All Dietary Specifications. To meet all of the dietary specifications for NSLP lunches, average weekly lunch menus must provide at least the minimum amount of calories while not exceeding the maximum calorie level, and must not exceed the limits on saturated fat (as a percentage of total calories) and sodium. Overall, 34 percent of average weekly lunch menus met all of the dietary specifications (Table C.10). Average weekly menus in high schools were significantly less likely than those in elementary or middle schools to meet all of these specifications (11 percent versus 40 percent and 38 percent, respectively).

In addition, average weekly lunch menus in medium-sized schools were significantly more likely than those in small or large schools to meet all of the dietary specifications (41 percent versus 31 and 22 percent, respectively; Table C.11). Average weekly menus in suburban schools were significantly more likely than those in rural schools to meet all of the dietary specifications (39 percent versus 26 percent; Table C.12).

B. Percentage of Average Weekly Lunch Menus That Were Consistent with DRI-Based Targets for Nutrient Content

The updated nutrition standards are based on recommendations from the IOM (2010). When developing its recommendations, the IOM committee set targets for the nutrient content of NSLP lunches. These targets provided the scientific underpinnings for the updated standards but were not intended to be used by SFAs or schools for planning or monitoring purposes. Instead, it was expected that meals planned to meet the meal pattern requirements would be consistent with most of the nutrient targets.⁴⁰

⁴⁰ Exceptions are vitamin E and potassium and iron for middle and high schools (IOM 2010).

The nutrient targets were based on the Dietary Reference Intakes (DRIs). Targets for NSLP lunches were based on the mean percentage of total daily calorie intake consumed by school-age children at lunch (32 percent).⁴¹ The DRI-based nutrient targets for NSLP lunches provide benchmarks for the average nutrient content of weekly lunch menus prepared in elementary, middle, and high schools. The targets for average weekly lunch menus are shown in Table 3.1. Additional information about the DRI-based targets for the nutrient content of weekly menus is provided in Appendix D.

Table 3.1. DRI-Based Targets for Nutrient Content of Average Weekly Lunch Menus

DRI-Based Nutrient Target ^a	Elementary Schools	Middle Schools	High Schools
Total Fat (percentage of calories)	25-35	25-35	25-35
Linoleic Acid (g)	3.3	3.6	4.5
Alpha-Linolenic Acid (g)	0.31	0.36	0.45
Protein (g)	15.2	32.2	32.5
Vitamin A (mcg RAE)	192	241	277
Vitamin C (mg)	24	30	39
Vitamin E (mg AT)	3.0	4.0	5.4
Thiamin (mg)	0.4	0.5	0.6
Riboflavin (mg)	0.46	0.61	0.67
Niacin (mg)	4.7	6.0	7.3
Vitamin B ₆ (mg)	0.4	0.5	0.6
Folate (mcg DFE)	136	169	205
Vitamin B ₁₂ (mcg)	1.2	1.3	1.6
Iron (mg)	3.4	5.2	5.9
Magnesium (mg)	72	98	147
Zinc (mg)	2.9	3.7	4.3
Calcium (mg)	332	440	481
Phosphorus (mg)	361	538	572
Potassium (mg)	1,353	1,523	1,740
Dietary Fiber (g)	8.5	9.4	10.7
Cholesterol (mg)	< 96	< 96	< 96

Source: Institute of Medicine (IOM). "School Meals: Building Blocks for Healthy Children." Washington, DC: National Academies Press, 2010.

Notes: Average weekly menus were not explicitly expected to meet the DRI-based targets for nutrient content. However, it is expected that the average nutrient content of lunches planned to meet the NSLP nutrition standards would be consistent with most of these nutrient targets. Exceptions are vitamin E and potassium and iron for middle and high schools.

^aThe targets for lunch are based on 32 percent of the daily school meal-target median intake for the age-grade group (IOM 2010).

AT= alpha-tocopherol; DFE = dietary folate equivalents; DRI = Dietary Reference Intakes; IOM = Institute of Medicine; NSLP = National School Lunch Program; RAE = retinol activity equivalents.

⁴¹ Data from the third School Nutrition Dietary Assessment Study (SNDA-III) were used to estimate the mean percentage of total calories consumed by school-age children at lunch.

To assess the extent to which average weekly NSLP menus were consistent with the DRI-based nutrient targets, the study team compared the average nutrient content of weekly NSLP menus prepared to these targets.⁴² The analysis considered average weekly menus to be consistent with the DRI-based targets if the average nutrient content met or exceeded the target. Findings for key nutrients are summarized in Figure 3.8 and discussed below. Table C.18 provides data for additional nutrients.⁴³ As noted above, the DRI-based nutrient targets provide a useful benchmark for the average nutrient content of weekly lunch menus, but menus were not *required* to meet these targets. In addition, the approach used for this analysis differs in an important way from the approach used by the IOM. When verifying that menus planned to meet the meal pattern requirements would meet or approach the DRI-based nutrient targets, the IOM used nutrient values that reflected the foods in the planned menu and gave equal weight to all menu items offered within a meal component group. In this analysis, the study team used nutrient values for average weekly menus prepared, which gives greater weight to menu items that were prepared in larger quantities.

Vitamin A. The average nutrient content of virtually all weekly lunch menus in elementary schools was consistent with the DRI-based target for vitamin A (Figure 3.8). Most (83 percent) average weekly lunch menus in middle schools were consistent with this target. In high schools, 68 percent of average weekly menus were consistent with the target for vitamin A. All of the differences between school types in the proportions of average weekly menus that were consistent with the DRI-based target for vitamin A were statistically significant.

Vitamin C. About three-quarters (74 percent) of average weekly lunch menus in elementary schools were consistent with the DRI-based target for vitamin C. The proportions of average weekly menus in middle and high schools that were consistent with this target—50 and 46 percent, respectively—were significantly lower.

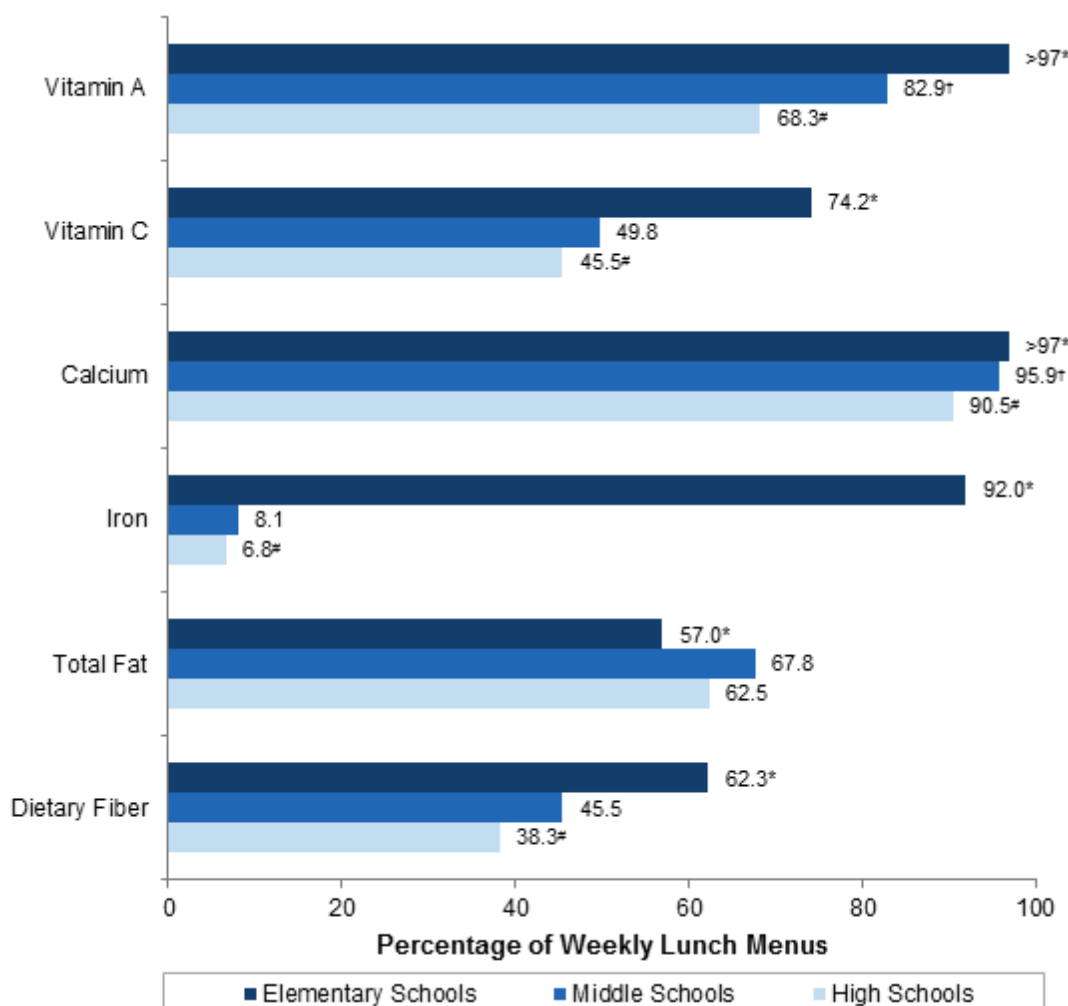
Calcium. The vast majority of average weekly lunch menus were consistent with the DRI-based target for calcium (91 percent to virtually all weekly menus). This is driven by the fact that virtually all NSLP lunches prepared included a serving of milk (typically one cup), which provides all or most of the targeted amount of calcium. All of the differences between school types in the proportions of average weekly menus that were consistent with this target were statistically significant.

Average weekly lunch menus in elementary schools were significantly more likely than those in middle or high schools to be consistent with the DRI-based nutrient targets for vitamin A, vitamin C, calcium, iron, and dietary fiber.

⁴² Tables C.22 and C.27 provide data on the average calorie and nutrient content of NSLP lunches prepared and served relative to the DRI-based nutrient targets.

⁴³ Appendix C (Tables C.19–C.21; Tables C.23–C.26) provides data on the percentage of average weekly lunch menus prepared and served that were consistent with the DRI-based nutrient targets by school size, urbanicity, and district child poverty rate.

Figure 3.8. Percentage of Average Weekly Lunch Menus That Were Consistent with DRI-Based Targets for Key Nutrients



Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: The DRI-based targets for nutrient content were developed by the Institute of Medicine (IOM 2010). The targets for lunch (see Table 3.1) are based on 32 percent of the daily school meal-target median intake for the age-grade group. Average weekly menus were not expected to meet these nutrient targets. However, it is expected that if school lunches were planned to meet the NSLP nutrition standards, they would be consistent with most of these nutrient targets. Iron for middle schools and high schools is an exception.

* Difference between elementary and middle schools is significantly different from zero at the 0.05 level.

† Difference between middle and high schools is significantly different from zero at the 0.05 level.

Difference between elementary and high schools is significantly different from zero at the 0.05 level.

DRI = Dietary Reference Intakes; NSLP = National School Lunch Program.

>97 = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this figure, flagged percentages between 97 and 100 percent are displayed as >97.

Iron. Most (92 percent) average weekly lunch menus in elementary schools were consistent with the DRI-based target for iron. However, significantly smaller proportions of average weekly menus in middle and high schools (8 and 7 percent, respectively) were consistent with this target. The IOM committee that developed the nutrient targets acknowledged that average weekly lunch menus that met all of the meal pattern requirements for middle and high schools would not meet the target for iron (IOM 2010). The approach used in setting the targets resulted in relatively high targets for middle and high schools.⁴⁴ Thus, it is expected that smaller proportions of average weekly lunch menus in middle and high schools would be consistent with this target.

Total Fat. The DRI-based target for total fat is based on the Acceptable Macronutrient Distribution Range (AMDR) for school-age children, which recommends that total fat intake be limited to 25 to 35 percent of calories (IOM 2005). More than half of average weekly lunch menus in elementary schools (57 percent) and roughly two-thirds in middle and high schools (68 and 63 percent, respectively) were consistent with the DRI-based target for total fat. Average weekly menus in elementary schools were significantly less likely than those in middle schools to be consistent with this target. Most average weekly lunch menus that were not consistent with the DRI-based target for total fat fell below the lower end of the recommended range (Tables C.32–C.34).

Dietary Fiber. Less than two-thirds (62 percent) of average weekly lunch menus in elementary schools and less than half in middle and high schools (46 percent and 38 percent, respectively) were consistent with the DRI-based target for dietary fiber. Average weekly menus in elementary schools were significantly more likely than those in middle or high schools to be consistent with this target.

⁴⁴ When setting the targets for iron, the IOM committee took into account the iron needs of menstruating females, who have the highest need for iron. This resulted in setting relatively high iron targets for middle and high schools (IOM 2010).

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4. COMPLIANCE OF DAILY AND WEEKLY BREAKFAST MENUS WITH SBP NUTRITION STANDARDS AND OTHER NUTRIENT TARGETS

In SY 2014–2015, the vast majority of schools (94 percent) that participated in the NSLP also participated in the SBP (Forrestal et al. 2019). Student participation rates are lower for the SBP than the NSLP (30 percent versus 61 percent, respectively; Forrestal et al. 2019), despite the widespread availability of the program. In SY 2014–2015, schools were implementing the updated nutrition standards for SBP breakfasts that went into effect beginning in SY 2012–2013; however, several requirements were phased in over time. SY 2014–2015 was the first year SBP breakfasts were required to meet all of the requirements defined in the nutrition standards. The updated standards (see Table 1.4) were designed to better reflect the *Dietary Guidelines for Americans* and included substantial changes to school meal requirements, relative to the former standards, which were implemented in 1995 as part of the SMI. This chapter presents findings about the extent to which daily and weekly SBP menus complied with the updated nutrition standards. The chapter also examines the extent to which the average nutrient content of weekly SBP menus was consistent with nutrient targets that were used in developing the nutrition standards.

All findings are based on analysis of data from the Menu Survey, which was completed by SNMs over the course of one school week in the spring of SY 2014–2015. Data are presented for all schools and separately by school type: elementary, middle, and high schools. The statistical significance of differences between schools in these subgroups was tested using two-tailed t-tests. All differences between school types that are discussed in the text are statistically significant, unless otherwise noted. Tables and figures in the chapter present key results; supplementary tables appear in Appendix E, as noted throughout the chapter.

To assess the extent to which SBP breakfasts met daily and weekly meal pattern requirements, the study team compared the types and amounts of food offered in each daily menu and across a school week to daily and weekly meal pattern requirements. To assess the extent to which SBP breakfasts met the dietary specifications for calories, saturated fat, and sodium and other nutrient targets, the study team computed the average nutrient content of SBP menus prepared for each school, based on an average across the school week. These estimates take into account the amounts of food prepared (number of servings) for reimbursable meals and give greater weight to menu items that were prepared in larger quantities.

The study team also computed the average nutrient content of SBP menus served for each school. These estimates, which are provided in Appendix E and are very similar to estimates of SBP menus prepared, take student selection patterns into account and give greater weight to menu items that were most frequently selected by (or served to) students as part of reimbursable meals.⁴⁵ Appendix D provides additional information on the methods used to estimate the calorie and nutrient content of SBP menus prepared and served.

⁴⁵ Appendix E (Tables E.28–E.51) provides additional data on the average calorie and nutrient content of SBP menus prepared and served, including standard errors, percentile distributions, and concentrations of nutrients per 1,000 calories. These tabulations also provide data on the average calorie and nutrient content of SBP menus prepared and served by school size, urbanicity, and district child poverty rate.

A. Percentage of Daily and Weekly Breakfast Menus That Met Nutrition Standards for SBP Breakfasts

In SY 2014–2015, SBP breakfasts were required to meet all of the updated nutrition standards (Table 1.4). The nutrition standards include meal pattern requirements that specify minimum amounts of foods to be offered each day and over the course of a week, as well as dietary specifications that set average weekly minimum and maximum calorie levels and limits on saturated fat and sodium content.^{46,47} Standards are defined for three different grade groups—kindergarten to grade 5, grades 6 to 8, and grades 9 to 12—the most common grade spans for elementary, middle and high schools, respectively (IOM 2010).

This section provides information on the extent to which daily and weekly lunch menus complied with the nutrition standards for SBP breakfasts.⁴⁸ The general approach used in assessing compliance was based on the approach FNS uses in determining whether an SFA is eligible to receive an additional 6-cents reimbursement per lunch.⁴⁹ However, because the data collected in the Menu Survey were used to address multiple research questions not related to compliance, there were some differences in how the data were collected and analyzed. These differences, which are described in Appendix D, mean that the findings from this analysis are not entirely comparable to findings based on the 6-Cents Tool. Compliance was assessed separately for daily meal pattern requirements, weekly meal pattern requirements, and dietary specifications. The sections below include a description of the methods used in assessing compliance with each type of requirement. Appendix D provides additional details.

1. Daily Meal Pattern Requirements

To assess compliance of breakfast menus with daily meal pattern requirements for SBP breakfasts, the study team compared each school’s daily menus to daily meal pattern requirements consistent with its grade group. If a daily menu included a choice of foods for students to select from (for example, 2 milk choices or 2 fruit choices), each choice had to meet the relevant daily meal pattern requirement. Thus, a single food could cause a daily menu to be noncompliant with the relevant daily meal pattern requirements. Daily menus that are more complex and include more choices for students to select from provide more opportunities for a daily menu to be noncompliant. For example, as described in Chapter 2, daily breakfast menus in

⁴⁶ The standard for sodium was designed to be phased in over ten years, with the first target taking effect in SY 2014–2015.

⁴⁷ The standards also call for the elimination of synthetic *trans* fat. Compliance with this requirement could not be assessed in the analysis of Menu Survey data because the nutrient database used for the study—the Food and Nutrient Database for Dietary Studies (FNDDS, version 2011–2012)—does not provide data on *trans* fat. Instead the study collected information on food purchasing practices used to eliminate *trans* fat. These data are summarized in Volume 1 of the SNMCS final report (Forrestal et al. 2019).

⁴⁸ Appendix E provides data on the percentage of daily and weekly breakfast menus meeting the nutrition standards and the percentage of weekly menus that came close to meeting the standards by school size, urbanicity, and district child poverty rate (Tables E.2–E.4; Tables E.7–E.9; Tables E.11–13; Tables E.15–17).

⁴⁹ Under HHFKA, schools that provide meals that comply with the updated nutrition standards for both lunch and breakfast (if offered) are eligible to receive an additional reimbursement of 6 cents per lunch. Additional information on the certification process is available at <http://www.fns.usda.gov/school-meals/certification-compliance>.

middle and high schools offered more fruit, separate grain/bread, and entrée choices to students than daily menus in elementary schools (Table 2.6). The analysis considered a daily menu to be compliant if the minimum amount of a given meal component was equal to or greater than the daily requirement. The analysis took into account all menu items that contributed to the meal component, and the menu item that contributed the smallest amount for a given meal component determined the minimum amount. For example, if a daily menu included a choice of 1 ounce equivalent of grains from cereal or 2 ounce equivalents of grains from a breakfast sandwich, the daily minimum for grains was 1 ounce equivalent. When computing daily minimum amounts for fruits, the analysis also took into account the maximum number of servings students were allowed to select. For example, if a school indicated that students could select up to two servings of fruits at breakfast, the daily minimum amount of fruits was computed by summing the meal pattern contributions of the two fruit offerings with the smallest contributions.

For grains, the analysis also took into account information about foods that were offered only with specific foods on a daily menu (referred to as “linked foods”) when computing daily minimum amounts. The analysis involved summing amounts for foods that were linked, and then used this sum in ranking menu items to determine the item with the smallest amount of grains. For example, if a daily menu offered two breakfast entrée choices—(1) a breakfast pizza with 2.5 ounce equivalents of grains, or (2) cold cereal (1 ounce equivalent) served with graham crackers (1 ounce equivalent) for a total of 2 ounce equivalents—the cold cereal/graham crackers choice would be considered the menu item with the smallest amount of grains.

Findings from this analysis are summarized in Figure 4.1 and discussed below.⁵⁰

Fruits. Overall, 83 percent of daily breakfast menus met the daily quantity requirement for fruits (Figure 4.1). There were no statistically significant differences across school types in the percentages of daily menus that met the daily quantity requirement for fruits. Relative to daily lunch menus (Figure 3.1), smaller proportions of daily breakfast menus in elementary and middle schools met the daily quantity requirement for fruits (83 and 82 percent of daily breakfast menus versus 98 and 96 percent of daily lunch menus), whereas similar proportions of daily menus in high schools met this requirement (86 percent of daily lunch menus versus 83 percent of daily breakfast menus) (differences between breakfast and lunch findings were not tested for statistical significance). For elementary and middle schools, the daily quantity requirement for fruits for SBP breakfasts is double that of NSLP lunches (1 cup versus 1/2 cup), whereas for high schools, the requirement is the same for SBP breakfasts and NSLP lunches (1 cup).

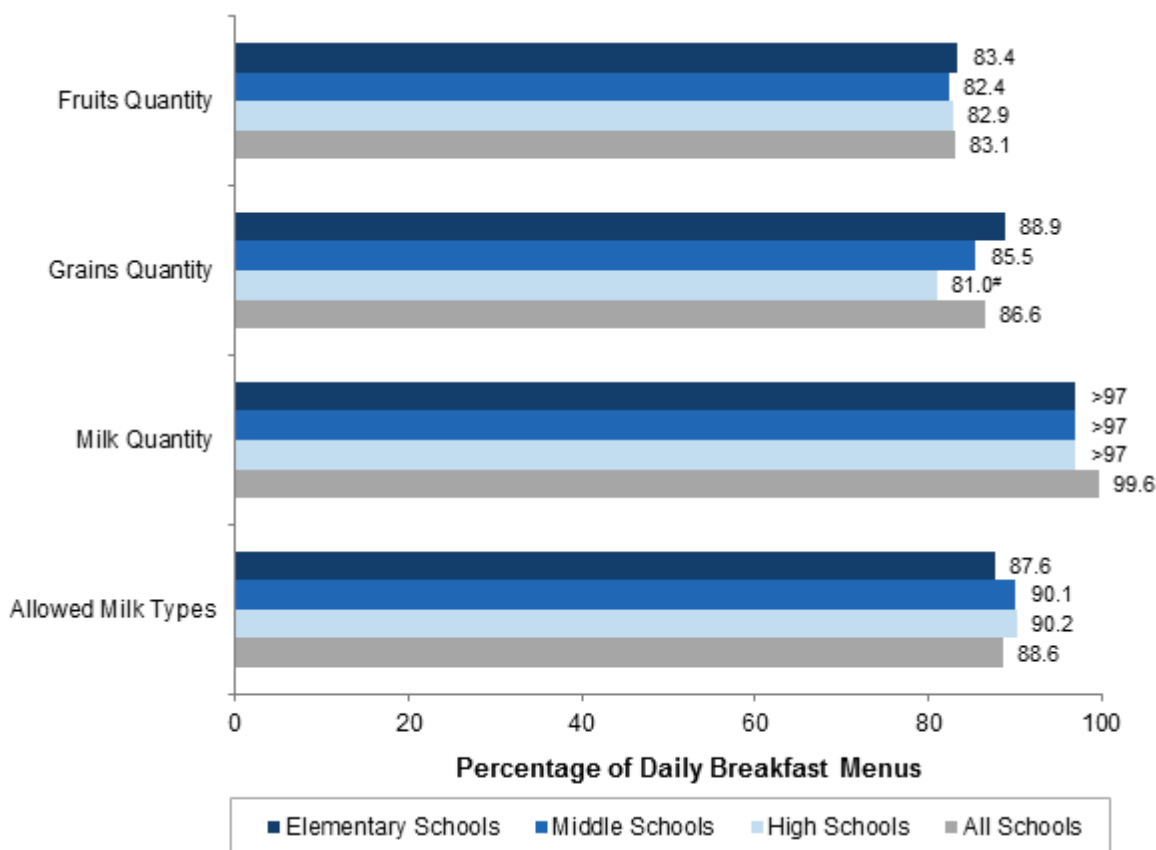
Daily breakfast menus in urban schools were significantly more likely than those in suburban or rural schools to meet the daily quantity requirement for fruits (89 percent versus 82 and 80 percent, respectively; Table E.3). In addition, daily menus in schools located in areas with lower rates of child poverty were significantly more likely than daily menus in schools located in higher poverty areas to meet the daily quantity requirement for fruits (87 percent versus 78 percent; Table E.4).

Grains. Overall, 87 percent of daily breakfast menus met the daily quantity requirement for grains. More than 85 percent of daily breakfast menus in elementary and middle schools (89 and

⁵⁰ Table E.5 provides data on the percentage of *schools* that met the daily SBP meal pattern requirements.

86 percent, respectively) met the daily quantity requirement for grains, and 81 percent of daily menus in high schools met this requirement. Daily menus in high schools were significantly less likely than those in elementary schools to meet this requirement.

Figure 4.1. Percentage of Daily Breakfast Menus That Met Daily SBP Meal Pattern Requirements



Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Note: None of the differences between middle and elementary or high schools were statistically significant.

Difference between elementary and high schools is significantly different from zero at the 0.05 level.

SBP = School Breakfast Program.

>97 = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this figure, flagged percentages between 97 and 100 percent are displayed as >97.

In elementary schools, the proportions of daily breakfast menus and daily lunch menus that met the daily quantity requirement for grains were similar (89 percent at both meals; data for NSLP lunches are shown in Figure 3.1). Among middle schools, a larger proportion of daily breakfast menus met the daily quantity requirement for grains than daily lunch menus (86 percent versus 79 percent; differences were not tested for statistical significance). For elementary and middle schools, the daily quantity requirement for grains is the same (1 ounce equivalent) for SBP breakfasts and NSLP lunches. The daily quantity requirement for grains for SBP breakfasts in high schools is half the requirement for NSLP lunches (1 ounce equivalent versus 2 ounce equivalents). In high schools, about 8 in 10 daily breakfast menus (81 percent) met the daily quantity requirement for grains, compared to about 5 in 10 daily lunch menus (55 percent).

Daily breakfast menus in medium-sized schools (500 to 999 students) were significantly more likely than those in large schools (1,000 or more students) to meet the daily quantity requirement for grains (90 percent versus 81 percent; Table E.2).

Milk. Virtually all daily breakfast menus met the daily quantity requirement for milk (Figure 4.1). In addition, most daily menus (88 to 90 percent) offered only allowed types of milk (fat-free milk or unflavored low-fat milk).⁵¹ There were no statistically significant differences across school types in the percentages of daily menus that met the milk requirements. This pattern of findings is similar to what was observed for NSLP lunches.

More than 80 percent of daily breakfast menus met the daily quantity requirements for fruits, grains, and milk.

The study team conducted a supplementary analysis to examine how the percentage of daily breakfast menus that met the allowed milk types requirement would change if low-fat flavored milk was allowed. With the inclusion of low-fat flavored milk, the percentage of daily breakfast menus that met the allowed milk type requirement would increase by about 6 percentage points in each school type (data not shown).

All Daily Meal Pattern Requirements. To meet all of the daily SBP meal pattern requirements, a daily menu must meet the daily quantity requirements for all meal components (fruits, grains, and milk), as well as the allowed milk types requirement. If a daily menu includes a choice of foods for students to select from (for example, 2 milk choices or 2 fruit choices), each choice must meet the relevant daily meal pattern requirement. Thus, a single food could cause a daily menu to be noncompliant with all of the daily meal pattern requirements.

Overall, almost two-thirds (64 percent) of daily breakfast menus met all of the daily meal pattern requirements (Table E.1). There were no statistically significant differences across school types in the percentages of daily menus that met all of the daily meal pattern requirements. However, daily breakfast menus in medium-sized schools were significantly more likely than those in large schools to meet all of the daily meal pattern requirements (68 percent versus 59 percent; Table E.2).

⁵¹ To meet the requirement for allowed milks, daily menus must include at least two allowed milk choices and no unallowed milks.

The study team conducted a supplementary analysis to examine the combinations of daily meal pattern requirements that were causing daily breakfast menus to be noncompliant with all of the daily requirements. For all school types, the three leading causes of noncompliance among daily menus that did not meet all of the daily meal pattern requirements were not meeting (1) the daily quantity requirement for fruit only; (2) the daily quantity requirement for grains only; or (3) the allowed milk types requirement only (data not shown).

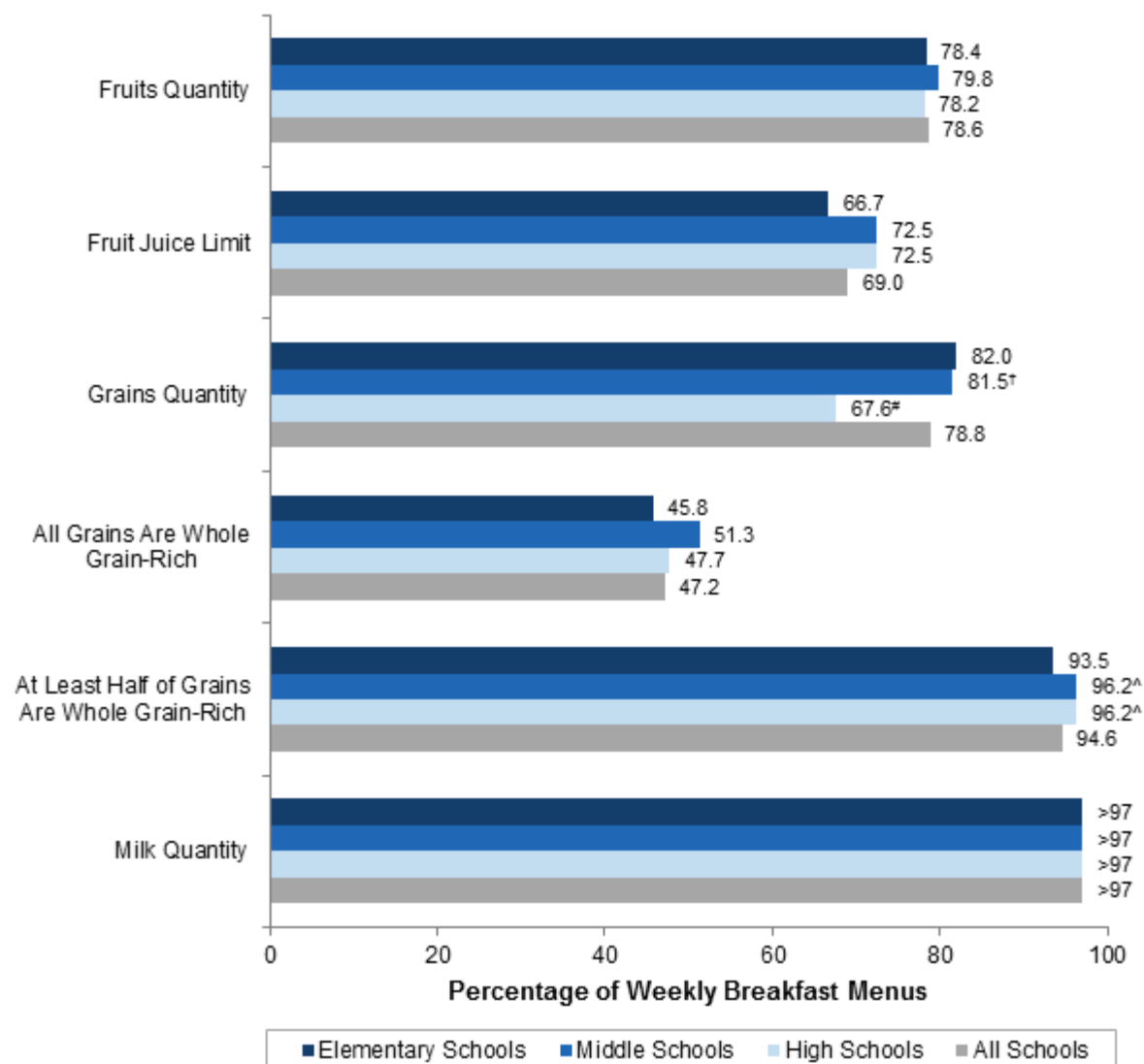
2. Weekly Meal Pattern Requirements

To assess compliance of breakfast menus with weekly meal pattern requirements for SBP breakfasts, the study team compared each school's weekly menu to weekly meal pattern requirements consistent with its grade group.⁵² For each meal component, the study team computed weekly minimums by summing the daily minimums across all daily menus. To assess whether weekly menus complied with the requirement that no more than half of the fruits offered be in the form of juice, the analysis involved computing the total weekly amounts of fruit and fruit juice by summing across all daily menus. The total weekly amount of fruit juice was then divided by the total weekly amount of fruit. The analysis used the same approach to assess whether weekly menus were compliant with requirements for whole grain-rich grains. The analysis assessed compliance with the requirement that all grains must be whole grain-rich as well as the relaxed requirement that at least half of all grains must be whole grain-rich. Findings are summarized in Figure 4.2 and discussed below. For weekly menus that did not meet a weekly meal pattern requirement, the study team also estimated the percentage of the shortfall (for example, within 5 percent of the requirement or between 5 and 10 percent of the requirement; Table E.14).

Fruits. Overall, 79 percent of weekly breakfast menus met the weekly quantity requirement for fruits (Figure 4.2). There were no statistically significant differences across school types in the proportions of weekly menus that met the weekly quantity requirement for fruits. An additional 5 percent of weekly menus in elementary schools came close (within 10 percent) to meeting the weekly quantity requirement for fruits (Table E.14).

In addition, two-thirds (67 percent) of weekly breakfast menus in elementary schools and 73 percent in middle and high schools complied with the requirement that no more than half of the fruits offered be in the form of juice (Figure 4.2). There were no statistically significant differences across schools types in the proportions of weekly breakfast menus that met this requirement. However, there were significant differences among subgroups of schools defined by size, urbanicity, and district child poverty rate. The percentage of weekly breakfast menus that complied with the limit on fruit juice was highest among schools that were large, located in urban areas, or located in areas with lower levels of child poverty (Tables E.7–E.9).

⁵² For schools that provided data for three or four days, the weekly meal pattern requirements were adjusted according to FNS guidance on shorter school weeks (USDA, FNS 2015a).

Figure 4.2. Percentage of Weekly Breakfast Menus That Met Weekly SBP Meal Pattern Requirements

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Note: None of the differences between elementary and middle schools were statistically significant.

[†] Difference between middle and high schools is significantly different from zero at the 0.05 level.

[#] Difference between elementary and high schools is significantly different from zero at the 0.05 level.

SBP = School Breakfast Program.

[^] = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this figure, flagged percentages between 97 and 100 percent are displayed as >97.

Relative to the results for NSLP lunches, smaller proportions of weekly breakfast menus met the weekly quantity requirement for fruit (78 to 80 percent of weekly breakfast menus versus 83 to 95 of weekly lunch menus; data for NSLP lunches are shown in Figure 3.2). The same was true for the limit on fruit juice—67 to 73 percent of weekly breakfast menus complied with the requirement that no more than half of the fruits offered be in the form of juice, compared to almost all weekly lunch menus. This pattern of findings is consistent with the fact that fruit juice was more commonly offered on daily breakfast menus than on daily lunch menus (90 percent of breakfast menus versus 31 percent of lunch menus; see Tables 2.7 and 2.2).

Compared to weekly lunch menus, smaller proportions of weekly breakfast menus met the weekly quantity requirement for fruits and complied with the requirement that no more than half of the fruits offered be in the form of juice.

Grains. Overall, almost 8 in 10 weekly breakfast menus (79 percent) met the weekly quantity requirement for grains, but there was some variation across school types (Figure 4.2). Eighty-two percent of weekly menus in elementary and middle schools and 68 percent in high schools met the weekly quantity requirement for grains. Weekly menus in high schools were significantly less likely than those in elementary or middle schools to meet this requirement. An additional 5 percent of weekly menus in elementary and middle schools and 7 percent in high schools came close (within 10 percent) to meeting this requirement (Table E.14). In addition, weekly breakfast menus in medium-sized schools were significantly more likely than those in large schools to meet the weekly quantity requirement for grains (82 percent versus 72 percent; Table E.7).

The weekly quantity requirement for grains in high schools is 9 ounce equivalents compared to 7 and 8 ounce equivalents, respectively, for elementary and middle schools. To meet the weekly quantity requirement for grains, at least some daily menus in a school must provide more than the daily minimum amount of grains (1 ounce equivalent for all school types). For example for high schools to meet the weekly quantity requirement for grains (9 ounce equivalents), daily menus must provide an average of 1.8 ounce equivalents each day (9 ounce equivalents ÷ 5 days), or at least four daily menus must offer 2 ounce equivalents of grains.

Across all school types, substantially larger proportions of weekly breakfast menus met the weekly quantity requirement for grains than weekly lunch menus (68 to 82 percent of weekly breakfast menus versus 33 to 57 percent of weekly lunch menus; differences were not tested for statistical significance). For elementary schools and high schools, weekly quantity requirements for SBP breakfasts are lower than weekly requirements for NSLP lunches (7 versus 8 ounce equivalents and 9 versus 10 ounce equivalents, respectively).

Whole Grains. Beginning in SY 2014–2015, the nutrition standards required that all grains offered in SBP breakfasts be whole grain-rich, instead of at least 50 percent required in the prior SY.⁵³ However, State agencies had the option of granting exemptions to this requirement if an SFA demonstrated hardship in procuring compliant whole grain-rich products that were

⁵³ To be whole grain-rich, a food item must contain at least 50 percent whole grains. Any non-whole grain portion must be enriched meal and/or flour (USDA, FNS 2014).

acceptable to students (USDA, FNS 2015b). This exemption was directed by Congress in response to difficulties some SFAs had in procuring and/or serving whole grain-rich foods, and to give industry additional time to develop a broader range of whole grain-rich products that are widely accepted by students (USDA, FNS 2015b). In SFAs that were granted this exemption, at least half of all grains offered had to be whole grain-rich.

Overall, about half of all weekly breakfast menus (46 percent in elementary schools, 51 percent in middle schools, and 48 percent in high schools) offered only whole grain-rich grain items (Figure 4.2). An additional 18 to 20 percent of weekly menus came close (within 10 percent) to meeting this requirement (Table E.14). Overall, 95 percent of weekly breakfast menus met the requirement that at least 50 percent of the grains offered must be whole grain-rich. There were no significant differences across schools types in the proportions of weekly breakfast menus that met either of these requirements. However, weekly breakfast menus in schools located in areas with lower rates of child poverty were significantly more likely than weekly breakfast menus in schools located in higher-poverty areas to meet the requirement that at least 50 percent of the grains offered must be whole grain-rich (97 percent versus 92 percent; Table E.9).

Overall, about half of all weekly breakfast menus offered only whole grain-rich items.

Across all school types, larger proportions of weekly breakfast menus met the whole grain-rich requirements than weekly lunch menus. The difference was largest for the requirement that all grains offered be whole grain-rich—46 to 51 percent of weekly breakfast menus offered only whole grain-rich items versus 21 to 30 percent of weekly lunch menus (differences were not tested for statistical significance). This finding may suggest that schools can more easily procure whole grain-rich breakfast products that appeal to students than whole grain-rich lunch products.

Milk. Virtually all weekly breakfast menus met the weekly quantity requirement for milk (Figure 4.2). There were no statistically significant differences across school types in the proportions of weekly menus that met this requirement.

All Weekly Meal Pattern Requirements. To meet all of the weekly SBP meal pattern requirements, weekly breakfast menus must meet all 5 requirements (see Table 1.4). Given the number of weekly requirements and the fact that a single noncompliant food on one daily menu could cause a weekly menu to be noncompliant with all of the weekly meal pattern requirements, it is challenging for weekly menus to meet all of the weekly meal pattern requirements.

Overall, just under one-quarter (23 percent) of weekly breakfast menus met all of the weekly meal pattern requirements (Table E.6). If the whole grain-rich requirement is relaxed to require that only 50 percent of all grains be whole grain-rich, the proportion of weekly menus that met all of the weekly meal pattern requirements increases to 42 percent. There were no statistically significant differences across school types in the proportions of weekly menus that met all weekly meal pattern requirement.

3. Dietary Specifications

To assess compliance with the dietary specifications, the study team compared average weekly amounts of calories, saturated fat (as a percentage of total calories), and sodium in SBP menus prepared to the relevant specification.^{54,55} Findings are summarized in Figures 4.3–4.5 and discussed below. For average weekly SBP menus that did not meet a dietary specification, the study team examined how close the weekly averages came to meeting the specification (for example, within 5 percent of the specification or between 5 and 10 percent of the specification; Table E.14).

Calories. The average calorie content of weekly breakfast menus must fall within a specified range, defined by a minimum and maximum amount of calories. That is, the average amount of calories in SBP breakfasts over the week must provide at least the minimum amount of calories specified for the grade groups included in the school while not exceeding the maximum calorie level.⁵⁶ For example, SBP breakfasts in a school with grades K–5 are required to provide, on average across the week, between 350 and 500 calories.

Overall, more than half (56 percent) of average weekly breakfast menus fell within the specified calorie range (that is, they met both the minimum and maximum calorie levels) (Figure 4.3). There were no statistically significant differences across school types in the proportions of average weekly menus that met both the minimum and maximum calorie levels. However, average weekly breakfast menus in medium-sized schools were significantly more likely than those in small schools to fall within the specified calorie range (64 percent versus 48 percent; Table E.11). In addition, average weekly menus in urban schools were significantly more likely than those in suburban or rural schools to fall within the specified calorie range (67 percent versus 55 percent and 50 percent, respectively; Table E.12).

Overall, more than half (56 percent) of average weekly breakfast menus fell within the specified calorie range. Average weekly breakfast menus were more likely to exceed the maximum calorie level than to fall below the minimum calorie level (36 percent versus 8 percent).

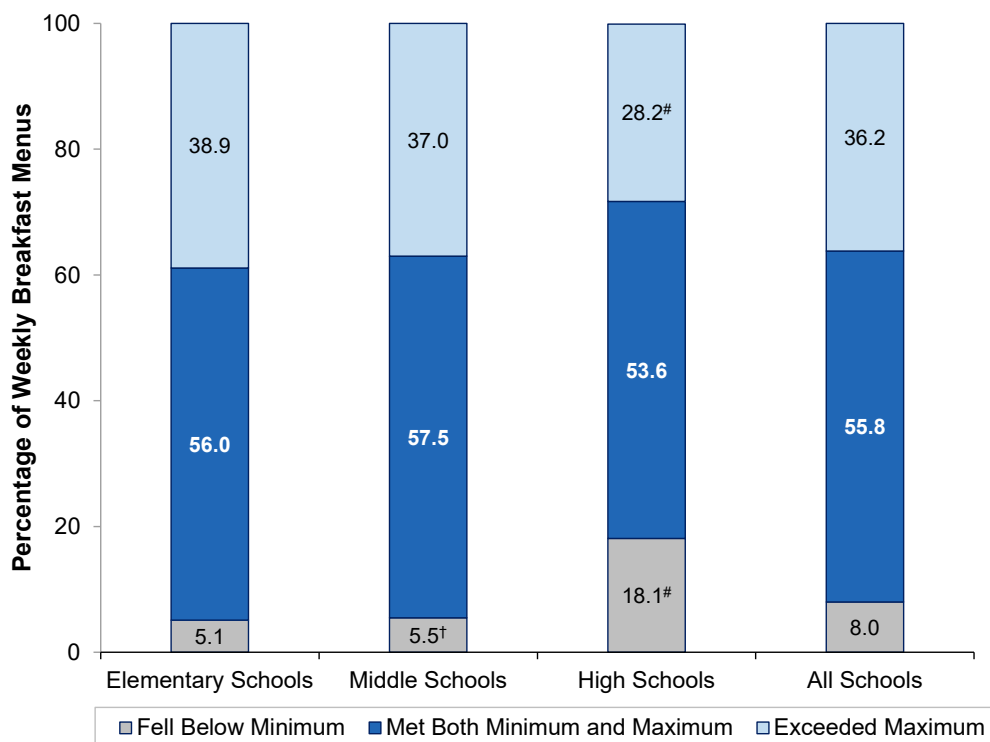
⁵⁴ As described previously, estimates of SBP menus prepared take into account the amounts of food prepared (number of servings) for reimbursable meals and give greater weight to menu items that were prepared in larger quantities.

⁵⁵ It is possible that *available* breakfast options could have met the dietary specifications, even if the nutrient content of the *average* weekly SBP breakfast prepared in a school did not meet the specification. Appendix F presents results from a supplementary analysis that examined the availability of SBP breakfasts that met the dietary specifications, as well as other nutrient targets.

⁵⁶ The range between the minimum and maximum amounts of calories for SBP breakfasts is 150 calories for each grade group (see Table 1.4). For schools that have grades that span more than one of the established grade groups (K–5, 6–8, and 9–12), average weekly menus must meet the calorie minimum for the oldest grade group and the calorie maximum for the youngest grade group. For schools that include both the K–5 and 6–8 grade groups or the 6–8 and 9–12 grade groups, the calorie range for SBP breakfasts is lower at 100 calories (400 to 500 calories, and 450 to 550 calories, respectively). For schools that span all three grade groups, the calorie range is very narrow, with a minimum of 450 calories and maximum of 500 calories. Because the calorie minimums and maximums for the oldest and youngest grade groups overlap for all three grade groups, all schools were included in the analysis.

Average weekly breakfast menus across all school types were more likely to exceed the maximum calorie level (36 percent overall) than to fall below the minimum calorie level (8 percent overall) (Figure 4.3).

Figure 4.3. Percentage of Weekly Breakfast Menus That Met and Did Not Meet SBP Dietary Specifications for Minimum and Maximum Calorie Levels



Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Note: None of the differences between elementary and middle schools were statistically significant.

[†] Difference between middle and high schools is significantly different from zero at the 0.05 level.

[#] Difference between elementary and high schools is significantly different from zero at the 0.05 level.

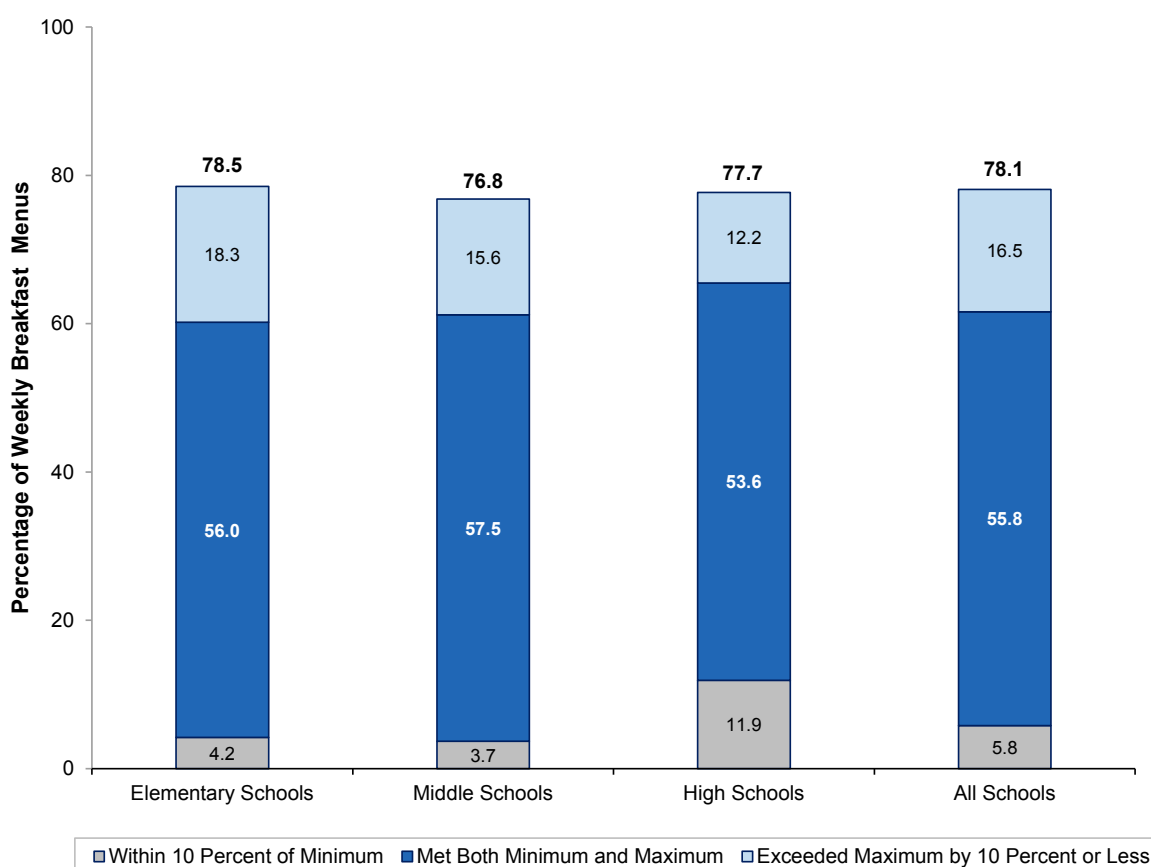
SBP = School Breakfast Program.

As described previously and shown in Figure 4.4, 56 percent of average weekly breakfast menus met both the minimum and maximum calorie levels. In addition, 6 percent of weekly menus came close to meeting (within 10 percent) the minimum calorie level, and another 17 percent of weekly menus came close to meeting the maximum calorie level. Thus, overall, more than three-quarters (78 percent) of average weekly breakfast menus either met both the minimum and maximum calorie levels or came close to meeting these specifications.

Among elementary schools, 56 percent of average weekly breakfast menus met both the minimum and maximum calorie levels, while 4 percent came close to meeting the minimum calorie level and 18 percent came close to meeting the maximum calorie level (Figure 4.4). In total, 79 percent of average weekly menus in elementary schools either met both the minimum and maximum calorie levels or came close to meeting these specifications. Fifty-eight percent of average weekly breakfast menus in middle schools met both the minimum and maximum calorie

levels. In addition, 4 percent of weekly menus came close to meeting the minimum calorie level, and another 16 percent of weekly menus came close to meeting the maximum calorie level. Thus, more than three-quarters (77 percent) of average weekly menus in middle schools either met both the minimum and maximum calorie levels or came close to meeting these specifications. Among high schools, 54 percent of average weekly breakfast menus met both the minimum and maximum calorie levels. An additional 12 percent of weekly breakfast menus were close to meeting the minimum calorie level and 12 percent were close to meeting the maximum calorie level. In total, 78 percent of average weekly menus in high schools either met both the minimum and maximum calorie levels or came close to meeting these specifications.

Figure 4.4. Percentage of Weekly Breakfast Menus that Met or Came Close to Meeting SBP Dietary Specifications for Minimum and Maximum Calorie Levels



Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

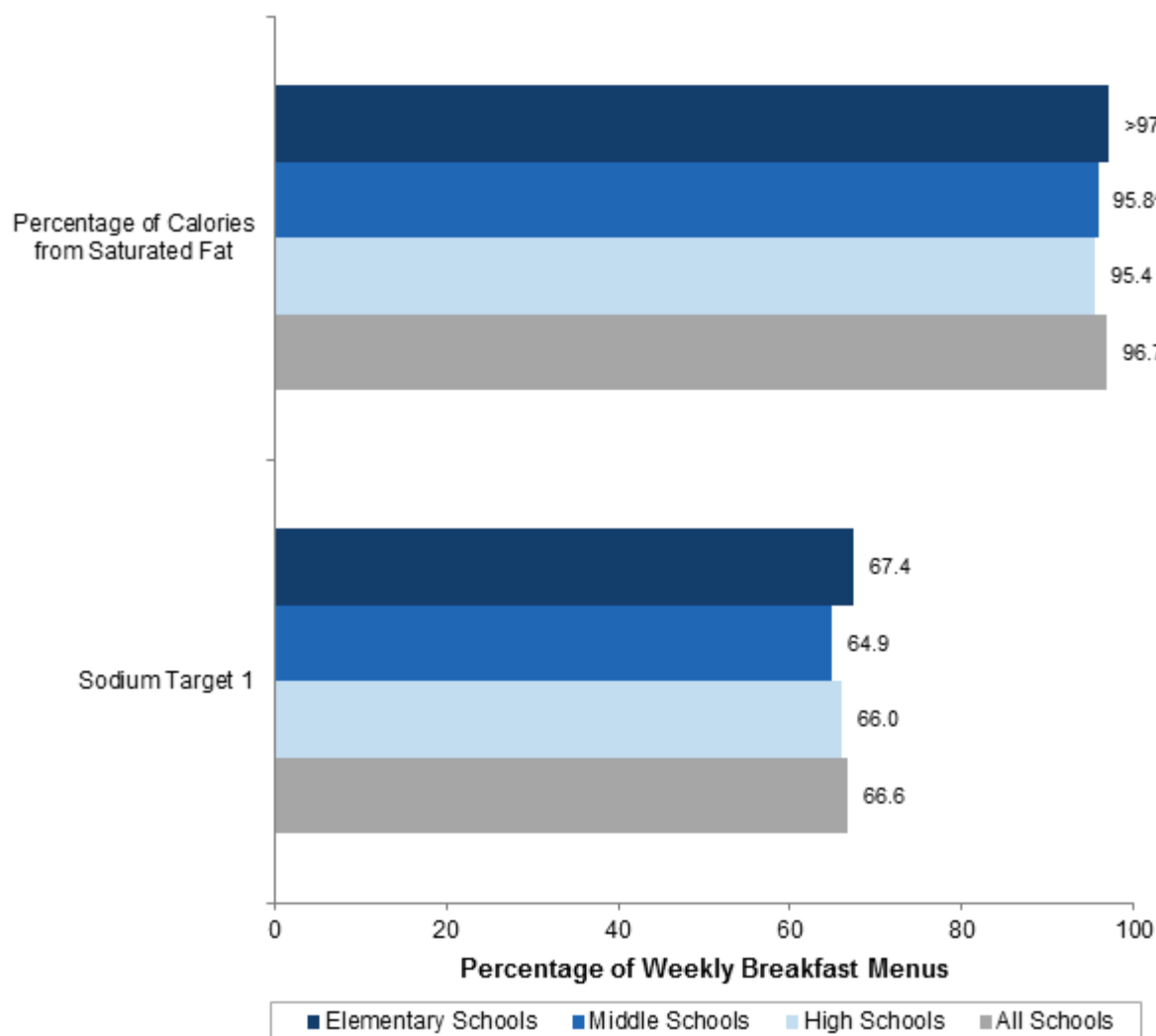
Note: Average weekly breakfast menus that were close to meeting the minimum or maximum calorie levels were within 10 percent of these specifications.

SBP = School Breakfast Program.

Saturated Fat. Nearly all (97 percent) average weekly breakfast menus met the limit on the percentage of calories from saturated fat (Figure 4.5). There were no statistically significant differences across school types in the proportions of average weekly menus that met this limit.

Sodium. Roughly two-thirds (65 to 67 percent) of average weekly breakfast menus met the Target 1 sodium limit that was in place in SY 2014–2015 (Figure 4.5). Another 10 to 11 percent of average weekly menus were within 10 percent of the sodium limit (Table E.14). There were no statistically significant differences across school types in the proportions of average weekly menus that met this limit. However, average weekly breakfast menus in medium-sized schools were significantly more likely than those in small schools to meet the sodium limit (73 percent versus 62 percent; Table E.11). In addition, average weekly menus in urban and suburban schools were significantly more likely than those in rural schools to meet the sodium limit (77 and 69 percent, respectively, versus 57 percent; Table E.12).

Figure 4.5. Percentage of Weekly Breakfast Menus That Met SBP Dietary Specifications for Saturated Fat and Sodium



Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014–2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Note: None of the differences between school types were statistically significant.

SBP = School Breakfast Program.

[^] = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules

are applied, percentages close to 0 or 100 are often flagged. In this figure, flagged percentages between 97 and 100 percent are displayed as >97.

All Dietary Specifications. To meet all of the dietary specifications for SBP breakfasts, average weekly breakfast menus must provide at least the minimum amount of calories while not exceeding the maximum calorie level, and must not exceed the limits on saturated fat (as a percentage of total calories) and sodium. Overall, 47 percent of average weekly breakfast menus met all of the dietary specifications (Table E.10). In elementary and middle schools, 49 percent of average weekly menus met all of the dietary specifications. A smaller proportion (41 percent) of average weekly menus in high schools met all of the dietary specifications, but the difference was not statistically significant.

Average weekly breakfast menus in medium-sized schools were significantly more likely than those in small or large schools to meet all of the dietary specifications (57 percent versus 40 and 46 percent, respectively; Table E.11). In addition, average weekly menus in urban and suburban schools were significantly more likely than those in rural schools to meet all of the dietary specifications (57 and 50 percent, respectively, versus 37 percent; Table E.12).

B. Percentage of Average Weekly Breakfast Menus That Were Consistent with DRI-Based Targets for Nutrient Content

The updated nutrition standards are based on recommendations from the IOM (2010). When developing its recommendations, the IOM committee set targets for the nutrient content of SBP breakfasts. These targets provided the scientific underpinnings for the updated standards but were not intended to be used by SFAs or schools for planning or monitoring purposes. Instead, it was expected that meals planned to meet the meal pattern requirements would be consistent with most of the nutrient targets.⁵⁷

The nutrient targets were based on the DRIs. Targets for SBP breakfasts were based on the mean percentage of total daily calorie intake consumed by school-age children at breakfast (21.5 percent).⁵⁸ The DRI-based nutrient targets for SBP breakfasts provide benchmarks for the average nutrient content of weekly breakfast menus prepared in elementary, middle, and high schools. The targets for average weekly breakfast menus are shown in Table 4.1. Additional information about the DRI-based targets for the nutrient content of weekly menus is provided in Appendix D.

To assess the extent to which average weekly SBP menus were consistent with the DRI-based nutrient targets, the study team compared the average nutrient content of weekly SBP menus prepared to these targets.⁵⁹ Findings for key nutrients are summarized in Figure 4.6 and

⁵⁷ Exceptions are vitamin E, potassium, linoleic acid, and linolenic acid (IOM 2010).

⁵⁸ Data from the third School Nutrition Dietary Assessment Study (SNDA-III) were used to estimate the mean percentage of total calories consumed by school-age children at breakfast.

⁵⁹ Tables E.22 and E.27 provide data on the average calorie and nutrient content of SBP breakfasts prepared and served relative to the DRI-based nutrient targets.

discussed below. Table E.18 provides data for additional nutrients.⁶⁰ As noted above, the DRI-based nutrient targets provide a useful benchmark for the average nutrient content of weekly breakfast menus, but menus were not *required* to meet these targets. In addition, the approach used for this analysis differs in an important way from the approach used by the IOM. When verifying that menus planned to meet the meal pattern requirements would meet or approach the DRI-based nutrient targets, the IOM used nutrient values that reflected the foods in the planned menu and gave equal weight to all menu items offered within a meal component group. In this analysis, the study team used nutrient values for average weekly menus prepared, which gives greater weight to menu items that were prepared in larger quantities.

Table 4.1. DRI-Based Targets for Nutrient Content of Average Weekly Breakfast Menus

DRI-Based Nutrient Target ^a	Elementary Schools	Middle Schools	High Schools
Total Fat (percentage of calories)	25-35	25-35	25-35
Linoleic Acid (g)	2.2	2.5	3.0
Alpha-Linolenic Acid (g)	0.21	0.25	0.30
Protein (g)	10.2	21.6	21.8
Vitamin A (mcg RAE)	129	162	186
Vitamin C (mg)	16	20	26
Vitamin E (mg AT)	2.0	2.7	3.7
Thiamin (mg)	0.2	0.3	0.4
Riboflavin (mg)	0.31	0.41	0.45
Niacin (mg)	3.2	4.0	4.9
Vitamin B ₆ (mg)	0.3	0.4	0.4
Folate (mcg DFE)	91	114	138
Vitamin B ₁₂ (mcg)	0.8	0.9	1.1
Iron (mg)	2.3	3.5	4.0
Magnesium (mg)	49	66	99
Zinc (mg)	2.0	2.5	2.9
Calcium (mg)	223	296	323
Phosphorus (mg)	242	362	384
Potassium (mg)	909	1,023	1,169
Dietary Fiber (g)	5.7	6.3	7.2
Cholesterol (mg)	< 65	< 65	< 65

Source: Institute of Medicine (IOM). "School Meals: Building Blocks for Healthy Children." Washington, DC: National Academies Press, 2010.

Notes: Average weekly menus were not explicitly expected to meet the DRI-based targets for nutrient content. However, it is expected that the average nutrient content of breakfasts planned to meet the SBP nutrition standards would be consistent with most of these nutrient targets. Exceptions are vitamin E, potassium, linoleic acid, and alpha-linolenic acid.

^aThe targets for breakfast are based on 21.5 percent of the daily school meal-target median intake for the age-grade group (IOM 2010).

AT= alpha-tocopherol; DFE = dietary folate equivalents; DRI = Dietary Reference Intakes; IOM = Institute of Medicine; RAE = retinol activity equivalents; SBP = School Breakfast Program.

⁶⁰ Appendix E (Tables E.19–E.21; Tables E.23–E.26) provides data on the percentage of average weekly breakfast menus prepared and served that were consistent with the DRI-based nutrient targets by school size, urbanicity, and district child poverty rate.

Vitamin A. The average nutrient content of virtually all weekly breakfast menus in elementary and middle schools was consistent with the DRI-based target for vitamin A (Figure 4.6). Most (84 percent) average weekly breakfast menus in high schools were also consistent with this target. All of the differences between school types in the proportions of average weekly menus that were consistent with the DRI-based target for vitamin A were statistically significant.

Vitamin C. The vast majority of average weekly breakfast menus in elementary and middle schools (96 and 94 percent, respectively) and most in high schools (85 percent) were consistent with the DRI-based target for vitamin C. Average weekly menus in high schools were significantly less likely than those in elementary or middle schools to be consistent with this target.

More than 8 in 10 average weekly breakfast menus met the DRI-based nutrient targets for vitamin A, vitamin C, and calcium.

Calcium. Virtually all average weekly breakfast menus were consistent with the DRI-based target for calcium. This is driven by the fact that virtually all SBP breakfasts prepared included a serving of milk (typically one cup), which provides all or most of the targeted amount of calcium.

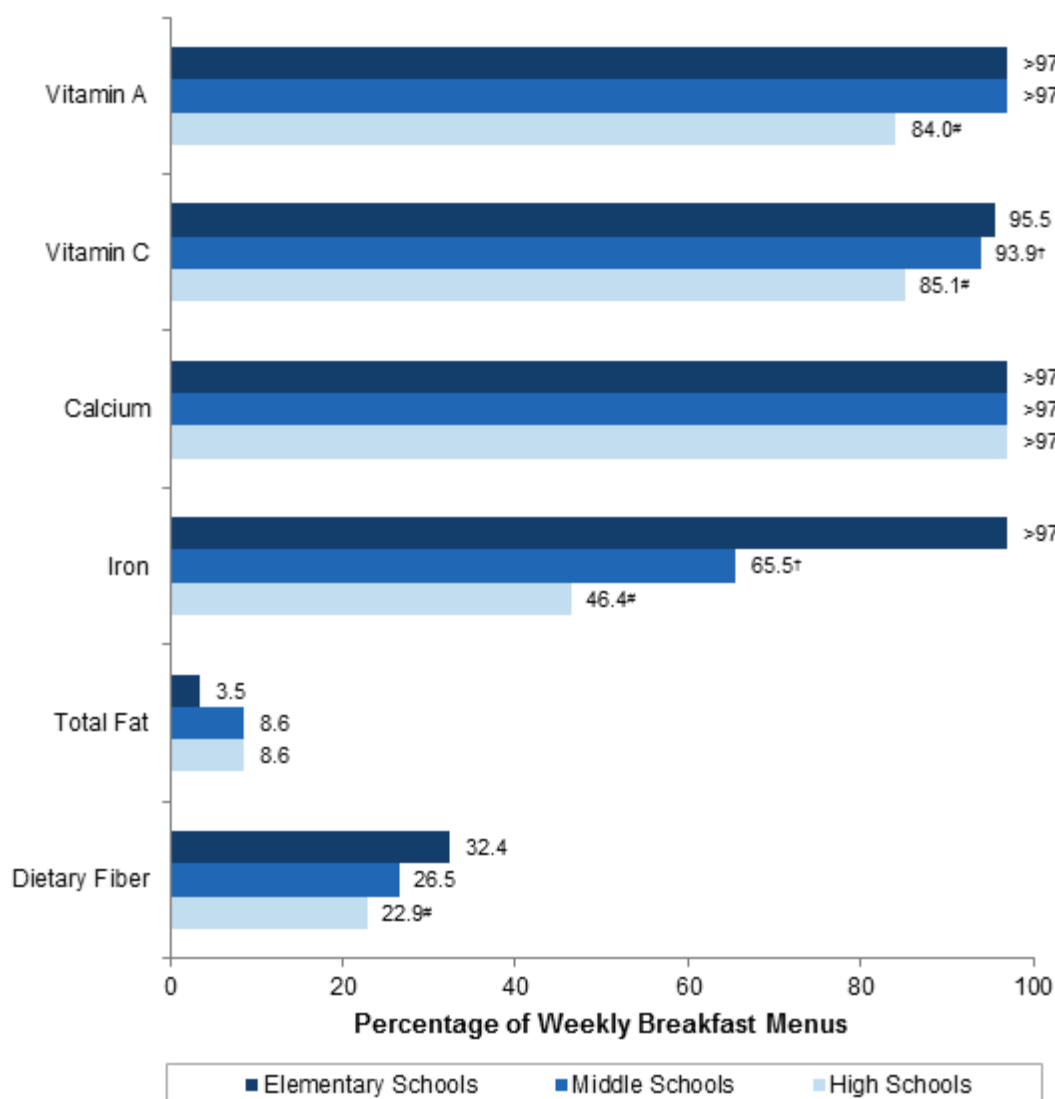
Iron. Virtually all average weekly breakfast menus in elementary schools were consistent with the DRI-based target for iron. Substantially smaller proportions of average weekly menus in middle schools (66 percent) and high schools (46 percent) were consistent with this target. All of the differences between school types in the proportions of average weekly menus that were consistent with the DRI-based target for iron were statistically significant. The IOM committee that developed the nutrient targets acknowledged that average weekly breakfast menus that met all of the meal pattern requirements for middle and high schools would not meet the target for iron (IOM 2010). The approach used in setting the targets resulted in relatively high targets for middle and high schools.⁶¹ Thus, it is expected that smaller proportions of average weekly breakfast menus in middle and high schools would be consistent with this target.

Total Fat. The DRI-based target for total fat is based on the Acceptable Macronutrient Distribution Range (AMDR) for school-age children, which recommends that total fat intake be limited to 25 to 35 percent of calories (IOM 2005). Few average weekly breakfast menus were consistent with this target (4 percent in elementary schools and 9 percent in middle and high schools). None of the differences between school types in the proportions of average weekly menus that were consistent with this target were statistically significant. Most average weekly breakfast menus that were not consistent with the DRI-based target for total fat fell below the lower end of the recommended range (Tables E.32–E.34). The IOM committee that developed the nutrient targets acknowledged that SBP breakfasts that meet all of the meal pattern requirements would not be consistent with the target for total fat (IOM 2010).

Dietary Fiber. One-third (32 percent) of average weekly breakfast menus in elementary schools and about one-quarter in middle and high schools (27 and 22 percent, respectively) were consistent with the DRI-based target for dietary fiber. Average weekly menus in elementary schools were significantly more likely than those in high schools to be consistent with this target.

⁶¹ When setting the targets for iron, the IOM committee took into account the iron needs of menstruating females, who have the highest need for iron. This resulted in setting relatively high iron targets for middle and high schools (IOM 2010).

Figure 4.6. Percentage of Average Weekly Breakfast Menus That Were Consistent with DRI-Based Targets for Key Nutrients



Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: The DRI-based targets for nutrient content were developed by the Institute of Medicine (IOM 2010). The targets for breakfast (see Table 4.1) are based on 21.5 percent of the daily school meal-target median intake for the age-grade group. Average weekly menus were not expected to meet these nutrient targets. However, it is expected that if school breakfasts were planned to meet the SBP nutrition standards, they would be consistent with most of these nutrient targets, with the exception of total fat.

* Difference between elementary and middle schools is significantly different from zero at the 0.05 level.

† Difference between middle and high schools is significantly different from zero at the 0.05 level.

Difference between elementary and high schools is significantly different from zero at the 0.05 level.

SBP = School Breakfast Program.

>97 = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this figure, flagged percentages between 97 and 100 percent are displayed as >97.

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5. OVERALL NUTRITIONAL QUALITY OF SCHOOL MEALS AND FACTORS ASSOCIATED WITH NUTRITIONAL QUALITY

This chapter describes the overall nutritional quality of school meals and factors that may influence nutritional quality. The updated nutrition standards, which were phased in beginning in SY 2012–2013, were designed to better reflect the *Dietary Guidelines for Americans* and improve the overall nutritional quality of school meals. However, as described in Chapters 3 and 4, the daily and weekly requirements combined with the complexity of some menus and cafeteria configurations can make it challenging for all daily and weekly menus to be fully compliant. It is unknown how specific types of noncompliance may affect overall nutritional quality—NSLP lunches and SBP breakfast that do not comply with some of the requirements could still be high in nutritional quality. The relationship between nutritional quality and compliance with nutrition standards is one of the issues explored in this chapter.

The study team used the Healthy Eating Index-2010 (HEI-2010) to examine the nutritional quality of NSLP lunches and SBP breakfasts prepared in SY 2014–2015 (the first year school meals were required to meet all the requirements for both NSLP lunches and SBP breakfasts). In addition, the study team conducted multivariate analyses to examine relationships between the nutritional quality of school meals and key characteristics of the meals, foodservice operations, and school food environments, as well as institutional and demographic characteristics of schools and SFAs. These analyses provide useful information on factors that may influence the nutritional quality of NSLP lunches and SBP breakfasts.

Findings for both descriptive and multivariate analyses are presented for all schools and separately by school type: elementary, middle, and high schools. Statistical significance of differences between subgroups in the descriptive analysis and associations in the multivariate analyses were tested using two-tailed t-tests. All findings that are discussed in the text are statistically significant, unless otherwise noted. Tables and figures in the chapter present key results; supplementary tables appear in Appendix G, as noted throughout the chapter.

A. Overview of the Healthy Eating Index-2010

The HEI-2010 provides a measure of the nutritional quality of school meals by assessing conformance to key recommendations of the 2010 *Dietary Guidelines for Americans* (Guenther et al. 2013).⁶² The USDA uses the HEI to monitor the quality of foods consumed by the U.S. population overall; to examine relationships between diet and health-related outcomes and between diet cost and diet quality; to determine the effectiveness of nutrition intervention programs; and to assess the quality of food assistance packages, menus, and the U.S. food supply (USDA, CNPP 2013).

The HEI-2010 is based largely on the USDA Food Patterns, which translate *Dietary Guidelines for Americans* recommendations into daily average amounts of foods to be consumed, in nutrient-dense forms, from five major food groups and their subgroups. It consists of 12 components, each reflecting a key aspect of nutritional quality, and a total score that

⁶² The study team used the HEI-2010, because the 2010 *Dietary Guidelines for Americans* were in effect when data for this study were collected.

measures overall nutritional quality. The standards used in assigning HEI-2010 component scores are expressed on a density basis (that is, amounts per 1,000 calories or as a percentage of total calories) rather than absolute amounts of foods. The use of such standards in assessing nutritional quality reflects the recommendation that individuals should strive to meet food group and nutrient guidelines while maintaining calorie balance, rather than meeting these recommendations simply by consuming large quantities of food. The density-based standards make it possible to use the HEI-2010 to assess the quality of any mix of foods, including school meals.

Table 5.1 shows the components included in the HEI-2010, the maximum score for each component, and the scoring criteria corresponding to the minimum and maximum scores for each component. Nine of the 12 components included in the HEI-2010 are adequacy components that focus on meeting food group and nutrient needs without exceeding calorie requirements. The adequacy components include the following:

- Total fruit, including juice
- Whole fruit
- Total vegetables
- Greens and beans
- Whole grains
- Dairy
- Total protein foods
- Seafood and plant proteins
- Fatty acids

The three remaining components, referred to as moderation components, measure dietary components that individuals are encouraged to limit, including refined grains, sodium, and empty calories (that is, calories from solid fats and added sugars).

The HEI-2010 assigns scores for each component based on its concentration in school meals. As shown in Table 5.1, maximum scores for the various components range from 5 to 20. Scores for concentrations between the minimum and maximum standards are scored proportionately. For example, a concentration that is halfway between the criteria for the maximum and minimum scores yields a score that is half the maximum score. Higher scores for each component reflect better conformance with *Dietary Guidelines for Americans* recommendations. Higher scores for the adequacy components reflect higher concentrations in school meals. Higher scores for the moderation components—refined grains, sodium, and empty calories—reflect lower concentrations because the *Dietary Guidelines for Americans* recommendations focus on limiting intake of these components.

Scores for each of the 12 components are summed to yield a total HEI-2010 score, with a maximum of 100. Total HEI-2010 scores provide an overall measure of nutritional quality. A higher score reflects better conformance with *Dietary Guidelines for Americans* recommendations and higher nutritional quality.

Table 5.1. Healthy Eating Index-2010 Components and Standards for Scoring

HEI-2010 Component ^a	Maximum Score	Standard for Maximum Score	Standard for Minimum Score of Zero
Adequacy Components (higher scores reflect higher concentrations in meals)			
Total Fruit ^b	5	≥ 0.8 cup equiv. / 1,000 kcal	No fruit
Whole Fruit ^c	5	≥ 0.4 cup equiv. / 1,000 kcal	No whole fruit
Total Vegetables ^d	5	≥ 1.1 cup equiv. / 1,000 kcal	No vegetables
Greens and Beans ^d	5	≥ 0.2 cup equiv. / 1,000 kcal	No dark green vegetables, beans, or peas
Whole Grains	10	≥ 1.5 ounce equiv. / 1,000 kcal	No whole grains
Dairy ^e	10	≥ 1.3 cup equiv. / 1,000 kcal	No dairy
Total Protein Foods ^f	5	≥ 2.5 ounce equiv. / 1,000 kcal	No protein foods
Seafood and Plant Proteins ^{f,g}	5	≥ 0.8 ounce equiv. / 1,000 kcal	No seafood or plant proteins
Fatty Acids ^h	10	(PUFAs + MUFAs) / SF > 2.5	(PUFAs + MUFAs) / SF < 1.2
Moderation Components (higher scores reflect lower concentrations in meals)			
Refined Grains	10	≤ 1.8 ounce equiv. / 1,000 kcal	≥ 4.3 ounce equiv. / 1,000 kcal
Sodium	10	≤ 1.1 gram / 1,000 kcal	≥ 2.0 grams / 1,000 kcal
Empty Calories ⁱ	20	≤ 19% of energy	≥ 50% of energy
Total Score	100		

Source: U.S. Department of Agriculture, Center for Nutrition Policy and Promotion, Fact Sheet Number 2, February 2013.

Note: Higher scores reflect higher nutritional quality.

^aConcentrations between the minimum and maximum standard are scored proportionately.

^bIncludes 100 percent fruit juice.

^cIncludes all forms except juice.

^dIncludes any beans and peas not counted as Total Protein Foods.

^eIncludes all milk products, such as fluid milk, yogurt, cheese, and fortified soy beverages.

^fBeans and peas are included here (and not with vegetables) when the Total Protein Foods standard is otherwise not met.

^gIncludes seafood, nuts, seeds, soy products (other than beverages) as well as beans and peas counted towards Total Protein Foods.

^hRatio of poly- and monounsaturated fatty acids (PUFAs and MUFAs) to saturated fat (SF).

ⁱCalories from solid fats and added sugars. School meals do not include alcohol.

Equiv = equivalent; HEI = Healthy Eating Index; kcal = calories; MUFA = monounsaturated fatty acid; PUFA = polyunsaturated fatty acid; SF = saturated fat.

B. Healthy Eating Index-2010 Scores for NSLP Lunches Prepared

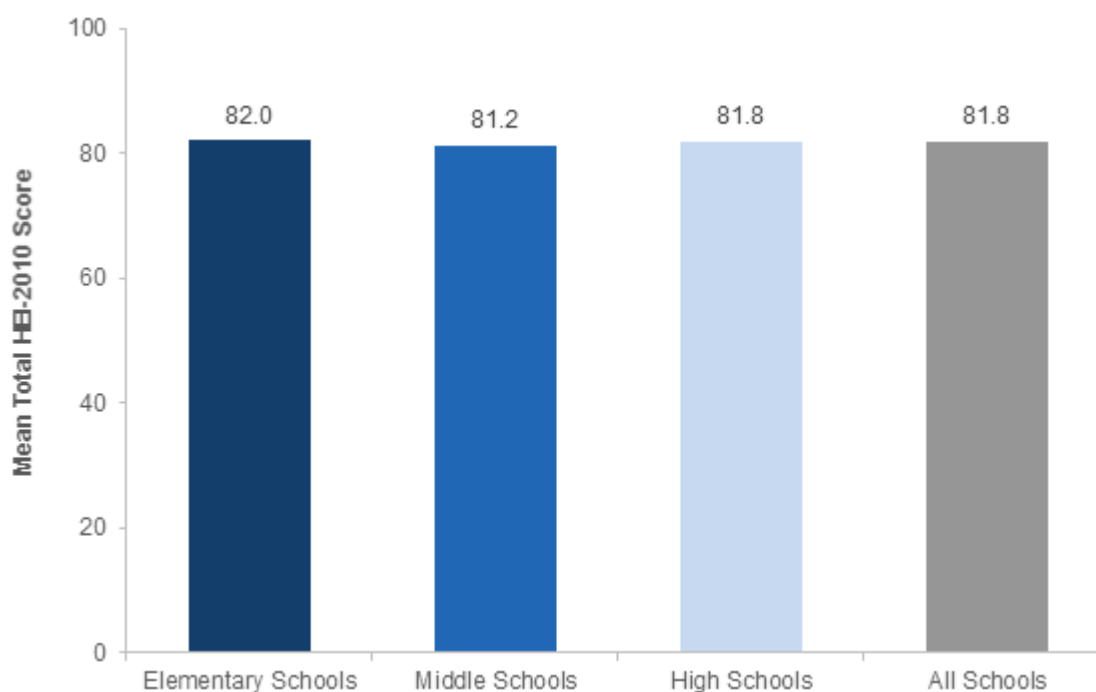
Using data from the Menu Survey, which was completed by SNMs over the course of one school week in the spring of SY 2014–2015, the study team estimated mean HEI-2010 total and component scores for NSLP lunches prepared. Total and component scores were generated for each school in the sample, based on average weekly menus prepared, and scores were averaged across schools to estimate mean total and component scores for all schools and for elementary,

middle, and high schools separately. Key findings are shown in Figures 5.1–5.3; supplementary tables are provided in Appendix G.⁶³

1. HEI-2010 Total Scores

On average, NSLP lunches received a total HEI-2010 score of 81.8 out of 100 (Figure 5.1). There were no statistically significant differences across school types in total HEI-2010 scores. The overall nutritional quality of NSLP lunches prepared (based on a total HEI-2010 score of 82 out of 100) was high in comparison to the overall diet quality of students in schools that participated in the school meal programs. In SY 2014–2015, total HEI-2010 scores for students' daily intakes were 65 out of 100 for students that participated in the NSLP and 61 out of 100 for nonparticipants (Fox et al. 2019).

Figure 5.1. Mean Healthy Eating Index-2010 Scores for NSLP Lunches Prepared: Total Scores



Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: Higher total scores reflect higher nutritional quality. None of the differences between school types were statistically significant.

NSLP = National School Lunch Program.

2. HEI-2010 Adequacy Components

Because maximum scores for the adequacy components vary, findings for these components of the HEI-2010 are expressed as a percentage of the maximum possible score. On average,

⁶³ Appendix G (Tables G.1–G.8) provides additional data on HEI-2010 scores for both NSLP lunches prepared and served and also provides data by school size, urbanicity, and district child poverty rate.

NSLP lunches overall received the maximum score for dairy (100 percent of the maximum score) and came close to receiving the maximum score for whole fruit (98 percent), total fruit (95 percent), and whole grains (95 percent) (Figure 5.2). These perfect and near-perfect scores indicate that the concentrations of dairy, whole fruit, total fruit, and whole grains in NSLP lunches were very consistent with the relevant *Dietary Guidelines for Americans* recommendations.

Average scores for total protein foods and total vegetables were slightly lower, but were still more than 80 percent of the maximum possible score (89 and 83 percent, respectively). On average, scores for greens and beans and fatty acids were 73 and 63 percent of the maximum scores, respectively. NSLP lunches received the lowest score for seafood and plant proteins (49 percent, on average), indicating that the concentration of this component in NSLP lunches was about half of the concentration recommended in the *Dietary Guidelines for Americans*.

There were some variations by school type in component scores for NSLP lunches (Figure 5.2):

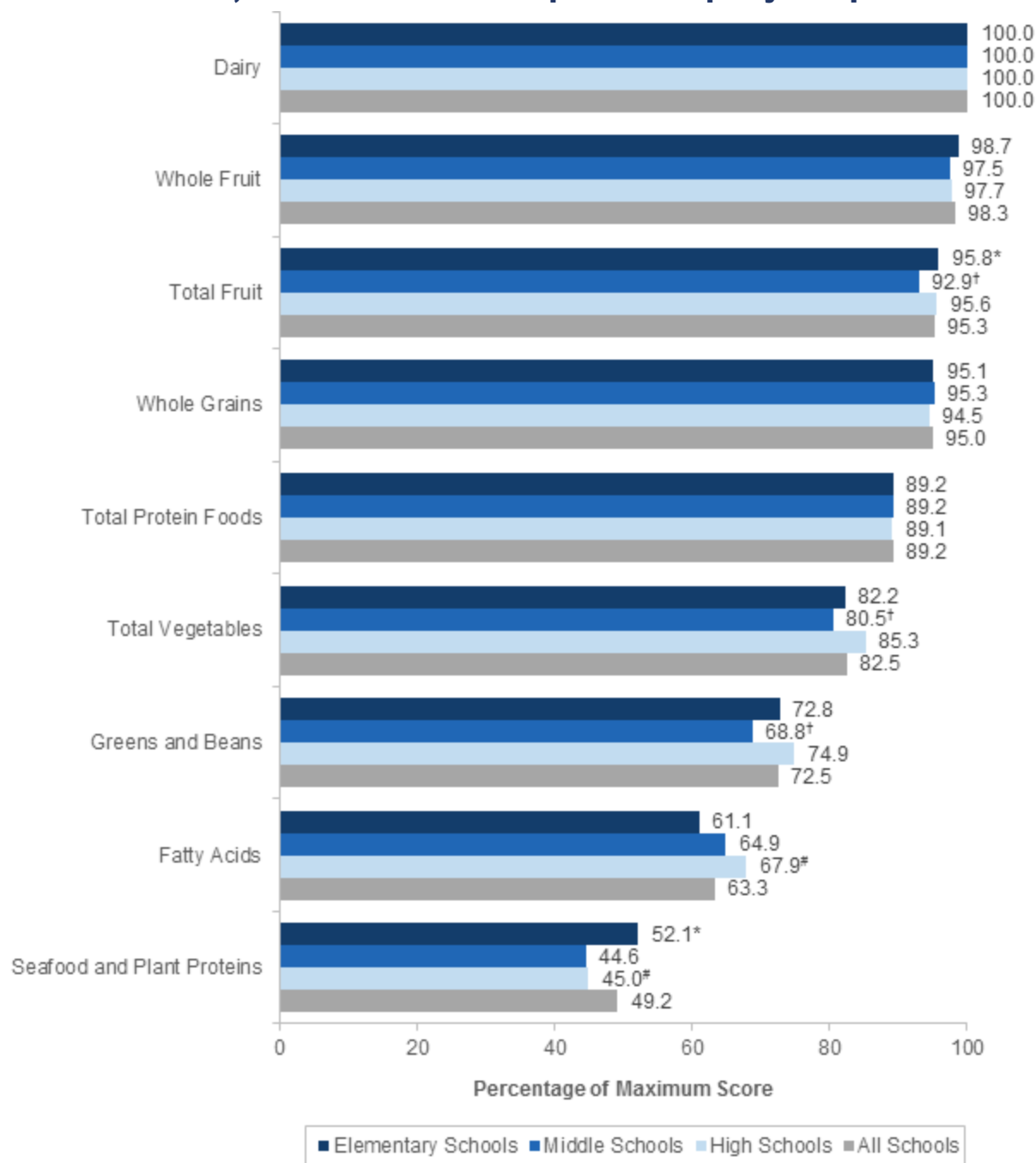
- On average, NSLP lunches in middle schools received a significantly lower score for total fruit than those in elementary or high schools (93 percent versus 96 percent for both middle and high schools).
- Relative to high schools, NSLP lunches in middle schools received significantly lower scores for total vegetables and for greens and beans (85 percent versus 81 percent for total vegetables, on average; and 75 percent versus 69 percent for greens and beans, on average).
- On average, NSLP lunches in elementary schools received a significantly higher score for seafood and plant proteins than middle or high schools (52 percent versus 46 percent for both middle and high schools).
- Relative to high schools, NSLP lunches in elementary schools received a significantly lower average score for fatty acids (61 percent versus 68 percent).

3. HEI-2010 Moderation Components

As with the adequacy components, findings for the moderation components of the HEI-2010 are expressed as a percentage of the maximum possible score. Overall, average NSLP lunches came close to receiving the maximum score for refined grains (97 percent of the maximum score) and empty calories (96 percent) (Figure 5.3). These near-perfect scores for these components indicate that concentrations of refined grains and empty calories in NSLP lunches were very consistent with the relevant *Dietary Guidelines for Americans* recommendations. On average, NSLP lunches in elementary schools received a significantly lower score for empty calories than NSLP lunches in high schools (95 percent versus 97 percent).

Overall, average scores for sodium were 28 percent of the maximum score, indicating that the concentration of sodium in NSLP lunches was higher than recommended in the *Dietary Guidelines for Americans*. On average, NSLP lunches in elementary schools had the highest score for sodium (31 percent) and those in high schools had the lowest score (22 percent). All of the differences between school types in the scores for sodium were statistically significant.

Figure 5.2. Mean Healthy Eating Index-2010 Scores, as a Percentage of Maximum Scores, for NSLP Lunches Prepared: Adequacy Components



Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Note: Higher scores for adequacy components indicate higher concentrations in NSLP lunches.

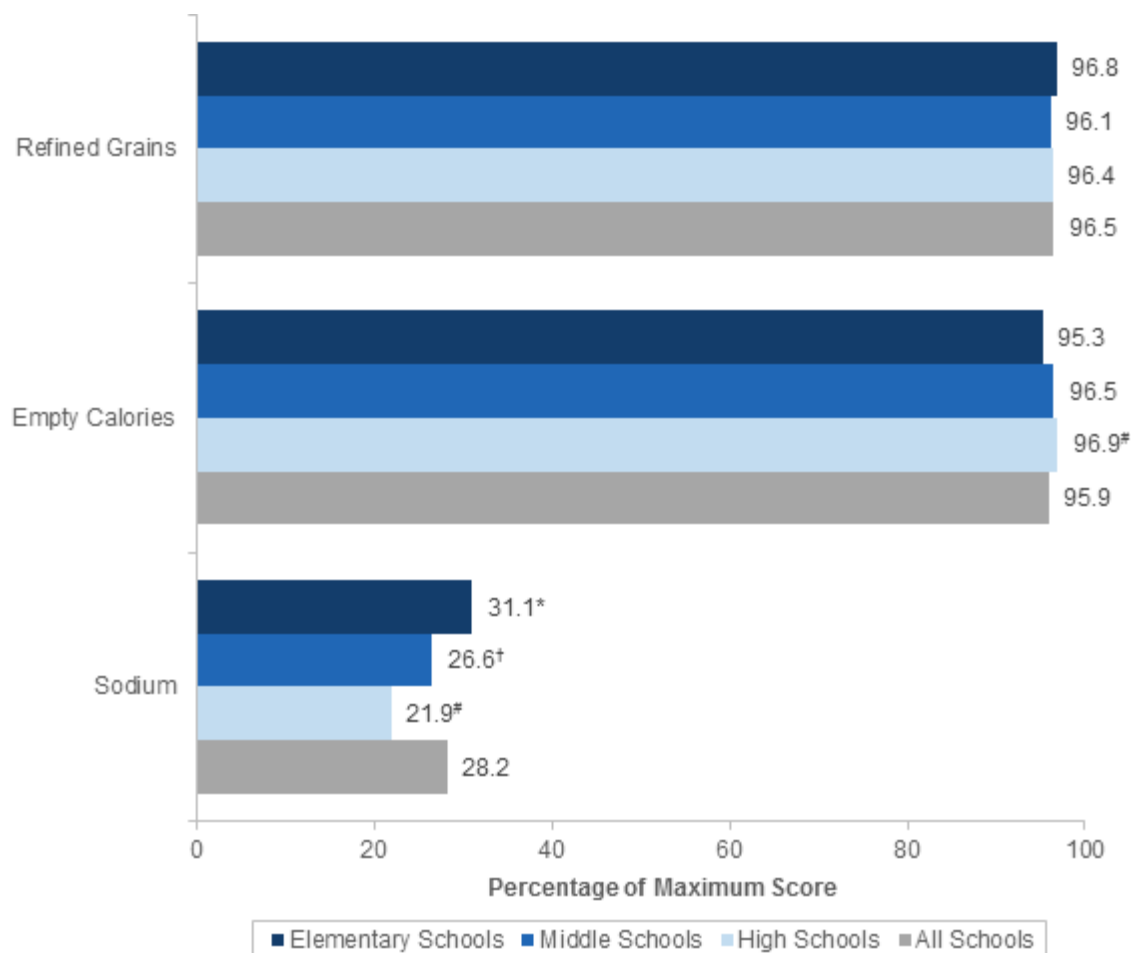
* Difference between elementary and middle schools is significantly different from zero at the 0.05 level.

† Difference between middle and high schools is significantly different from zero at the 0.05 level.

Difference between elementary and high schools is significantly different from zero at the 0.05 level.

NSLP = National School Lunch Program.

Figure 5.3. Mean Healthy Eating Index-2010 Scores, as a Percentage of Maximum Scores, for NSLP Lunches Prepared: Moderation Components



Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Note: Higher scores for moderation components indicate lower concentrations in NSLP lunches.

* Difference between elementary and middle schools is significantly different from zero at the 0.05 level.

† Difference between middle and high schools is significantly different from zero at the 0.05 level.

Difference between elementary and high schools is significantly different from zero at the 0.05 level.

NSLP = National School Lunch Program.

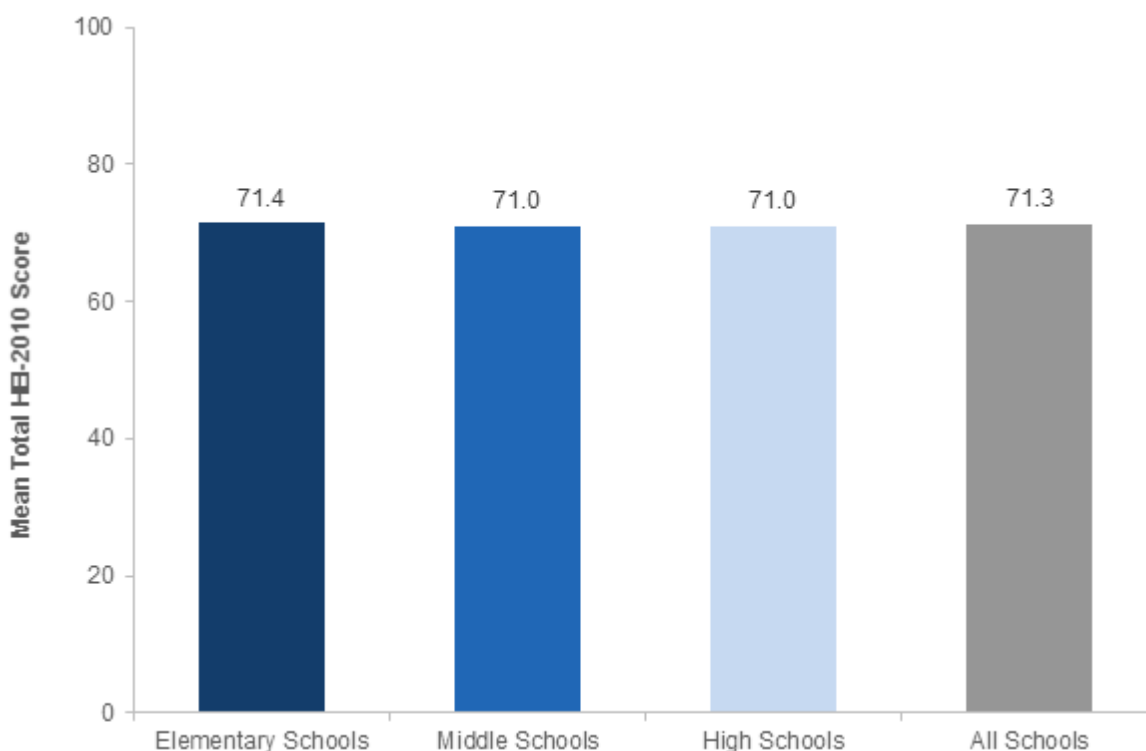
C. Healthy Eating Index-2010 Scores for SBP Breakfasts Prepared

This section describes mean HEI-2010 scores for SBP breakfasts. Like the preceding analysis of NSLP lunches, estimates of HEI-2010 total and component scores are based on weekly average menus for SBP breakfasts prepared and findings for component scores are expressed as a percentage of the maximum possible score. Key findings are shown in Figures 5.4–5.6; supplementary tables are provided in Appendix G.⁶⁴

1. HEI-2010 Total Scores

On average, SBP breakfasts received a total HEI-2010 score of 71.3 out of 100 (Figure 5.4). There were no statistically significant differences across school types in total HEI-2010 scores for SBP breakfasts. The overall nutritional quality of SBP breakfasts prepared (based on a total HEI-2010 score of 71 out of 100) was slightly higher than the overall diet quality of students in schools that participated in the school meal programs. In SY 2014–2015, total HEI-2010 scores for students' daily intakes were 66 out of 100 for both students that participated in the SBP and nonparticipants (Fox et al. 2019).

Figure 5.4. Mean Healthy Eating Index-2010 Scores for SBP Breakfasts Prepared: Total Scores



Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014–2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: Higher total scores reflect higher nutritional quality. None of the differences between school types were statistically significant.

SBP = School Breakfast Program.

⁶⁴ Appendix G (Tables G.9–G.16) provides additional data on HEI-2010 scores for SBP breakfasts prepared and served and also provides data by school size, urbanicity, and district child poverty rate.

2. HEI-2010 Adequacy Components

On average, SBP breakfasts received the maximum score for dairy and total fruit (100 percent of the maximum possible score) and came close to receiving the maximum score for whole grains (95 percent) and whole fruit (92 percent) (Figure 5.5). Similar to the findings for NSLP lunches, these perfect and near-perfect scores indicate that the concentrations of dairy, total fruit, whole grains, and whole fruit in SBP breakfasts were very consistent with the relevant *Dietary Guidelines for Americans* recommendations.

Scores for the remaining adequacy components (fatty acids, total protein foods, seafood and plant proteins, total vegetables, and greens and beans) were low for SBP breakfasts, indicating that concentrations of these components were low relative to relevant *Dietary Guidelines for Americans* recommendations. Overall scores for fatty acids and total protein foods were, on average, 42 and 29 percent of the maximum scores, respectively. On average, the score for seafood and plant proteins was 13 percent of the maximum, while the scores for total vegetables and greens and beans were less than 4 percent of the maximum. Average scores for total protein foods, seafood and plant proteins, total vegetables, and greens and beans are consistent with the fact that menu items that contribute to these components were not commonly offered on daily breakfast menus (see Table 2.7). In addition, the nutrition standards for SBP breakfasts do not include requirements for vegetables or meats/meat alternates.

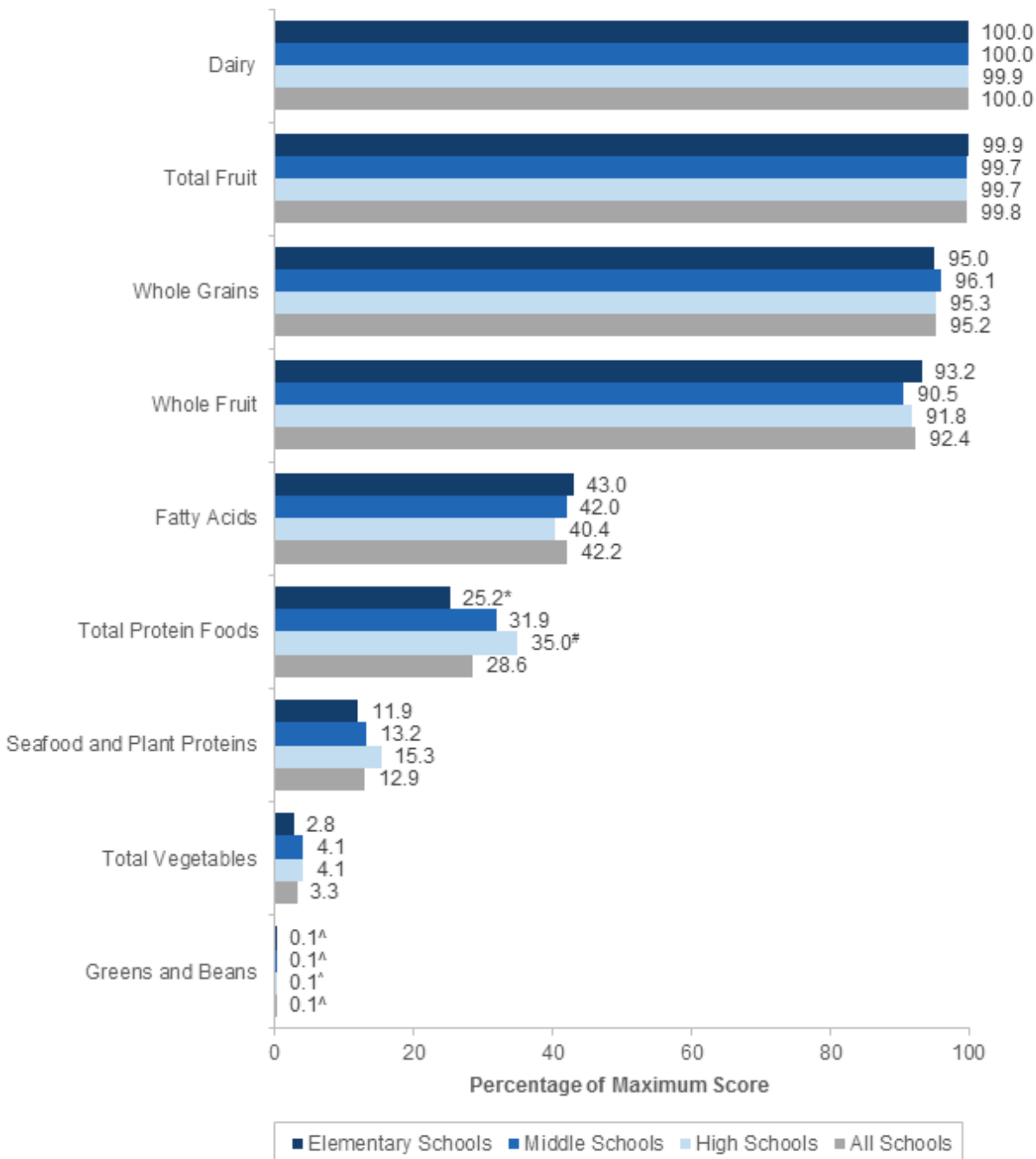
There were few variations across school types in average scores for the adequacy components of the HEI-2010. The only differences observed were for total protein foods. On average, SBP breakfasts in elementary schools received a significantly lower score for total protein foods than either middle or high schools (25 percent versus 32 and 35 percent, respectively) (Figure 5.5).

3. HEI-2010 Moderation Components

Overall, SBP breakfasts came close to receiving the maximum possible score for refined grains (97 percent) and sodium (95 percent) (Figure 5.6). The near-perfect scores for both whole grains and refined grains indicates that the mix of grains in SBP breakfasts was very consistent with the *Dietary Guidelines for Americans* recommendation that at least half of all grains be whole grain. In addition, the near-perfect score for sodium indicates that the concentration of sodium in SBP breakfasts was consistent with the *Dietary Guidelines for Americans* recommendation. On average, SBP breakfasts in elementary schools received a significantly higher score for sodium relative to high schools (96 percent versus 92 percent).

On average, the overall score for empty calories for SBP breakfasts was 83 percent of the maximum. SBP breakfasts in elementary schools received a significantly higher score for this component, on average, than SBP breakfasts in either middle or high schools (84 percent versus 81 percent for both middle and high schools).

Figure 5.5. Mean Healthy Eating Index-2010 Scores, as a Percentage of Maximum Scores, for SBP Breakfasts Prepared: Adequacy Components



Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: Higher scores for adequacy components indicate higher concentrations in SBP breakfasts. None of the differences between middle and high schools was statistically significant.

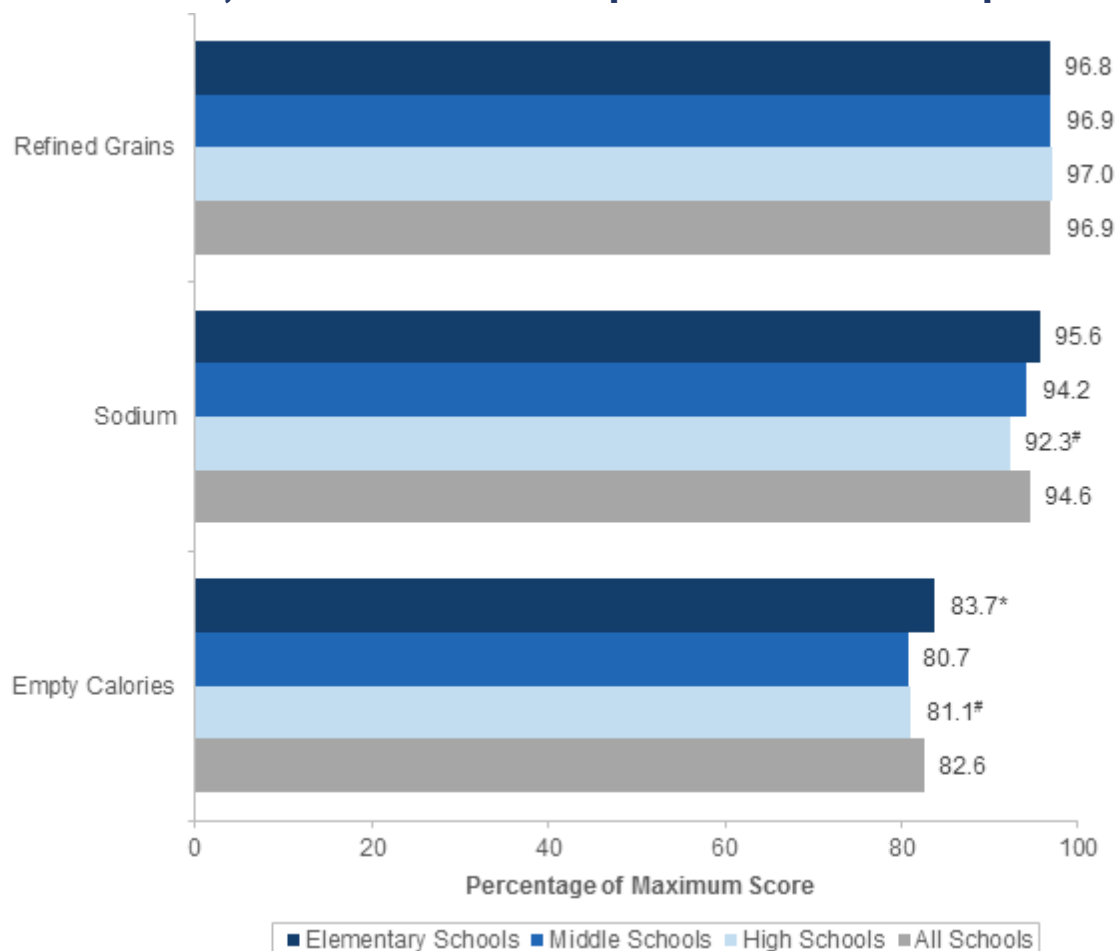
* Difference between elementary and middle schools is significantly different from zero at the 0.05 level.

Difference between elementary and high schools is significantly different from zero at the 0.05 level.

SBP = School Breakfast Program.

^ Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1.

Figure 5.6. Mean Healthy Eating Index-2010 Scores, as a Percentage of Maximum Scores, for SBP Breakfasts Prepared: Moderation Components



Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: Higher scores for moderation components indicate lower concentrations in SBP breakfasts. None of the differences between middle and high schools was statistically significant.

* Difference between elementary and middle schools is significantly different from zero at the 0.05 level.

Difference between elementary and high schools is significantly different from zero at the 0.05 level.

SBP = School Breakfast Program.

D. Factors Associated with the Nutritional Quality of NSLP Lunches

This section describes results of multivariate analyses that examined the relationships between the nutritional quality of NSLP lunches, based on total HEI-2010 scores for NSLP lunches prepared, and key characteristics in four domains:

- Characteristics of NSLP lunches, including compliance of daily and weekly menus with selected NSLP nutrition standards
- Characteristics of school foodservice operations
- Characteristics of the school food environment

- Institutional and demographic characteristics of schools and SFAs.

For each of these domains, the study team identified an initial set of characteristics consisting of relevant variables from the Menu Survey, Principal Survey, SNM Survey, Cafeteria Observation Guide, A la Carte Checklist, Vending Machine and Other Sources of Foods and Beverages Checklist, and SFA Director Survey (see Chapter 1). The final set of variables was selected by eliminating variables which (1) contained valid values for a relatively low proportion of the sample, (2) exhibited insufficient variation within the sample, or (3) were highly correlated with other considered variables that better explained variation in total HEI-2010 scores. Appendix H provides additional details on the variable exclusion criteria and a technical description of the multivariate analysis methods used to produce the results presented in this section and in Section E.

The multivariate analyses were implemented using least squares regression and weights that accounted for the study's complex sample design. Findings are presented in Tables 5.2–5.5 as regression-adjusted mean total HEI-2010 scores (hereafter referred to as “HEI-2010 scores” for simplicity). Supplementary tables provided in Appendix G report full sets of regression coefficients and standard errors for each multivariate model. Because the probability of finding significant associations by chance increases with the number of associations tested, findings for the many characteristics examined in this section should be considered exploratory. Models that assessed relationships between nutritional quality and characteristics of NSLP lunches, school foodservice operations, and the school food environment included additional variables to control for differences between schools in terms of institutional and demographic characteristics that are not determined by the SFA but may be associated with the nutritional quality of school meals. Therefore, these analyses estimate how the nutritional quality of school meals is associated with a given characteristic in comparison to a school without that characteristic that is otherwise similar in terms of institutional and demographic characteristics. A separate model was used to independently assess the relationships between nutritional quality and these institutional and demographic characteristics.

1. Relationships between the Nutritional Quality of NSLP Lunches and Key Characteristics of the Lunches

This analysis examined the relationship between the nutritional quality of NSLP lunches and (1) compliance with selected NSLP nutrition standards, and (2) the types of food offered in daily lunch menus. The study team collaborated with FNS to identify a parsimonious set of variables to characterize compliance with the nutrition standards, focusing on standards that were more challenging for one or more school types to meet and had sufficient variation within the sample.

Compliance with NSLP Nutrition Standards

Findings indicate that compliance with selected NSLP nutrition standards was associated with significantly higher HEI-2010 scores. The largest difference was observed for the relaxed requirement for whole grains (that at least half of all grains were whole grain-rich). Overall, the mean HEI-2010 score for schools with weekly menus that met this requirement was 4.9 points higher than the mean score for schools that were otherwise similar but had weekly menus that did not meet the requirement (82.5 versus 77.6) (Table 5.2). The significant association between

nutritional quality of NSLP lunches and meeting the relaxed requirement for whole grains was observed for all three school types.

Meeting the Target 1 sodium limit was also associated with significantly higher HEI-2010 scores. Overall, the mean score for schools with average weekly menus that met this requirement was 3.1 points higher than the mean score for similar schools that had average weekly menus that did not meet this requirement (82.7 versus 79.6). The significant association between nutritional quality of NSLP lunches and meeting the Target 1 sodium limit was observed for all three school types.

For NSLP lunches overall, meeting the relaxed requirement for whole grains and the Target 1 sodium limit were associated with significantly higher HEI-2010 scores.

Findings related to meeting the minimum and maximum calorie levels were mixed. Overall, schools with average weekly menus that met the minimum calorie level had a significantly higher mean HEI-2010 score (1.5 points higher), whereas schools with average weekly menus that met the maximum calorie level had a significantly lower mean score (1.2 points lower). There was no significant association between nutritional quality and meeting daily quantity requirements for grains or meats/meat alternates. With the exception of middle schools, the same was true for meeting the weekly quantity requirement for vegetables.

Types of Food Offered

There were several significant associations between the nutritional quality of NSLP lunches and the characteristics of the foods offered, but findings varied by school type. Overall and among middle schools, offering dark green vegetables or legumes on more than half of daily lunch menus was associated with significantly higher mean HEI-2010 scores (1.0 points and 1.3 points, respectively) (Table 5.2). Overall and among elementary schools, offering breaded meat items on at least one daily menu was associated with significantly higher mean HEI-2010 scores (1.5 points and 2.0 points, respectively). With the exception of middle schools, offering pizza or pizza products on more than half of daily lunch menus was associated with significantly lower mean HEI-2010 scores (1.9 points lower, overall, and 2.9 and 2.1 points lower for elementary and high schools, respectively).

For high schools only, a large and positive association was observed between the mean HEI-2010 score and the median number of vegetable choices offered on daily menus. Daily menus in high schools that offered a median of 3 to 4 vegetable choices across the week were associated with a significantly higher mean HEI-2010 score (2.8 points higher) than those that offered fewer than 2 vegetable choices. The difference increased to 3.8 points for high schools that offered a median of 5 or more vegetable choices. For middle schools only, not offering French fries or similar potato products on any daily lunch menus was associated with a significantly higher mean HEI-2010 score (1.5 points higher).

Table 5.2. Relationships between the Nutritional Quality of NSLP Lunches and Key Characteristics of the Lunches: Regression-Adjusted Mean Total Healthy Eating Index-2010 Scores

		Elementary Schools	Middle Schools	High Schools	All Schools
Mean Total HEI-2010 Score for NSLP Lunches Prepared		82.0	81.2	81.8	81.8
	Yes/ No	Regression-Adjusted Mean Total HEI-2010 Scores			
		Elementary Schools	Middle Schools	High Schools	All Schools
Compliance of Daily and Weekly Lunch Menus with NSLP Nutrition Standards					
Met Daily Quantity Requirement for Grains	Y	82.2	81.3	82.5	82.0
	N	81.6	81.2	81.7	81.6
Met Daily Quantity Requirement for Meats/Meat Alternates	Y	82.0	81.1	80.5	81.7
	N	81.6	82.5	82.8	82.5
Met Daily Quantity Requirement for Vegetables	Y	82.1	81.4	82.0	81.9
	N	81.8	81.0	81.7	81.6
Met Weekly Quantity Requirement for Meats/Meat Alternates	Y	82.2	81.3	82.8	82.0
	N	81.6	81.2	81.1	81.7
Met Weekly Quantity Requirement for Vegetables	Y	81.9	81.7*	82.1	81.9
	N	82.3	78.8	81.2	81.4
Met Relaxed Requirement that at Least Half of Weekly Grains Are Whole Grain-Rich	Y	82.5*	81.9*	82.6*	82.5*
	N	78.3	77.0	77.1	77.6
Met Minimum Calorie Level	Y	82.2	81.8*	82.9	82.3*
	N	81.0	80.0	81.4	80.8
Met Maximum Calorie Level	Y	81.5	81.1	81.4	81.4*
	N	82.8	81.5	82.8	82.6
Met Target 1 Sodium Limit	Y	83.1*	81.7*	82.4*	82.7*
	N	79.1	79.7	80.7	79.6

	Yes/ No	Regression-Adjusted Mean Total HEI-2010 Scores			
		Elementary Schools	Middle Schools	High Schools	All Schools
Types of Foods Offered in Lunch Menus					
All Daily Menus Offered Raw Vegetables	Y	82.3	81.8	81.4	81.9
	N	81.7	80.6	82.3	81.8
Median Number of Vegetable Choices Offered per Day					
Less than 2 (<i>reference category</i>)		82.4	82.3	79.7	81.6
2		81.4	81.9	80.9	81.3
3 to 4		82.7	80.3	82.5*	82.2
5 or more		82.2	81.2	83.5*	82.8
More than Half of Daily Menus Offered Dark Green Vegetables or Legumes	Y	82.5	82.0*	82.0	82.4*
	N	81.7	80.7	81.7	81.4
More than Half of Daily Menus Offered Red and Orange Vegetables	Y	81.8	80.9	81.2	81.4
	N	82.2	81.5	82.3	82.2
At Least One Daily Menu Offered Side Salad Bar	Y	83.0	81.9	81.6	82.6
	N	81.9	81.1	81.9	81.7
No Daily Menus Offered French Fries or Similar Potato Products	Y	82.1	82.3*	82.1	82.1
	N	81.9	80.8	81.7	81.7
More than Half of Daily Menus Offered Pizza or Pizza Products	Y	79.3*	81.0	80.7*	80.4*
	N	82.2	81.5	82.8	82.3
At Least One Daily Menu Offered Breaded Meat (as Separate Choice or as Part of a Sandwich)	Y	82.4*	81.5	81.8	82.1*
	N	80.4	79.8	82.0	80.6
Number of Schools		451	384	372	1,207

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Estimates are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: Estimates are regression-adjusted means that control for institutional and demographic characteristics of each school and their SFA. Variables with rows labeled "Y" and "N" report adjusted mean total HEI-2010 scores for schools that do and do not meet the variable criteria, respectively. Otherwise, regression-adjusted means are reported for each category within a variable. See Appendix H for more details on characteristic descriptions and selection methods.

For HEI-2010, the maximum possible total score is 100. A higher total score indicates higher nutritional quality of NSLP lunches.

*Denotes the difference in total HEI-2010 score between schools with and without a dichotomous characteristic is statistically different from zero at the 0.05 level. For variables containing multiple categories, * denotes that the difference in total HEI-2010 score between schools in the corresponding category and schools in the reference category is statistically different from zero at the 0.05 level.

HEI = Healthy Eating Index; NSLP = National School Lunch Program; SFA = school food authority.

2. Relationships between the Nutritional Quality of NSLP Lunches and Key Characteristics of School Foodservice Operations

This analysis examined the relationship between the nutritional quality of NSLP lunches and characteristics of (1) food purchasing, (2) menu planning, (3) the school's meal programs, and (4) meal service.

There were few significant associations overall between the nutritional quality of NSLP lunches and characteristics of school foodservice operations, and findings varied by school type. Participation in a purchasing cooperative was associated with significantly higher mean HEI-2010 scores. Overall, the mean HEI-2010 score for schools in SFAs that participated in a purchasing cooperative was 1.6 points higher than the mean score for similar schools in SFAs that did not participate in a purchasing cooperative (82.6 versus 81.0) (Table 5.3). This significant association was also observed for elementary and middle schools (1.8 and 1.6 points higher, respectively), but not for high schools.

In addition, receipt of fully or partially prepared meals from production or central kitchens was associated with significantly higher HEI-2010 scores. Overall, the mean score for such schools was 1.5 points higher than the mean score for similar schools that did not receive meals from central or production kitchens. This significant association was also observed for elementary schools (2.1 points higher), but not for middle or high schools.

For NSLP lunches overall, participation in a purchasing cooperative and receipt of fully or partially prepared meals from production or central kitchens were associated with significantly higher HEI-2010 scores.

Several significant associations between the nutritional quality of NSLP lunches and school foodservice characteristics were observed for only one or two school types. Among elementary schools, the mean HEI-2010 score for schools in SFAs where the SFA director thought the updated nutrition standards were somewhat helpful in improving the nutritional quality of school meals was 2.0 points higher than the mean score for similar schools in SFAs where the SFA director thought the updated standards were not at all helpful (82.5 versus 80.5). Among middle schools, mean HEI-2010 scores were higher for schools that participated in a Farm to School program, participated in the SBP, and had policies and procedures to accommodate students with allergies or special dietary needs. Mean HEI-2010 scores for middle schools that had these characteristics were 1.4, 3.4, and 2.4 points higher, respectively, than mean scores for middle schools that did not have these characteristics but were otherwise similar.

Among both middle and high schools, there was a negative association between the nutritional quality of NSLP lunches and SFA directors' perceptions about challenges encountered in meeting the updated nutrition standards. Specifically, mean HEI-2010 scores for middle and high schools in SFAs where SFA directors perceived more substantial challenges in meeting the updated standards were as much as 1.8 and 1.5 points lower, respectively, than mean scores for similar middle and high schools in SFAs where the director perceived fewer challenges. Finally, among high schools, there was a negative association between the nutritional quality of NSLP lunches and use of a foodservice management company (FSMC). The mean HEI-2010 score for high schools in SFAs that used a FSMC was 2.2 points lower than the mean score for similar high schools in SFAs that did not use a FSMC.

Table 5.3. Relationships between the Nutritional Quality of NSLP Lunches and Key Characteristics of School Foodservice Operations: Regression-Adjusted Mean Total Healthy Eating Index-2010 Scores

		Elementary Schools	Middle Schools	High Schools	All Schools
Mean Total HEI-2010 Score for NSLP Lunches Prepared		82.0	81.2	81.8	81.8
		Regression-Adjusted Mean Total HEI-2010 Scores			
	Yes/ No	Elementary Schools	Middle Schools	High Schools	All Schools
Food Purchasing Characteristics					
SFA Uses Alliance for a Healthier Generation or Other Similar Tools for Selecting and Purchasing Healthy Foods	Y	82.6	81.5	82.3	82.2
	N	81.6	81.1	81.6	81.6
SFA Participates in a Food Purchasing Cooperative	Y	82.9*	82.0*	82.4	82.6*
	N	81.1	80.4	81.3	81.0
SFA is Engaged in a Pouring Rights Contract	Y	82.0	81.3	82.2	81.8
	N	82.0	81.2	81.7	81.9
Schools in SFA Offer Brand-Name or Chain Restaurant Foods	Y	82.5	81.6	80.8	81.8
	N	82.0	81.2	82.0	81.8
School Participates in Farm to School Program	Y	82.8	82.4*	82.1	82.4
	N	81.9	81.0	81.8	81.7
Menu Planning Characteristics					
School Uses Cycle Menus	Y	82.3	81.3	81.6	81.7
	N	81.0	81.0	82.6	82.3
SFA Conducts Nutrient Analysis of Menus	Y	82.0	81.2	82.2	81.9
	N	82.1	81.3	80.8	81.6
Number of Challenges in Meeting the Updated Nutrition Standards that SFA Rated as 3 or Higher on a Scale of 1 (Not a Challenge) to 5 (Significant Challenge)					
4 or less (reference category)		81.8	82.1	82.7	82.1
5 to 7		82.4	80.9	81.2*	81.8
8		81.7	80.3*	81.6	81.4
SFA Perception of Updated Meal Requirements' Helpfulness in Improving the Nutritional Quality of Meals					
Not at all helpful (reference category)		80.5	81.6	82.1	80.6
Somewhat helpful		82.5*	81.0	81.7	82.0
Very helpful		82.2	81.5	82.1	82.2
SFA was already improving the nutritional quality of meals prior to the new meal requirements		82.2	81.3	81.6	82.1

	Yes/ No	Regression-Adjusted Mean Total HEI-2010 Scores			
		Elementary Schools	Middle Schools	High Schools	All Schools
Characteristics of the School Meal Programs					
School Participates in School Breakfast Program	Y	82.0	81.5*	81.7	81.9
	N	81.4	78.1	83.2	80.8
School Participates in the Fresh Fruit and Vegetable Program	Y	82.4	n.a.	n.a.	82.4
	N	81.8	n.a.	n.a.	81.7
School Provides Afterschool Snacks or Suppers	Y	82.5	82.5	80.3	82.0
	N	81.8	80.9	82.1	81.8
Meal Service Characteristics					
School Receives Fully or Partially Prepared Meals from a Separate Production or Central Kitchen	Y	83.7*	80.8	82.3	83.1*
	N	81.6	81.3	81.8	81.6
SFA Uses a Foodservice Management Company	Y	82.9	81.8	79.9*	81.9
	N	81.8	81.1	82.1	81.8
School Uses Offer-Versus-Serve at Lunch	Y	81.8	81.5	†	81.3
	N	83.0	79.9		82.9
School Has Policies and Procedures for Accommodating Students with Food Allergies or Special Dietary Needs	Y	82.2	81.6*	81.9	82.0
	N	80.7	79.2	81.6	81.1
Number of HealthierUS School Challenge Smarter Lunchroom Techniques Used					
Zero (<i>reference category</i>)		81.4	81.4	81.2	81.4
1		80.9	79.7	82.3	81.0
2 to 3		82.9	81.9	81.8	82.6
4 to 7		82.6	81.9	81.4	82.0
Price Charged for Paid Lunches					
School Offered Free Lunch to All Students		82.1	81.3	81.2	81.9
\$2.25 or less (<i>reference category</i>)		82.5	81.7	82.7	82.2
\$2.26 to \$2.50		82.5	81.1	82.2	82.2
\$2.51 to \$2.75		82.1	81.4	81.5	81.5
More than \$2.75		79.2	81.8	80.9	81.0
Number of Schools		451	384	372	1,207

Source: School Nutrition and Meal Cost Study, Menu Survey, School Food Authority Director Survey, School Nutrition Manager Survey, and Cafeteria Observation Guide, school year 2014-2015. Estimates are regression-adjusted means that control for institutional and demographic characteristics of each school and their SFA. Variables with rows labeled “Y” and “N” report adjusted mean total HEI-2010 scores for schools that do and do not meet the variable criteria, respectively. Otherwise, regression-adjusted means are reported for each category within a variable. Estimates are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program. See Appendix H for more details on characteristic descriptions and selection methods.

Note: For HEI-2010, the maximum possible total score is 100. A higher total score indicates higher nutritional quality of NSLP lunches.

* Denotes the difference in total HEI-2010 score between schools with and without a dichotomous characteristic is statistically different from zero at the 0.05 level. For variables containing multiple categories, * denotes that the difference in total HEI-2010 score between schools in the corresponding category and schools in the reference category is statistically different from zero at the 0.05 level.

† Variable was excluded from the model due to low within-sample variation.

n.a. = Characteristic did not apply to any schools within the specific school type.

HEI = Healthy Eating Index; NSLP = National School Lunch Program; SFA = school food authority.

3. Relationships between the Nutritional Quality of NSLP Lunches and Key Characteristics of the School Food Environment

This analysis examined the relationship between the nutritional quality of NSLP lunches and characteristics the school food environment, including (1) wellness policies and practices, (2) availability of competitive foods, and (3) meal service practices.

There were few associations overall between the nutritional quality of NSLP lunches and the school food environment, and findings varied by school type. There was a positive association between HEI-2010 scores and *not* selling competitive foods during meal times. Overall, the mean HEI-2010 score for schools that did not sell competitive foods at meal times was 2.8 points higher than the mean score for similar schools that did sell competitive foods at meal times (84.2 versus 81.4) (Table 5.4). This association was considerably stronger among middle and high schools, where the mean HEI-2010 scores were 4.9 and 5.8 points higher, respectively, for schools that did not sell competitive foods at meal times than mean scores for similar schools that did sell competitive foods at meal times.

For NSLP lunches overall, not selling competitive foods during meal times was associated with a significantly higher HEI-2010 score. This positive association was considerably stronger among middle and high schools.

In addition, among high schools only, there was a negative association between the nutritional quality of NSLP lunches and the presence of a school-level wellness policy (in addition to the district policy). The mean HEI-2010 score for high schools that had local wellness policies was 2.0 points lower than the mean score for similar high schools that did not have a local wellness policy. This counter-intuitive finding may reflect NSLP lunches of lower nutritional quality in SFAs where high school administrators are concerned that the district wellness policy does not go far enough.

Table 5.4. Relationships between the Nutritional Quality of NSLP Lunches and Key Characteristics of the School Food Environment: Regression-Adjusted Mean Total Healthy Eating Index-2010 Scores

		Elementary Schools	Middle Schools	High Schools	All Schools
Mean Total HEI-2010 Score for NSLP Lunches Prepared		82.0	81.2	81.8	81.8
		Regression-Adjusted Mean Total HEI-2010 Scores			
	Yes/No	Elementary Schools	Middle Schools	High Schools	All Schools
Wellness Policies and Practices					
SFA Has Nutrition Standards for School Meals that Exceed Federal Standards	Y	82.1	80.7	81.2	81.7
	N	81.9	81.7	82.2	81.9
SFA Has Plan for Informing Public About Wellness Policy Content and Implementation	Y	82.3	81.8	81.9	82.1
	N	81.6	80.6	81.7	81.5
School Has School-Level Wellness Policy in Addition to District Wellness Policy	Y	82.2	80.8	80.3*	81.5
	N	82.0	81.4	82.3	81.9
SFA Wellness Policy Includes Nutrition Promotion	Y	81.9	81.2	82.0	81.8
	N	82.4	81.3	81.4	82.0
School Conducted a Nutrition Education Activity in the Classroom or Foodservice Area	Y	82.4	81.8	81.6	82.1
	N	81.6	80.7	82.0	81.6
School Operates a School Garden	Y	82.8	81.2	n.a.	82.0
	N	81.9	81.3	n.a.	81.8
Competitive Foods					
School Does Not Sell Competitive Foods during Mealtimes	Y	84.2*	85.5*	87.0*	84.2*
	N	81.5	80.6	81.2	81.4
School Sells Foods Other than Milk on an A la Carte Basis	Y	82.2	81.5	81.9	82.0
	N	81.7	80.3	81.2	81.5
School Sells Foods and Beverages in Vending Machine	Y	80.6	81.3	82.2	81.8
	N	82.2	81.2	81.0	81.8
SFA Has Standards for Competitive Foods that Exceed Smart Snacks in Schools Standards	Y	81.7	80.7	81.6	81.5
	N	82.1	81.5	82.0	82.0
Meal Service Practices					
Length of Lunch Period					
Less than 30 minutes (<i>reference category</i>)		82.4	81.1	81.4	81.8
30 to 44 minutes		81.6	81.7	82.4	81.7
45 minutes or more		81.9	80.4	81.8	82.0
School Has Multiple Lunch Periods	Y	81.7	81.3	82.4	81.8
	N	82.4	81.1	81.0	81.8

	Yes/ No	Regression-Adjusted Mean Total HEI-2010 Scores			
		Elementary Schools	Middle Schools	High Schools	All Schools
School Has Other Activities Scheduled during Lunch Period	Y	82.3	80.8	82.1	82.1
	N	81.9	81.5	81.6	81.7
School Has More than One Line or Station that Offers Reimbursable Lunches or Components of Reimbursable Lunches	Y	82.3	81.0	82.0	82.0
	N	81.9	81.7	81.6	81.7
Number of Schools		451	384	372	1,207

Source: School Nutrition and Meal Cost Study, Menu Survey, School Food Authority Director Survey, School Nutrition Manager Survey, Principal Survey, Vending Machine and Other Sources of Foods and Beverages Checklist, A la Carte Checklist, and Cafeteria Observation Guide, school year 2014-2015. Estimates are regression-adjusted means that control for institutional and demographic characteristics of each school and their SFA. Variables with rows labeled “Y” and “N” report adjusted mean total HEI-2010 scores for schools that do and do not meet the variable criteria, respectively. Otherwise, regression-adjusted means are reported for each category within a variable. Estimates are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program. See Appendix H for more details on characteristic descriptions and selection methods.

Note: For HEI-2010, the maximum possible total score is 100. A higher total score indicates higher nutritional quality of NSLP lunches.

* Denotes the difference in total HEI-2010 score between schools with and without a dichotomous characteristic is statistically different from zero at the 0.05 level. For variables containing multiple categories, * denotes that the difference in total HEI-2010 score between schools in the corresponding category and schools in the reference category is statistically different from zero at the 0.05 level.

n.a. = Characteristic did not apply to any schools within the specific school type.

HEI = Healthy Eating Index; NSLP = National School Lunch Program; SFA = school food authority.

4. Relationships between the Nutritional Quality of NSLP Lunches and Key Institutional and Demographic Characteristics

This analysis examined the relationship between the nutritional quality of NSLP lunches and institutional and demographic characteristics of schools and SFAs. The characteristics examined were included in the multivariate models described in previous sections to control for factors that are not controlled by the SFA.

There were few significant associations overall between the nutritional quality of NSLP lunches and the institutional and demographic characteristics of schools and SFAs and findings varied by school type. Overall, the mean HEI-2010 score for schools located in FNS’s Western region was 2.7 points higher than the mean score for similar schools located in the Mid-Atlantic region (the reference category) (84.0 versus 81.3) (Table 5.5). This significant and positive association was observed for all three school types. For high schools only, mean HEI-2010 scores were significantly lower for schools located in the Northeast, Midwest, and Mountain Plains regions, relative to similar schools located in the Mid-Atlantic region (4.2, 2.0, and 3.1 points lower, respectively).

Table 5.5. Relationships between the Nutritional Quality of NSLP Lunches and Institutional and Demographic Characteristics of Schools and SFAs: Regression-Adjusted Mean Total Healthy Eating Index-2010 Scores

	Elementary Schools	Middle Schools	High Schools	All Schools
Mean Total HEI-2010 Score for NSLP Lunches Prepared	82.0	81.2	81.8	81.8

	Regression-Adjusted Mean Total HEI-2010 Scores			
	Elementary Schools	Middle Schools	High Schools	All Schools
SFA Size				
Fewer than 2,500 students (<i>reference category</i>)	82.2	82.0	82.5	82.1
2,500 to 9,999 students	82.7	81.4	82.0	82.3
10,000 or more students	81.4	80.6	80.8	81.2
School Size				
Fewer than 500 students (<i>reference category</i>)	82.0	81.2	82.3	81.9
500 to 999 students	82.0	81.3	81.8	81.6
1,000 or more students	‡	81.1	81.2	82.3
FNS Region				
Mid-Atlantic (<i>reference category</i>)	81.1	80.5	82.9	81.3
Northeast	81.8	80.9	78.7*	81.0
Southeast	82.6	82.6	82.1	82.4
Midwest	80.8	79.1	80.9*	80.6
Southwest	81.5	81.7	83.2	81.9
Mountain Plains	82.3	79.3	79.8*	81.1
Western	83.7*	83.9*	85.3*	84.0*
Urbanicity				
Urban (<i>reference category</i>)	81.6	80.7	84.3	81.7
Suburban	82.2	81.0	81.8*	81.9
Rural	82.1	82.0	81.0*	81.8
Share of Minority Students in SFA				
Less than 20 percent (<i>reference category</i>)	81.1	81.9	82.2	81.5
20 to 39 percent	83.3*	79.9*	81.5	82.3
40 to 59 percent	82.4	81.9	82.1	82.3
60 to 79 percent	81.8	81.1	81.6	81.7
80 to 100 percent	82.1	80.9	80.9	81.7
Share of Students Approved for Free or Reduced-Price Meals				
Less than 40 percent (<i>reference category</i>)	80.9	80.7	82.1	81.1
40 percent or more	82.5*	81.6	81.4	82.2
Number of Schools	451	384	372	1,207

Source: School Nutrition and Meal Cost Study, Menu Survey, School Food Authority Director Survey, Common Core of Data (CCD) 2011-2012, U.S. Census Bureau's Small Area Income and Poverty Estimates school district file, and Food and Nutrition Service's SFA Verification Summary Report 2012-2013, school year

2014-2015. Estimates are regression-adjusted means that control for institutional and demographic characteristics of each school and their SFA. Variables with rows labeled “Y” and “N” report adjusted mean total HEI-2010 scores for schools that do and do not meet the variable criteria, respectively. Otherwise, regression-adjusted means are reported for each category within a variable. Estimates are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program. See Appendix H for more details on characteristic descriptions and selection methods.

Note: For HEI-2010, the maximum possible total score is 100. A higher total score indicates higher nutritional quality of NSLP lunches.

* Denotes the difference in total HEI-2010 score between schools with and without a dichotomous characteristic is statistically different from zero at the 0.05 level. For variables containing multiple categories, * denotes that the difference in total HEI-2010 score between schools in the corresponding category and schools in the reference category is statistically different from zero at the 0.05 level.

‡ Category was combined with the above category due to sparseness of observations.

HEI = Healthy Eating Index; NSLP = National School Lunch Program; SFA = school food authority.

In addition, mean HEI-2010 scores for high schools in suburban and rural areas were significantly lower than mean scores for high schools in urban areas (2.5 and 3.3 points lower, respectively). For both elementary and middle schools, there was a significant association between the nutritional quality of NSLP lunches and the share of minority students, but the relationships were not in a consistent direction. Among elementary schools, the mean HEI-2010 score for schools in SFAs where minorities represented 20 to 39 percent of the student population was 2.2 points higher than the mean score for schools in SFAs where minorities represented less than 20 percent of the student population. In contrast, among middle schools, the mean HEI-2010 score for schools in SFAs where minorities represented 20 to 39 percent of the student population was 2.0 points lower than the mean score for schools in SFAs where minorities represented less than 20 percent of the student population. Finally, among elementary schools, the mean HEI-2010 score for schools with 40 percent or more of students approved for free or reduced-price meals was 1.6 points higher than the mean score for similar schools with fewer students approved for free or reduced-price meals.

E. Factors Associated with the Nutritional Quality of SBP Breakfasts

This section describes results of multivariate analyses that examined the relationships between the nutritional quality of SBP breakfasts and key characteristics of (1) the breakfasts, (2) school foodservice operations, (3) the school food environment, and (4) other characteristics of schools and SFAs. The analytic approach was comparable to the approach described in the preceding section for NSLP lunches, including the use of the total HEI-2010 score to assess nutritional quality. Multivariate models included key characteristics used in the NSLP analyses that were relevant to SBP breakfasts, as well as other characteristics specific to SBP breakfasts. Findings from these analyses are presented in Tables 5.6–5.9 as regression-adjusted mean total HEI-2010 scores (hereafter referred to as “HEI-2010 scores” for simplicity). Supplementary tables are provided in Appendix G, and Appendix H provides a technical description of the multivariate analysis methods. As stated previously, findings for the many characteristics examined in these analyses should be considered exploratory because the probability of finding significant associations by chance increases with the number of associations tested.

1. Relationships between the Nutritional Quality of SBP Breakfast and Key Characteristics of the Breakfasts

This analysis examined the relationship between the nutritional quality of SBP breakfasts and (1) compliance with selected SBP nutrition standards, and (2) the types of food offered in

daily breakfast menus. The study team collaborated with FNS to identify a parsimonious set of variables to characterize compliance with the nutrition standards, focusing on standards that were more challenging for one or more school types to meet and had sufficient variation within the sample.

Compliance with SBP Nutrition Standards

As with the findings for NSLP lunches, the findings for SBP breakfasts indicate that compliance with selected SBP nutrition standards was associated with significantly higher HEI-2010 scores. Similar to the analogous findings for NSLP lunches, the largest difference was observed for the relaxed requirement for whole grains (that at least half of all grains were whole grain-rich). Overall, the mean HEI-2010 score for schools with weekly menus that met this requirement was 5.3 points higher than the mean score for similar schools with weekly menus that did not meet the requirement (71.6 versus 66.3) (Table 5.6). The significant association between nutritional quality and meeting the relaxed requirement for whole grains was observed for all three school types.

Meeting the Target 1 sodium limit was also associated with a significantly higher HEI-2010 score. Overall, schools with average weekly menus that met this requirement had a HEI-2010 score that was 1.8 points higher than the mean score for similar schools with average weekly menus that did not meet this requirement (71.0 versus 70.1). The significant association between nutritional quality and meeting the Target 1 sodium limit was also observed for high schools, but not for elementary or middle schools.

For SBP breakfasts overall, meeting the relaxed requirement for whole grains and the Target 1 sodium limit were associated with significantly higher HEI-2010 scores.

Overall, schools with average weekly menus that met the minimum calorie level had a significantly higher mean HEI-2010 score (1.4 points higher) than similar schools with average weekly menus that did not meet the minimum calorie level. This significant association was not observed for any of the three school types examined independently. There was no significant association between the nutritional quality of SBP breakfasts and meeting the maximum calorie level.

Among middle schools only, there was a significant association between the nutritional quality of SBP breakfasts and meeting the daily quantity requirement for grains. The mean HEI-2010 score for schools that met this requirement was 1.2 higher than the mean score for similar schools that did not meet the requirement.

Types of Food Offered

There were some significant associations between the nutritional quality of SBP breakfasts and characteristics of the foods offered, but the findings varied by school type. Overall and among middle schools, offering cold cereal on every daily breakfast menu was associated with significantly higher mean HEI-2010 scores (1.1 and 1.3 points higher, respectively). Overall and among both elementary and middle schools, offering pizza products on at least one daily breakfast menu was also associated with significantly higher mean HEI-2010 scores (1.4, 1.3, and 2.2 points higher, respectively).

Table 5.6. Relationships between the Nutritional Quality of SBP Breakfasts and Key Characteristics of the Breakfasts: Regression-Adjusted Mean Total Healthy Eating Index-2010 Scores

		Elementary Schools	Middle Schools	High Schools	All Schools
Mean Total HEI-2010 Score for SBP Breakfasts Prepared		71.4	71.0	71.0	71.3
		Regression-Adjusted Mean Total HEI-2010 Scores			
	Yes/ No	Elementary Schools	Middle Schools	High Schools	All Schools
Compliance of Daily and Weekly Breakfast Menus with SBP Nutrition Standards					
Met Daily Quantity Requirement for Grains	Y	71.2	71.4*	71.2	71.2
	N	72.1	70.2	70.7	71.5
Met Relaxed Requirement that at Least Half of Weekly Grains Are Whole Grain-Rich	Y	71.8*	71.2*	71.1*	71.6*
	N	66.1	66.3	67.5	66.3
Met Minimum Calorie Level	Y	†	71.1	71.3	71.4*
	N		69.4	69.7	70.0
Met Maximum Calorie Level	Y	71.3	70.8	71.1	71.2
	N	71.6	71.4	70.8	71.4
Met Target 1 Sodium Limit	Y	72.0	71.6	72.1*	71.9*
	N	70.4	70.1	68.8	70.1
Types of Foods Offered in Breakfast Menus					
All Daily Menus Offered Cold Cereal	Y	71.8	71.5*	71.2	71.7*
	N	70.9	70.2	70.7	70.6
More than Half of Daily Menus Offered Breakfast Pastries or Muffins	Y	71.2	71.0	71.2	71.1
	N	71.5	71.1	70.9	71.4
At Least One Daily Menu Offered Pizza or Pizza Products	Y	72.2*	72.2*	71.5	72.1*
	N	70.9	70.0	70.6	70.7
At Least One Daily Menu Offered Meat or Meat Alternates (as Separate Choice or as Part of an Entrée)	Y	71.4	71.0	71.0	71.2
	N	72.7	72.6	71.6	72.3
No Daily Menus Offered French Fries or Similar Potato Products	Y	71.3	71.0	70.4	71.1
	N	71.5	71.1	71.4	71.4
Number of Schools		415	352	344	1,111

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Estimates are regression-adjusted means that control for institutional and demographic characteristics of each school and their SFA. Variables with rows labeled "Y" and "N" report adjusted mean total HEI-2010 scores for schools that do and do not meet the variable criteria, respectively. Otherwise, regression-adjusted means are reported for each category within a variable. Estimates are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program. See Appendix H for more details on characteristic descriptions and selection methods.

Note: For HEI-2010, the maximum possible total score is 100. A higher total score indicates higher nutritional quality of NSLP lunches.

* Denotes the difference in total HEI-2010 score between schools with and without a dichotomous characteristic is statistically different from zero at the 0.05 level. For variables containing multiple categories, * denotes that the

difference in total HEI-2010 score between schools in the corresponding category and schools in the reference category is statistically different from zero at the 0.05 level.

† Variable was excluded from the model due to low within-sample variation.

HEI = Healthy Eating Index; NSLP = National School Lunch Program; SFA = school food authority.

2. Relationships between the Nutritional Quality of SBP Breakfasts and Key Characteristics of School Foodservice Operations

This analysis examined the relationship between the nutritional quality of SBP breakfasts and characteristics of (1) food purchasing, (2) menu planning, (3) the school's meal programs, and (4) meal service.

As was the case for NSLP lunches, there were few significant associations between the nutritional quality of SBP breakfasts and characteristics of school foodservice operations, and findings varied by school type. Participation in a Farm to School program was associated with significantly higher mean HEI-2010 scores. Overall, the mean HEI-2010 score for schools that participated in a Farm to School program was 2.9 points higher than the mean score for similar schools that did not participate in a Farm to School program (72.9 versus 70.0) (Table 5.7). This positive and significant association was also observed for elementary and high schools (2.8 and 1.5 points higher, respectively), but not for middle schools.

In addition, in some cases, charging higher prices for paid SBP breakfasts was associated with significantly lower mean HEI-2010 scores. Overall, schools that charged between \$1.50 and \$1.99 for paid breakfasts had a significantly lower mean HEI-2010 score than the reference group of schools that charged less than \$1.25 (but did charge for paid breakfasts) (2.2 points lower). This negative and significant association between nutritional quality and price charged for a paid SBP breakfast was observed for elementary and middle schools independently, but not for high schools. In addition, among elementary schools, schools that charged between \$1.25 and 1.49 for a paid breakfast had a significantly lower mean score than schools that charged less than \$1.25 (1.8 points lower). Interestingly, charging \$2.00 or more for paid breakfasts was not associated with significantly lower mean HEI-2010 scores compared to the reference group.

Some significant associations between the nutritional quality of SBP lunches and school foodservice characteristics were observed for only one school type. Among high schools, the mean HEI-2010 score for schools in SFAs where the SFA director thought the updated nutrition standards were very helpful in improving the nutritional quality of school meals was 3.1 points higher than the mean score for similar schools in SFAs where the SFA director thought the updated standards were not at all helpful (73.2 versus 70.1). Among elementary schools, receipt of fully or partially prepared meals from production or central kitchens was associated with significantly higher HEI-2010 scores. Overall, the mean score for such schools was 2.1 points higher than the mean score for similar schools that did not receive meals from central or production kitchens. Finally, among middle schools, the use of offer-versus-serve (OVS; which allows students to decline some components of a reimbursable meal) at breakfast was associated with significantly lower mean HEI-2010 scores (3.6 points lower), relative to middle schools that did not use OVS at breakfast.

Table 5.7. Relationships between the Nutritional Quality of SBP Breakfasts and Key Characteristics of School Foodservice Operations: Regression-Adjusted Mean Total Healthy Eating Index-2010 Scores

		Elementary Schools	Middle Schools	High Schools	All Schools
Mean Total HEI-2010 Score for SBP Breakfasts Prepared		71.4	71.0	71.0	71.3

		Regression-Adjusted Mean Total HEI-2010 Scores			
	Yes/ No	Elementary Schools	Middle Schools	High Schools	All Schools
Food Purchasing Characteristics					
SFA Uses Alliance for a Healthier Generation or Other Similar Tools for Selecting and Purchasing Healthy Foods	Y	71.7	71.5	70.7	71.4
	N	71.2	70.7	71.2	71.2
SFA Participates in a Food Purchasing Cooperative	Y	71.6	71.1	70.8	71.4
	N	71.2	71.0	71.2	71.1
School Participates in Farm to School Program	Y	73.9*	70.6	72.2*	72.9*
	N	71.0	71.1	70.7	70.9
Menu Planning Characteristics					
School Uses Cycle Menus	Y	71.3	71.0	71.1	71.0
	N	72.0	71.1	70.9	72.1
SFA Conducts Nutrient Analysis of Menus	Y	71.6	70.9	71.1	71.3
	N	70.9	71.8	70.8	71.1
Number of Challenges in Meeting the New Nutrition Standards that SFA Rated as 3 or Higher on a Scale of 1 (Not a Challenge) to 5 (Significant Challenge)					
4 or less (<i>reference category</i>)		72.3	71.3	70.6	71.7
5 to 7		70.9	71.1	71.5	71.1
8		71.0	70.5	70.8	70.9
SFA Perception of New Meal Requirements' Helpfulness in Improving the Nutritional Quality of Meals					
Not at all helpful (<i>reference category</i>)		70.0	70.0	70.1	69.9
Somewhat helpful		72.1	71.0	70.8	71.7
Very helpful		70.9	71.4	73.2*	71.4
SFA was already improving the nutritional quality of meals prior to the new meal requirements		71.8	71.6	69.6	71.4
Characteristics of the School Meal Programs					
School Offers Grab-and-Go Option at Breakfast	Y	70.6	70.2	70.5	70.5
	N	71.5	71.2	71.1	71.4
Students Have Option of Eating Breakfast in the Classroom	Y	71.0	71.2	72.1	71.2
	N	71.6	71.0	70.8	71.3
School Participates in the Fresh Fruit and Vegetable Program	Y	71.5	n.a.	n.a.	n.a.
	N	71.4	n.a.	n.a.	n.a.

	Yes/ No	Regression-Adjusted Mean Total HEI-2010 Scores			
		Elementary Schools	Middle Schools	High Schools	All Schools
Meal Service Characteristics					
School Receives Fully or Partially Prepared Meals from a Separate Production or Central Kitchen	Y	73.1*	69.5	72.0	72.4
	N	71.0	71.2	70.9	71.1
SFA Uses a Foodservice Management Company	Y	72.5	70.6	70.4	71.9
	N	71.2	71.1	71.1	71.2
School Uses Offer-Versus-Serve at Breakfast	Y	71.6	70.6*	71.1	71.4
	N	70.5	74.2	70.5	70.5
School Has Policies and Procedures for Accommodating Students with Food Allergies or Special Dietary Needs	Y	71.3	71.0	70.6	71.1
	N	72.0	71.4	72.9	72.0
Price Charged for Paid Breakfast					
School Offered Free Breakfast to All Students		71.5	70.7	69.8	71.1
Less than \$1.25 (<i>reference category</i>)		72.7	72.9	70.2	72.3
\$1.25 to \$1.49		70.9*	71.3	72.0	71.2
\$1.50 to \$1.99		69.9*	69.6*	70.8	70.1*
\$2.00 or more		72.1	72.3	69.1	71.4
Number of Schools		415	352	344	1,111

Source: School Nutrition and Meal Cost Study, Menu Survey, School Food Authority Director Survey, School Nutrition Manager Survey, and Cafeteria Observation Guide, school year 2014-2015. Estimates are regression-adjusted means that control for institutional and demographic characteristics of each school and their SFA. Variables with rows labeled “Y” and “N” report adjusted mean total HEI-2010 scores for schools that do and do not meet the variable criteria, respectively. Otherwise, regression-adjusted means are reported for each category within a variable. Estimates are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program. See Appendix H for more details on characteristic descriptions and selection methods.

Note: For HEI-2010, the maximum possible total score is 100. A higher total score indicates higher nutritional quality of SBP Breakfasts.

* Denotes the difference in total HEI-2010 score between schools with and without a dichotomous characteristic is statistically different from zero at the 0.05 level. For variables containing multiple categories, * denotes that the difference in total HEI-2010 score between schools in the corresponding category and schools in the reference category is statistically different from zero at the 0.05 level.

n.a. = Characteristic did not apply to any schools within the specific school type.

HEI = Healthy Eating Index; SBP = School Breakfast Program; SFA = school food authority.

3. Relationships between the Nutritional Quality of SBP Breakfasts and Key Characteristics of the School Food Environment

This analysis examined the relationship between the nutritional quality of SBP breakfasts and characteristics the school food environment, including (1) wellness policies and practices, (2) availability of competitive foods, and (3) meal service practices.

Overall, there were no significant relationships between the nutritional quality of SBP breakfasts and the school food environment characteristics examined in this analysis (Table 5.8). For middle schools only, schools at which the first bus arrives before or at the start of the breakfast period had a significantly lower mean HEI-2010 score (1.8 points lower) than similar schools with later bus arrival times.

Table 5.8. Relationships between the Nutritional Quality of SBP Breakfasts and Key Characteristics of the School Food Environment: Regression-Adjusted Mean Total Healthy Eating Index-2010 Scores

		Elementary Schools	Middle Schools	High Schools	All Schools
Mean Total HEI-2010 Score for SBP Breakfasts Prepared		71.4	71.0	71.0	71.3
		Regression-Adjusted Mean Total HEI-2010 Scores			
	Yes/ No	Elementary Schools	Middle Schools	High Schools	All Schools
Wellness Policies and Practices					
SFA Has Standards for School Meals that Exceed Federal Standards	Y	71.3	70.5	70.9	71.0
	N	71.5	71.4	71.1	71.4
SFA Has Plan for Informing Public About Wellness Policy Content and Implementation	Y	71.5	71.1	71.0	71.4
	N	71.3	71.0	71.0	71.1
School Has School-Level Wellness Policy in Addition to District Wellness Policy	Y	71.5	71.6	71.1	71.3
	N	71.4	70.9	71.0	71.3
SFA Wellness Policy Includes Nutrition Promotion	Y	71.9	71.2	70.7	71.5
	N	69.9	70.7	71.8	70.7
School Conducted a Nutrition Education Activity in the Classroom or Foodservice Area	Y	71.8	71.4	71.4	71.7
	N	70.9	70.7	70.7	70.9
Competitive Foods					
School Sells Foods Other than Milk on an A la Carte Basis	Y	71.8	71.0	71.1	71.4
	N	70.8	71.3	70.5	70.8
School Sells Foods and Beverages in Vending Machine	Y	71.1	70.5	70.9	71.0
	N	71.5	71.5	71.2	71.4
Meal Service Practices					
Length of Breakfast Period					
Less than 25 minutes (<i>reference category</i>)		70.9	71.0	70.3	70.8
25 to 39 minutes		72.3	71.0	70.7	71.8
40 minutes or more		71.2	71.3	72.2	71.4
First Bus Arrives Before or at Same Time as Breakfast	Y	72.1	70.3*	71.3	71.6
	N	70.7	72.1	70.7	70.9
Last Bus Arrives Before or at Same Time as Breakfast	Y	70.7	71.7	71.5	71.0
	N	71.6	70.9	70.9	71.3
Number of Schools		415	352	344	1,111

Source: School Nutrition and Meal Cost Study, Menu Survey, School Food Authority Director Survey, School Nutrition Manager Survey, Principal Survey, Vending Machine and Other Sources of Foods and Beverages Checklist, A la Carte Checklist, and Cafeteria Observation Guide, school year 2014-2015. Estimates are regression-adjusted means that control for institutional and demographic characteristics of each school and their SFA. Variables with rows labeled "Y" and "N" report adjusted mean total HEI-2010 scores for schools that do and do not meet the variable criteria, respectively. Otherwise, regression-adjusted means are

reported for each category within a variable. Estimates are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program. See Appendix H for more details on characteristic descriptions and selection methods.

Note: For HEI-2010, the maximum possible total score is 100. A higher total score indicates higher nutritional quality of SBP breakfasts.

* Denotes the difference in total HEI-2010 score between schools with and without a dichotomous characteristic is statistically different from zero at the 0.05 level. For variables containing multiple categories, * denotes that the difference in total HEI-2010 score between schools in the corresponding category and schools in the reference category is statistically different from zero at the 0.05 level.

HEI = Healthy Eating Index; SBP = School Breakfast Program; SFA = school food authority.

4. Relationships between the Nutritional Quality of SBP Breakfasts and Key Institutional and Demographic Characteristics

This analysis examined the relationship between the nutritional quality of SBP breakfasts and institutional and demographic characteristics of schools and SFAs. The characteristics examined were included in the multivariate models described in the previous sections to control for factors that are not controlled by the SFA.

In general, there were few significant associations between the nutritional quality of SBP breakfasts and institutional and demographic characteristics of schools and SFAs. The only significant association that was observed for all schools combined was that schools located in the Western region of the country had a significantly higher mean HEI-2010 score than schools in the Mid-Atlantic reference group (1.8 points higher) (Table 5.9). This significant association, which is analogous to the finding reported for NSLP lunches, was also observed among middle schools (4.5 points higher), but not for elementary or middle schools.

Several significant associations between the nutritional quality of SBP breakfasts and the institutional and demographic characteristics of schools and SFAs were observed for only one school types. Among high schools, mean HEI-2010 scores were significantly higher in schools in medium and large SFAs (2,500 to 9,999 students and 10,000 or more students, respectively) than in schools in smaller SFAs (fewer than 2,500 students). Mean HEI-2010 scores for high schools in medium and large SFAs were 2.6 and 3.0 points higher, respectively, than the mean HEI-2010 score for high schools in smaller SFAs (72.0 and 72.4, respectively, versus 69.4). Among elementary schools, schools in the Southeast region had a significantly lower mean HEI-2010 score than the reference group of schools in the Mid-Atlantic region (2.4 points lower). Lastly among middle schools, schools in the Midwest region had a significantly higher mean HEI-2010 score than schools in the reference group (2.9 points lower).

Table 5.9. Relationships between the Nutritional Quality of SBP Breakfasts and Institutional and Demographic Characteristics of Schools and SFAs: Regression-Adjusted Mean Total Healthy Eating Index-2010 Scores

	Elementary Schools	Middle Schools	High Schools	All Schools
Mean Total HEI-2010 Score for SBP Breakfast Prepared	71.4	71.0	71.0	71.3
	Regression-Adjusted Mean Total HEI-2010 Scores			
	Elementary Schools	Middle Schools	High Schools	All Schools
SFA Size				
Fewer than 2,500 students (<i>reference category</i>)	71.3	70.5	69.4	70.7
2,500 to 9,999 students	71.4	71.2	72.0*	71.5
10,000 or more students	71.6	71.4	72.4*	71.5
School Size				
Fewer than 500 students (<i>reference category</i>)	71.0	70.5	71.7	71.0
500 to 999 students	71.9	71.4	70.9	71.6
1,000 or more students	‡	71.4	70.2	71.5
FNS Region				
Mid-Atlantic (<i>reference category</i>)	72.3	69.4	70.6	71.4
Northeast	70.7	70.2	70.1	70.3
Southeast	69.9*	68.6	69.3	69.6
Midwest	71.6	72.3*	71.5	71.6
Southwest	70.0	71.2	71.2	70.5
Mountain Plains	72.0	71.6	71.4	71.8
Western	73.2	73.9*	72.6	73.2*
Urbanicity				
Urban (<i>reference category</i>)	72.1	71.2	72.8	72.1
Suburban	70.8	70.8	70.6	70.7
Rural	71.8	71.2	70.6	71.4
District's percentage of minority students				
Less than 20 percent (<i>reference category</i>)	71.2	71.3	71.2	71.3
20 to 39 percent	72.1	70.1	71.3	71.6
40 to 59 percent	70.9	72.0	70.7	71.0
60 to 79 percent	70.4	70.0	71.0	70.4
80 to 100 percent	72.7	71.6	70.3	72.0
Share of Students Approved for Free or Reduced-Price Meals				
Less than 40 percent (<i>reference category</i>)	71.9	70.3	70.7	71.3
40 percent or more	71.4	71.2	71.1	71.3
Number of Schools	415	352	344	1,111

Source: School Nutrition and Meal Cost Study, Menu Survey, School Food Authority Director Survey, Common Core of Data (CCD) 2011-2012, 2011 U.S. Census Bureau's Small Area Income and Poverty Estimates school district file, and Food and Nutrition Service's SFA Verification Summary Report 2012-2013, school

year 2014-2015. Estimates are regression-adjusted means that control for institutional and demographic characteristics of each school and their SFA. Estimates are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program. See Appendix H for more details on characteristic descriptions and selection methods.

Note: For HEI-2010, the maximum possible total score is 100. A higher total score indicates higher nutritional quality of SBP breakfasts.

* Denotes the difference in total HEI-2010 score between schools with and without a dichotomous characteristic is statistically different from zero at the 0.05 level. For variables containing multiple categories, * denotes that the difference in total HEI-2010 score between schools in the corresponding category and schools in the reference category is statistically different from zero at the 0.05 level.

‡ Category was combined with the above category due to sparseness of observations.

HEI = Healthy Eating Index; SBP = School Breakfast Program; SFA = school food authority.

6. POTENTIAL CONTRIBUTION OF SCHOOL MEALS TO RECOMMENDED USDA FOOD PATTERNS

USDA Food Patterns describe the types and amounts of foods included in a healthy diet pattern; that is, a pattern consistent with the *Dietary Guidelines for Americans*. This chapter describes the potential contribution of NSLP lunches and SBP breakfasts prepared in SY 2014–2015 to the USDA Food Patterns included in the 2010 *Dietary Guidelines for Americans*—the version of the guidelines that was in effect at the time data for this study were collected.

All findings presented in this chapter are based on analysis of data from the Menu Survey, which was completed by SNMs over the course of one school week in the spring of SY 2014–2015. Data are presented separately by school type: elementary, middle, and high schools. Figures in the chapter present key results; supplementary tables appear in Appendix I, as noted throughout the chapter.

A. Overview of USDA Food Pattern Recommendations

The *Dietary Guidelines for Americans* promote overall health through dietary recommendations. A healthy diet limits sodium, saturated fat, cholesterol, added sugar, and refined grains, and includes a variety of fruits and vegetables, whole grains, fat-free or low-fat dairy, and lean proteins (USDA and DHHS 2010). The USDA Food Patterns were developed to help individuals carry out the recommendations set forth in the *Dietary Guidelines for Americans*; they identify daily average amounts of foods to be consumed, in nutrient dense forms, from five major food groups and their subgroups.

USDA Food Pattern recommendations for individuals depend on calorie requirements, which are determined by age, sex, and activity level. The system includes 12 different Food Patterns, ranging from 1,000 to 3,200 calories, which are designed to meet the needs of individuals 2 years of age and older, as well as those at risk for developing chronic disease. This analysis used the 1,800, 2,000, and 2,400 calorie-level Food Patterns to assess the potential contribution of school meals prepared in elementary, middle, and high schools, respectively. These are the calorie levels that IOM used in developing recommendations for the updated nutrition standards that went into effect beginning in SY 2012–2013 (IOM 2010).

USDA Food Pattern recommendations for the three calorie levels are presented in Table 6.1. Note that the USDA Food Pattern recommendations are different than the meal pattern requirements specified in the updated nutrition standards for NSLP lunches and SBP breakfasts. Fruits, vegetables, grains, dairy, and protein foods comprise the five major food groups specified in the USDA Food Patterns. All foods in the Food Pattern food groups are assumed to be in their most nutrient-dense form, meaning their lowest-fat form, with no added sugar (Bowman 2014). The fruit and vegetable groups include all fresh, canned, dried, frozen, and juiced fruits and vegetables. The grains group includes all enriched or whole grains and products made from grains, such as breads, cereals, and rice. The dairy group includes all fluid milk products including lactose-reduced, lactose-free, and calcium-fortified soy milk; yogurts; dairy desserts; and cheeses. Protein foods include meat, poultry, seafood, eggs, nuts and seeds, and processed soy products. Legumes can be part of either the protein foods group or the vegetables group.

Table 6.1. USDA Food Patterns Used to Assess Potential Contribution of School Meals to Recommended Dietary Patterns

	Daily Recommended Amounts ^a		
	Elementary Schools	Middle Schools	High Schools
Calorie Level	1,800	2,000	2,400
Fruits (cups)	1.5	2.0	2.0
Vegetables (cups)	2.5	2.5	3.0
Dark green (cups/week) ^a	1.5	1.5	2.0
Red and orange (cups/week) ^a	5.5	5.5	6.0
Legumes (cups/week) ^a	1.5	1.5	2.0
Starchy (cups/week) ^a	5.0	5.0	6.0
Other (cups/week) ^a	4.0	4.0	5.0
Grains (oz)	6.0	6.0	8.0
Whole grains (oz)	3.0	3.0	4.0
Dairy (cups)	3.0	3.0	3.0
Protein Foods (oz)	5.0	5.5	6.5
Oils (tsp)	5.0	6.0	7.0
Empty Calories	161	258	330

Source: U.S. Department of Agriculture, Center for Nutrition Policy and Promotion. USDA Food Patterns, September 2011.

Notes: USDA Food Patterns are based on the *2010 Dietary Guidelines for Americans*.

The USDA Food Pattern food groups are largely consistent with the meal components used in planning NSLP lunches and SBP breakfasts, with two exceptions: (1) fluid milk is considered a separate meal component, and (2) other dairy foods such as yogurt and cheese are counted as meat alternates. Fluid milk, yogurt, and cheese are counted under the dairy group in the USDA Food Patterns.

The fruits group includes both whole fruit (any fresh, canned, dried, or frozen fruit) and 100% fruit juice.

^aRecommendations for vegetable subgroups are weekly amounts.

cups = cup equivalents; oz = ounce equivalents; tsp = teaspoons.

Vegetables are broken out into the following five subgroups in the USDA Food Patterns:

- The dark green vegetables subgroup includes vegetables such as broccoli, romaine lettuce, and other leafy greens.
- The red and orange vegetables subgroup includes items such as carrots, tomatoes, red peppers, and sweet potatoes.
- The legumes subgroup includes mature beans and peas such as black beans, garbanzo beans (chickpeas), kidney beans, pinto beans, white beans, split peas, black-eyed peas, and lentils.
- The starchy vegetables subgroup includes foods such as white potatoes, corn, and green peas.
- The other vegetables subgroup includes a variety of vegetables, such as iceberg lettuce, avocado, onions, cucumbers, and green beans.

Additionally, the Food Patterns specify a target for whole grains, an allowance for oils, and a suggested maximum limit for empty calories—defined as calories from solid fats and added

sugars. All recommended amounts are daily quantities, except for the vegetable subgroups, which are recommended weekly amounts (USDA, CNPP 2011).

B. Overview of Data Sources and Methods

To obtain data on the food group content of NSLP lunches and SBP breakfasts, the study team linked food items reported in daily menus to the Food Patterns Equivalents Database and Food Patterns Equivalents Ingredients Database (FPED and FPID; versions 2011–2012). These databases are similar to a nutrient database but provide data on the USDA Food Pattern food group content: cup equivalents of fruits, vegetables, and dairy; ounce equivalents of grains and protein foods; grams of oils and solid fats; and teaspoon equivalents of added sugars (Bowman et al 2014).⁶⁵

In the FPED/FPID, single-ingredient foods that are in their lowest-fat, lowest-sugar form, such as fat-free milk or a fresh peach, are assigned to a single major food group. Foods that have fat or added sugar, such as whole milk or peaches canned in syrup, have FPED entries for both the relevant food group and for solid fats and/or added sugars. Food mixtures that have ingredients from more than one food group are disaggregated, and individual ingredients are assigned to appropriate food groups. For example, in a cheese pizza, the cheese contributes to the dairy group, the crust contributes to the grain group, and tomato sauce contributes to both the vegetable group and the red and orange vegetables subgroup. In the FPED, legumes can be counted as vegetables or protein foods, but not both simultaneously. For this analysis, legumes were counted in the appropriate group based on how they were credited on the Menu Survey by the respondent (that is, legumes credited as vegetables were counted as vegetables in the analysis, and legumes credited as meats/meat alternates were counted as protein foods in the analysis).

The meal components used in planning NSLP lunches and SBP breakfasts are largely consistent with the USDA Food Pattern food groups, with two exceptions. In the NSLP and SBP, milk is considered a separate meal component, and other dairy foods such as yogurt and cheese are counted as meat alternates. In the USDA Food Patterns, milk and other dairy foods are included in the dairy group. Meal pattern requirements for NSLP lunches and SBP breakfasts are shown in Tables 1.3 and 1.4, respectively.

The study team estimated the average USDA Food Pattern food group content of NSLP lunches and SBP breakfasts prepared and served. The findings presented in this chapter focus on estimates for meals prepared. These estimates take into account the amounts of food prepared (number of servings) for reimbursable meals and give greater weight to menu items that were prepared in larger quantities. Appendix D provides additional information on the methods used to estimate the USDA Food Pattern food group content of NSLP lunches and SBP breakfasts.

⁶⁵ A cup equivalent is the amount of food equivalent to one cup of cut-up fruit or vegetable or one cup of milk, and an ounce equivalent of food is considered to be equivalent to a one-ounce slice of bread or one ounce of cooked lean meat, poultry, or fish (Bowman et al. 2014).

C. Average USDA Food Pattern Food Group Content of NSLP Lunches Prepared Relative to Recommendations

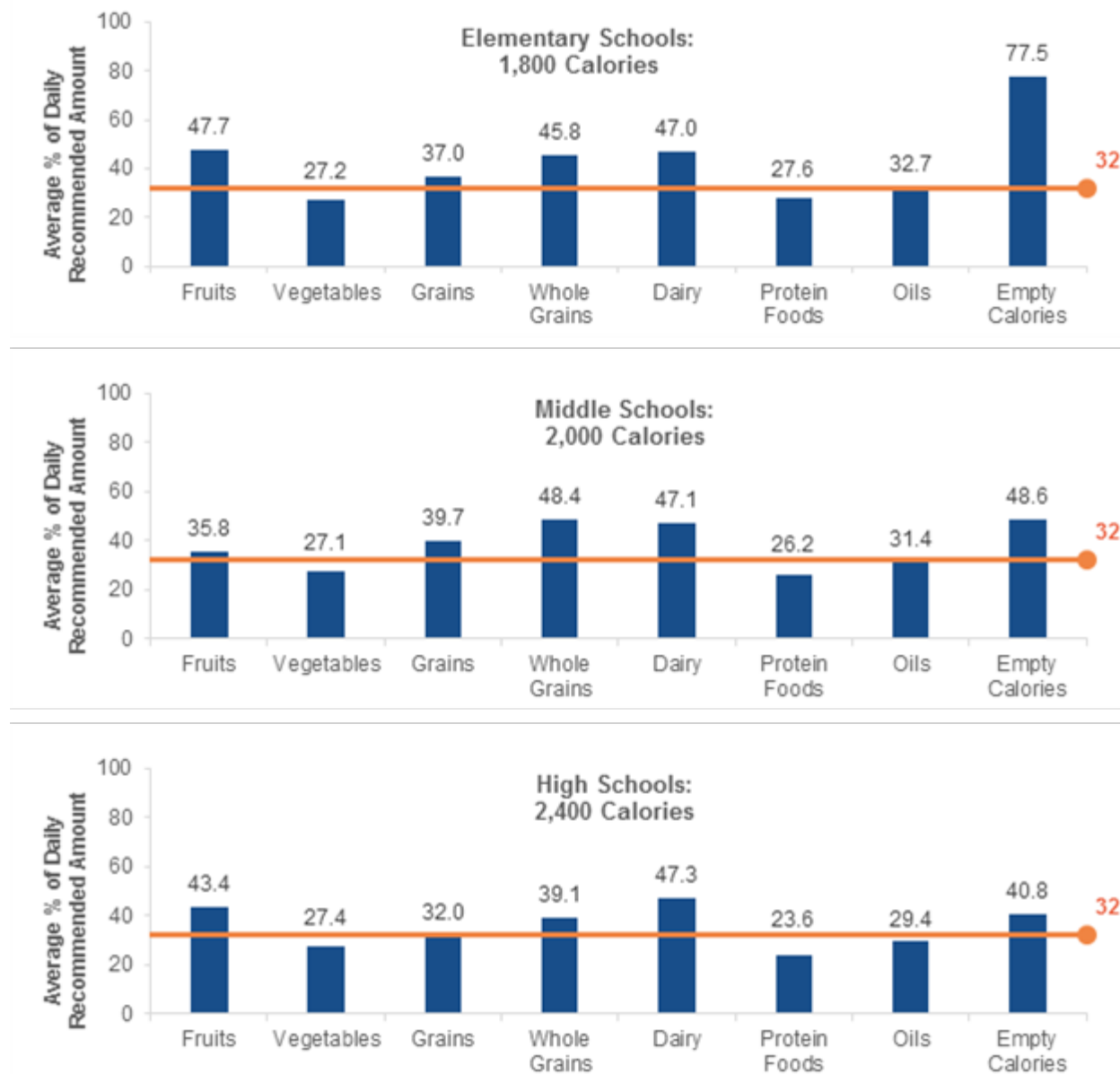
Findings show that average NSLP lunches prepared provided substantial proportions of recommended food groups. Figure 6.1 shows how the average amounts of each USDA Food Pattern group in NSLP lunches prepared compare to the Food Pattern recommendations.⁶⁶ To provide perspective on these findings, Figure 6.1 includes a benchmark line at 32 percent. This reflects the fact that the nutrition standards assume that NSLP lunches planned to meet the meal pattern requirements will provide approximately 32 percent of students' daily nutrient needs (IOM 2010).

- Average NSLP lunches prepared provided 48 percent of the recommended daily amounts of fruits in elementary schools, 36 percent in middle schools, and 43 percent in high schools.
- On average, NSLP lunches prepared provided 32 percent or more of the recommended amounts of grains for all school types (37 percent in elementary schools, 40 percent in middle schools, and 32 percent in high schools).
- Average NSLP lunches prepared provided 39 to 48 percent of recommended daily amounts of whole grains. The whole grain-rich requirement in the nutrition standards for school meals stipulates that all grains offered must be at least 50 percent whole grains, consistent with the USDA Food Patterns recommendation that at least half of all grains are whole grains. Although previous data show that schools are not offering *only* whole grain-rich foods (Table 2.3 and Figure 3.4), the average NSLP lunch is providing substantial amounts of whole grains, relative to daily USDA Food Pattern recommendations.
- On average NSLP lunches prepared provided 27 percent of the recommended amounts of vegetables. (Findings for vegetable subgroups can be found in the next section.)
- Average NSLP lunches prepared contributed 47 percent of recommended amounts of dairy for all school types. In the USDA Food Patterns, the dairy group includes cheese and yogurt, as well as fluid milk. In school meals, milk is counted as its own meal component and must be provided in all lunches, and cheese and yogurt are counted as meat alternates.
- Across all school types, average lunches prepared provided roughly one-quarter of the recommended daily amounts of protein foods (28 percent for elementary schools, 26 percent for middle schools, and 24 percent for high schools).

Average NSLP lunches prepared made substantial contributions to the daily amounts of fruits, grains, whole grains, and dairy recommended in the USDA Food Patterns.

⁶⁶ Additional tabulations, including data on the average amounts of USDA Food Pattern food groups in NSLP lunches prepared and served, are provided in Tables I.1 to I.3.

Figure 6.1. Percentage Contribution of NSLP Lunches Prepared to Daily Amounts of Food Groups Recommended in Reference USDA Food Patterns



Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014–2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: The reference USDA Food Patterns are based on the calorie levels used by the Institute of Medicine (IOM) in developing recommendations for the updated nutrition standards for school meals. The 32 percent benchmark is used for illustrative purposes only and is based on the level used by the IOM to develop recommendations for target contributions of NSLP lunches to the reference food patterns (IOM 2010). The USDA Food Pattern food groups are largely consistent with the meal components used in planning NSLP lunches, with two exceptions. In school meals: (1) fluid milk is considered a separate meal component, and (2) other dairy foods such as yogurt and cheese are counted as meat alternates. Fluid milk, yogurt, and cheese are counted under the dairy group in the USDA Food Patterns.

The fruits group includes both whole fruit (any fresh, canned, dried, or frozen fruit) and 100% fruit juice.

NSLP = National School Lunch Program.

- NSLP lunches prepared provided large amounts of empty calories relative to the maximum daily limits specified in the USDA Food Patterns, particularly in elementary schools.⁶⁷ Average NSLP lunches prepared in elementary schools provided 78 percent of the maximum daily limit of empty calories. Average NSLP lunches in middle and high schools provided 49 and 41 percent of the maximum limit on empty calories, respectively. The difference between elementary and secondary schools is driven by the fact that younger students have lower overall calorie requirements and thus have less room in their diets for empty calories. The maximum limit on empty calories is 161 for elementary school students versus 258 and 330 for middle and high schools students, respectively (see Table 6.1).

Average NSLP lunches prepared provided large amounts of empty calories relative to the maximum daily limits specified in the USDA Food Patterns, particularly in elementary schools.

It is likely that menu planners used foods such as yogurt and cheese to meet the meats/meat alternates requirement for NSLP lunches, despite that these foods are classified in the dairy group for the USDA Food Patterns. This factor could contribute to the results in Figure 6.1 that show a higher average contribution of NSLP lunches to dairy recommendations and lower average contributions of NSLP lunches to protein foods recommendations than might be expected by menu planners. Additionally, the FPED protein equivalents are based on ounce equivalents of lean meat. However, many protein choices are not lean choices. For example, breaded and/or fried poultry products were offered in 21 percent of daily lunch menus (see Table 2.2). Ounce for ounce, these items provide fewer meat equivalents than their plain, lean counterparts (offered in 5 percent of daily lunch menus) and increase the equivalents allocated to the oil group and/or the grains group. For example, 100 g of baked or broiled chicken breast without the skin provides 3.53 ounce equivalents of protein. A comparable portion of chicken nuggets or breaded chicken patty provides only 2.14 lean meat ounce equivalents (Condon et al. 2009).

Vegetable Subgroups

The USDA Food Patterns specify weekly (for a 7-day week) recommended amounts of five vegetable subgroups. A school week is typically a 5-day week. To assess the potential contribution of NSLP lunches to these weekly recommendations, the analysis was limited to schools that provided menu information for five days (a full school week). To provide additional context, a benchmark of 23 percent, rather than 32 percent, was used for the weekly vegetable subgroups. The benchmark was developed with the assumption that if consumption was distributed evenly across the week, a five-day period would cover 71 percent of the recommendation ($5 \text{ days} \div 7 \text{ days} = 71 \text{ percent}$). The assumption that lunches are expected to provide 32 percent of recommended amounts of food groups translates into a benchmark of 23 percent ($71 \text{ percent} * 0.32$). Thus, the 23 percent benchmark represents the percentage of

⁶⁷ Empty calories include calories from solid fats and added sugars. Solid fats may be present in foods such as pizza, hamburgers/cheeseburgers, bakery products (such as cookies, cakes, and brownies), and higher fat condiments (such as butter, margarine, and cheese sauce). Added sugars may be present in foods such as flavored milks, bakery products (such as cookies, cakes, and brownies) and condiments (such as jelly or syrup).

recommended amounts of vegetable subgroups that average NSLP lunches would contribute if these meals provided an equal share of weekly requirements.

Figure 6.2 summarizes data for vegetable subgroups in NSLP lunches prepared. Key findings include the following:

- Average NSLP lunches prepared made the largest contributions to recommended weekly amounts of dark green vegetables, providing 38 percent of recommended amounts in elementary, 37 percent in middle schools, and 31 percent of the recommended amount in high schools.
- On average, NSLP lunches prepared provided one-fifth (20 to 21 percent) of recommended amounts of red and orange vegetables.
- Average NSLP lunches prepared provided 13 to 18 percent of recommended weekly amounts of legumes, starchy vegetables, and other vegetables.

D. Average USDA Food Pattern Food Group Content of SBP Breakfasts Prepared Relative to Recommendations

Figure 6.3 shows how the average amounts of each Food Pattern group in SBP breakfasts prepared compare to USDA Food Pattern recommendations.⁶⁸ To provide perspective on these findings, Figure 6.3 includes a benchmark line at 21.5 percent. This reflects the fact that the nutrition standards assume that SBP breakfasts planned to meet the meal pattern requirements will provide approximately 21.5 percent of students' daily nutrient needs (IOM 2010).

- Average SBP breakfasts prepared made considerable contributions to the recommended daily amounts of fruits. Average SBP breakfasts in elementary schools made the largest contribution to the fruit recommendation, providing 63 percent of the recommended amount. Average SBP breakfasts prepared provided 48 and 51 percent of the recommended amounts of fruits in middle and high schools, respectively.
- On average, SBP breakfasts prepared provided roughly one-quarter to one-third of recommended daily amounts of grains. SBP breakfasts made slightly larger contributions to whole grain recommendations, providing 30 to 38 percent of recommended daily amounts.
- SBP breakfasts, on average, provided about 40 percent of recommended amounts of dairy. As with the findings for lunch, this finding is likely driven by the fact that fluid milk, which contributes to the dairy group in the USDA Food Patterns, must be provided in all breakfasts. In addition, yogurt (which is also counted under the dairy group in the USDA Food Patterns) was offered in about 25 percent of daily breakfast menus (Table 2.7).

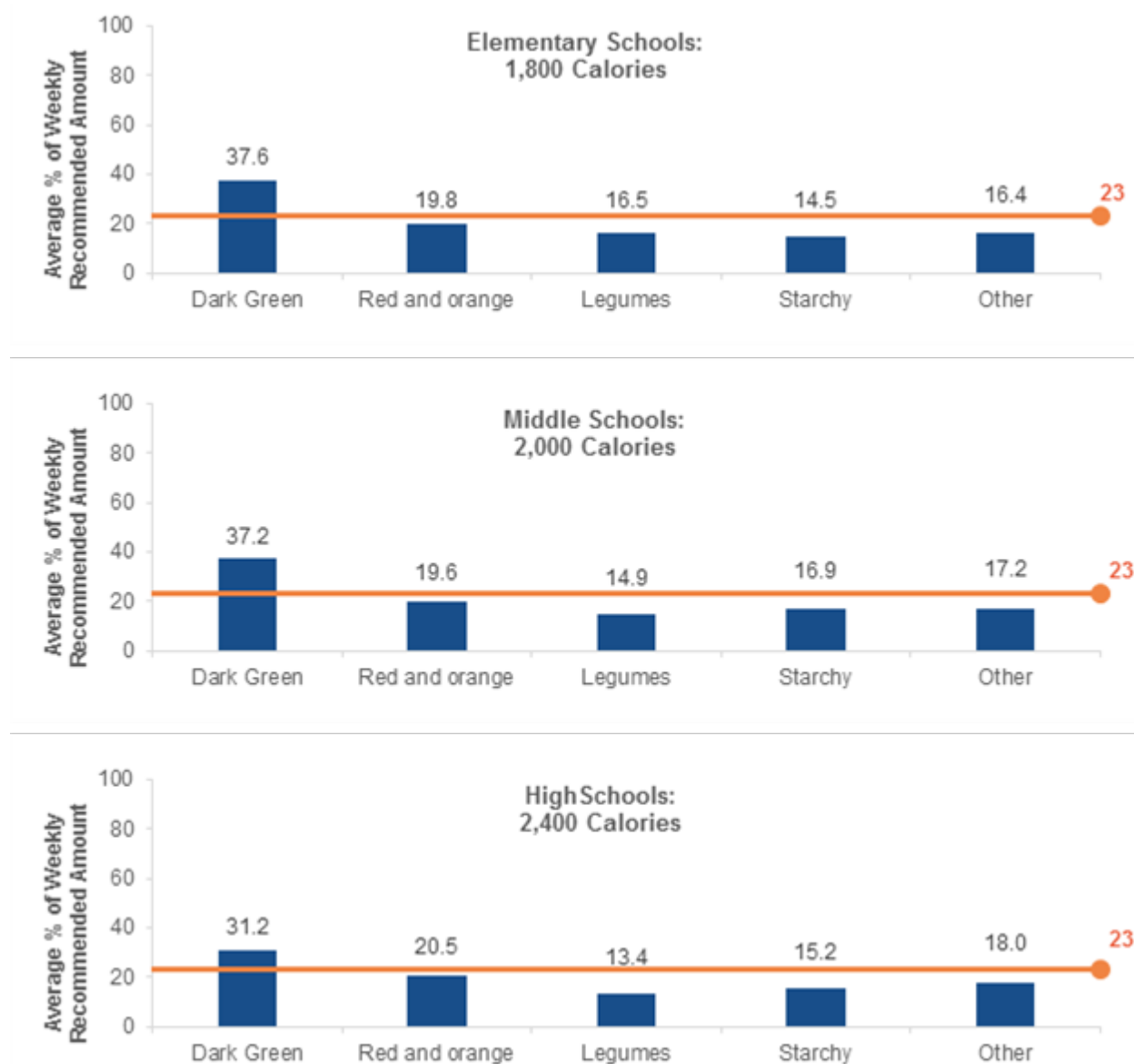
Average SBP breakfasts prepared made substantial contributions to the daily amounts of fruits, grains, whole grains, and dairy recommended in the USDA Food Patterns.

⁶⁸ Additional tabulations, including data on the average amounts of USDA Food Pattern food groups in SBP breakfasts prepared and served, are provided in Tables I.4 to I.6.

- Overall, average SBP breakfasts prepared provided limited amounts of protein foods (6 to 8 percent) and oils (11 to 14 percent). The small contribution of breakfasts to the protein foods recommendation is consistent with the facts that (1) the nutrition standards for SBP breakfasts do not include a quantity requirement for meats/meat alternates, and (2) some meats/meat alternates, such as cheese and yogurt, are counted under the dairy group in the USDA Food Patterns.
- Average SBP breakfasts for all school types provided large amounts of empty calories relative to the maximum daily limits specified in the USDA Food Patterns.⁶⁹ Average SBP breakfasts prepared in elementary schools provided 73 percent of the limit on empty calories. The contribution of SBP breakfasts to this limit was smaller among middle and high schools—52 and 41 percent, respectively.
- For all school types, roughly 70 percent of the empty calories provided in average SBP breakfasts prepared were from added sugars and 30 percent were from solid fats (Table I.4).

⁶⁹ Empty calories include calories from solid fats and added sugars. Solid fats may be present in foods such as bakery products (such as sweet rolls, donuts, and pastries), sausage, pizza, and higher fat condiments (such as butter, margarine, and cream cheese). Added sugars may be present in foods such as flavored milks, sweetened cold cereals, bakery products (such as sweet rolls, donuts, and pastries), and condiments (such as jelly or syrup).

Figure 6.2. Percentage Contribution of NSLP Lunches Prepared to Weekly Amounts of Vegetable Subgroups Recommended in Reference USDA Food Patterns

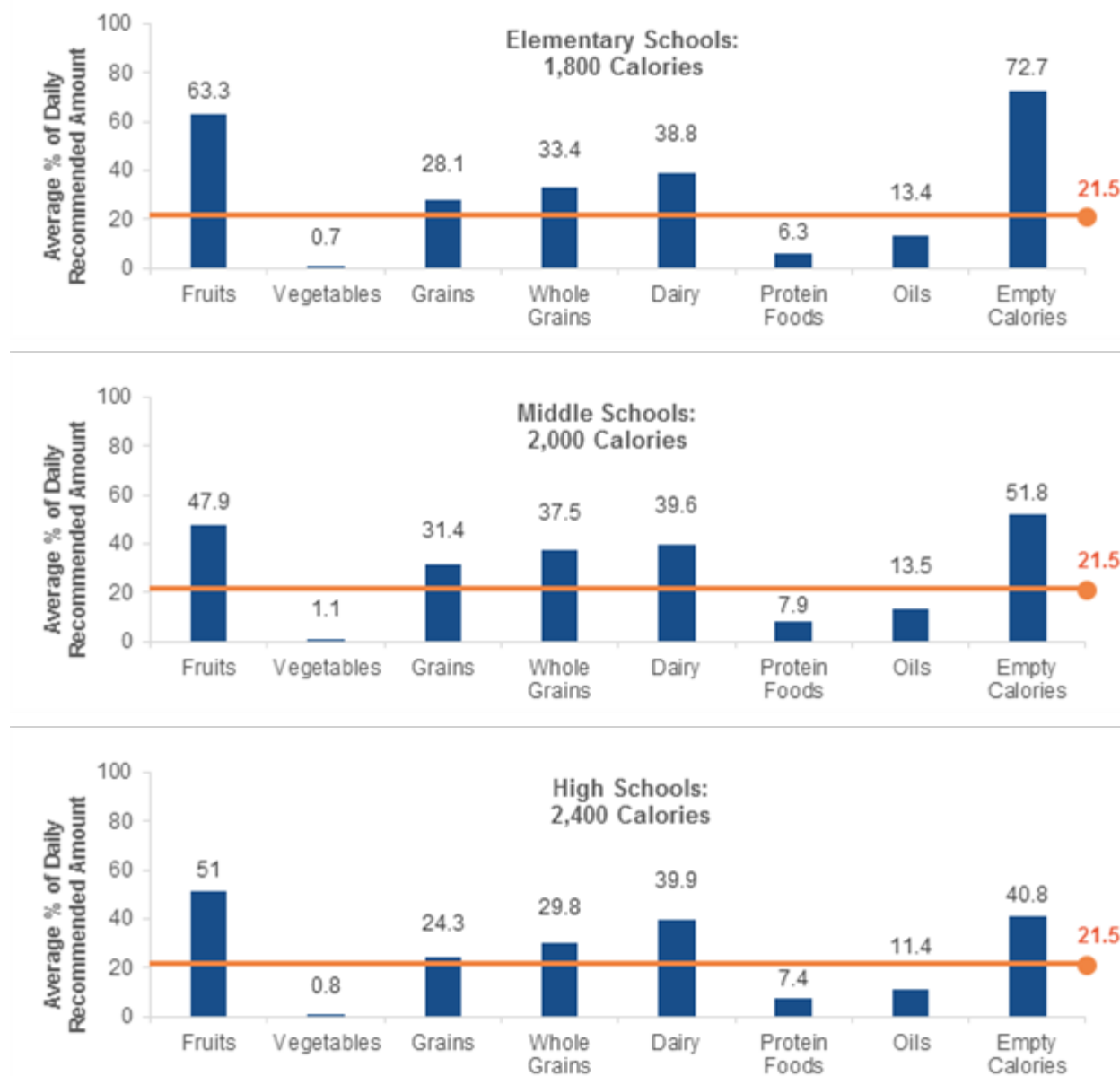


Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014–2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Note: The reference USDA Food Patterns are based on the calorie levels used by the Institute of Medicine in developing recommendations for the updated nutrition standards for school meals (IOM 2010). Figure includes only schools that provided five days (a full school week) of menu data. The 23 percent benchmark is used for illustrative purposes only and is also based on the assumptions that (1) 71 percent of the weekly recommendations should be met in a five-day school week ($5 \text{ days} \div 7 \text{ days} = 71 \text{ percent}$) and (2) lunches are expected to provide 32 percent of recommended amounts of food groups ($0.71 * 0.32 = 0.23$).

NSLP = National School Lunch Program.

Figure 6.3. Percentage Contribution of SBP Breakfasts Prepared to Daily Amounts of Food Groups Recommended in Reference USDA Food Patterns



Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014–2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: The reference USDA Food Patterns are based on the calorie levels used by the Institute of Medicine (IOM) in developing recommendations for the updated nutrition standards for school meals. The 21.5 percent benchmark is used for illustrative purposes only and is based on the level used by the IOM in developing recommendations for target contributions of SBP breakfasts to the reference Food Patterns (IOM 2010).

The USDA Food Pattern food groups are largely consistent with the meal components used in planning SBP breakfasts, with two exceptions. In school meals: (1) fluid milk is considered a separate meal component, and (2) other dairy foods such as yogurt and cheese are counted as meat alternates. Fluid milk, yogurt, and cheese are counted under the dairy group in the USDA Food Patterns.

The fruits group includes both whole fruit (any fresh, canned, dried, or frozen fruit) and 100% fruit juice.

SBP = School Breakfast Program.

7. SOURCES OF CALORIES AND NUTRIENTS IN SCHOOL MEALS

This chapter presents information about the relative contributions of foods and food groups to the calories and selected nutrients available in NSLP lunches and SBP breakfasts. Discussion of the findings in this chapter is grouped by the dietary specifications defined in the updated standards—calories, saturated fat, and sodium—followed by other nutrient standards that were important benchmarks reported in the fourth School Nutrition Dietary Assessment (SNDA-IV) and previous SNDA studies—total fat, dietary fiber, and cholesterol. These findings provide insights about the menu items that drive average calorie and nutrient content. The analysis is based on the average calorie and nutrient content of NSLP lunches and SBP breakfasts prepared. These estimates take into account the amounts of food prepared (number of servings) for reimbursable meals and give greater weight to menu items that were prepared in larger quantities. Appendix D provides additional information on the methods used to estimate the average calorie and nutrient content of NSLP lunches and SBP breakfasts.

The relative contribution of a food or food group as a source of a particular nutrient or dietary component is determined by both the composition of the food and the frequency with which it is available (Subar et al. 1998). For this reason, foods more commonly prepared in school meals, such as milk and particular types of entrées, make more substantial contributions to some nutrients or dietary components than might be anticipated based on nutrient content alone.

The findings presented separately for NSLP lunches and SBP breakfasts in this chapter provide the percentage contribution of a particular food or food group to the nutrient content of the average meal prepared for calories, saturated fat, sodium, total fat, dietary fiber, and cholesterol. For each nutrient, the contributions of each of eight major food groups was ranked, along with each of the top 10 contributors among the minor food groups. Tables present data separately for elementary and secondary schools (middle and high schools combined), as well as for all schools combined. The statistical significance of differences between elementary and secondary schools was tested using two-tailed t-tests. All differences between school types that are discussed in the text are statistically significant, unless otherwise noted. Most of the observed differences were small in magnitude and are not always discussed in the text.

A. Sources of Calories and Nutrients in NSLP Lunches Prepared

To identify the food sources of calories and nutrients in NSLP lunches prepared, the study team used the same food grouping system described in Chapter 2, which classified menu items into major and minor food groups (see Table B.1 for details on the major and minor food groups). To simplify the presentation of findings for this analysis, the study team combined some minor food groups to create an abbreviated set of groups.

For each of the nutrients and dietary components assessed in this analysis, the study team estimated the percentage contribution of the major food groups and each of the minor food groups by (1) summing the total amount of the nutrient/dietary component provided by a given food group across the school week (using weighting assumptions for meals prepared) and (2) dividing this sum by the total amount of the nutrient/dietary component provided in meals prepared.

Findings are presented in Table 7.1. For calories and each nutrient/dietary component, the table shows the relative contributions of the major food groups and identifies the 10 minor food groups that made the largest contributions to NSLP lunches prepared. Key findings are discussed in the sections that follow.

1. Sources of Calories, Saturated Fat, and Sodium

Calories. The leading source of calories in NSLP lunches prepared was combination entrées, which contributed 38 percent of total calories. Entrées such as sandwiches with breaded meat, poultry, or fish; Mexican-style entrées; breaded/fried chicken nuggets (a meat/meat alternate); pizza without and with meat; and sandwiches with plain meat or poultry made the largest contributions. Sandwiches with breaded meat, poultry, or fish and pizza with meat contributed a significantly larger share of calories in secondary schools than elementary schools. Milk, primarily flavored fat-free and unflavored low-fat milk, was the second largest contributor of calories in NSLP lunches prepared in both elementary schools (21 percent) and secondary schools (19 percent). Fruits and vegetables contributed 11 percent and 9 percent of calories in NSLP lunches, respectively, and separate grains/breads contributed 7 percent. Five percent of the calories in NSLP lunches came from accompaniments available with the reimbursable meal, including condiments, toppings, and salad dressings (such as ketchup, mayonnaise, sour cream, and ranch dip), and 2 percent came from desserts/other items (which included mostly grain-based desserts).

Saturated fat. Seventy-two percent of the saturated fat in NSLP lunches prepared was contributed by combination entrées and meats/meat alternates (60 percent and 12 percent, respectively). Mexican-style entrées, pizza without and with meat, and sandwiches with plain meat, poultry, or fish (may include cheese) were the leading contributors of saturated fat overall; pizza with meat comprised the largest source of saturated fat in NSLP lunches prepared in secondary schools (8 percent), whereas Mexican-style entrées comprised the largest source of saturated fat in NSLP lunches prepared in elementary schools (9 percent). Also of note is that separate meats/meat alternates contributed significantly more of the saturated fat in NSLP lunches prepared in elementary schools than lunches prepared in secondary schools (14 percent versus 10 percent). Milk (flavored fat-free and unflavored low-fat milk) accounted for 11 percent of the saturated fat in NSLP lunches, and accompaniments (condiments, toppings, and salad dressings) accounted for 6 percent.

Milk accounted for 11 percent of the saturated fat in NSLP lunches prepared.

Sodium. Nearly three-quarters of the sodium in NSLP lunches prepared came from combination entrées (47 percent), accompaniments (15 percent), and vegetables (12 percent). Overall, the top contributor of sodium was condiments and toppings, followed by sandwiches with plain meat, poultry, or fish; flavored fat-free milk; sandwiches with breaded meat, poultry, or fish; and salad dressings. Combination entrées (48 percent versus 45 percent) and accompaniments (16 percent versus 13 percent), contributed significantly more of the sodium in NSLP lunches prepared in secondary schools than lunches prepared in elementary schools, whereas meats/meat alternates, mostly breaded/fried chicken nuggets and similar products (10 percent versus 7 percent) and milk (9 percent versus 8 percent; mostly flavored fat-free) contributed significantly more of the sodium in NSLP lunches prepared in elementary schools than lunches prepared in secondary schools.

Table 7.1. Food Sources of Calories and Key Nutrients in NSLP Lunches Prepared

Major Food Groups		Percentage Contribution to Amount of Nutrient in NSLP Lunches Prepared		
		Elementary Schools	Secondary Schools	All Schools
Calories	Combination Entrées	36.3	39.8*	37.9
	Milk	20.7	19.2*	20.0
	Fruits	11.1	10.8	11.0
	Vegetables	8.5	9.0	8.7
	Meats/Meat Alternates	9.1	6.7*	8.0
	Grains/Breads	7.8	7.0	7.4
	Accompaniments ^a	4.5	5.6*	5.0
	Desserts/Other	<3	<3	1.9
Saturated Fat	Combination Entrées	58.0	61.2*	59.5
	Meats/Meat Alternates	14.3	9.8*	12.2
	Milk	11.6	10.5*	11.1
	Accompaniments ^a	5.1	6.9*	5.9
	Vegetables	4.2	5.2*	4.7
	Grains/Breads	4.4	4.0	4.2
	Desserts/Other	<3	<3	1.9
	Fruits	<3	<3	<3
Sodium	Combination Entrées	45.1	48.2*	46.6
	Accompaniments ^a	13.3	15.8*	14.5
	Vegetables	12.7	11.8	12.3
	Meats/Meat Alternates	10.3	7.4*	8.9
	Milk	9.4	8.4*	8.9
	Grains/Breads	7.8	7.1	7.5
	Desserts/Other	<3	<3	<3
	Fruits	<3	<3	<3
Total Fat	Combination Entrées	51.7	53.7	52.7
	Meats/Meat Alternates	16.4	11.6*	14.1
	Accompaniments ^a	8.8	11.8*	10.2
	Vegetables	7.2	9.0*	8.1
	Grains/Breads	6.7	5.8	6.3
	Milk	5.8	5.1*	5.4
	Desserts/Other	<3	2.1	2.2
	Fruits	<3	<3*	<3
Dietary Fiber	Combination Entrées	32.6	37.0*	34.6
	Fruits	21.6	20.6	21.1
	Vegetables	21.7	19.2*	20.5
	Grains/Breads	9.4	9.4	9.4
	Milk	8.9	8.5*	8.7
	Meats/Meat Alternates	3.5	2.9*	3.3
	Accompaniments ^a	<3	<3*	1.5
	Desserts/Other	<3	<3	<3
Cholesterol	Combination Entrées	57.3	65.7*	61.2
	Meats/Meat Alternates	25.9	18.3*	22.4
	Milk	12.0	11.0*	11.5
	Accompaniments ^a	<3	2.5*	2.0
	Grains/Breads	<3	<3*	1.6
	Vegetables	<3	<3	<3
	Desserts/Other	<3	<3	<3
	Fruits	<3	<3	<3

Top 10 Minor Food Groups		Percentage Contribution to Amount of Nutrient in NSLP Lunches Prepared		
		Elementary Schools	Secondary Schools	All Schools
Calories	Fat-free milk, flavored	15.4	14.5	15.0
	Sandwich with breaded meat, poultry, or fish	3.2^	5.8*	4.4
	Mexican-style entrees ^b	4.6	4.0	4.3
	Breaded/fried chicken nuggets ^c	4.3	3.9	4.1
	Pizza without meat	4.1	3.6	3.9
	Pizza with meat	<3	4.5*	3.5
	Sandwich with plain meat or poultry	3.4	3.4	3.4
	Breads, rolls, bagels, and other plain bread	3.2^	3.2	3.2
	Low-fat milk, unflavored	<3	2.8	2.9
	Condiments and toppings	<3	3.1*	2.8
Saturated Fat	Mexican-style entrees ^b	9.2	7.7*	8.5
	Pizza without meat	7.2	6.2	6.8
	Pizza with meat	4.7	8.1*	6.3
	Sandwich with plain meat or poultry	4.8	4.8	4.8
	Fat-free milk, flavored	4.9	4.6	4.8
	Low-fat milk, unflavored	4.9	4.6	4.7
	Breaded/fried chicken nuggets ^c	4.7	4.2	4.4
	Cheeseburger ^d	3.7	4.7*	4.2
	Sandwich with breaded meat, poultry, or fish	<3	4.7*	3.6
	Mixtures with grain, meat and/or vegetables ^e	3.8	3.1	3.5
Sodium	Condiments and toppings	8.1	9.9*	9.0
	Sandwich with plain meat or poultry	6.5	6.0	6.2
	Fat-free milk, flavored	6.3	5.7*	6.0
	Sandwich with breaded meat, poultry, or fish	3.7	6.6*	5.1
	Salad dressings	4.7	4.7	4.7
	Breaded/fried chicken nuggets ^c	4.4	3.8	4.1
	Mexican-style entrees ^b	4.4	3.8	4.1
	Pizza with meat	3.0	5.1*	4.0
	Pizza without meat	4.0	3.4	3.7
	Breads, rolls, bagels, and other plain bread	3.6	3.5	3.5
Total Fat	Breaded/fried chicken nuggets ^c	7.5	6.6	7.1
	Mexican-style entrees ^b	7.5	6.3	7.0
	Salad dressings	5.2	5.4	5.3
	Pizza without meat	5.5	4.6	5.1
	Sandwich with breaded meat, poultry, or fish	3.8	6.6*	5.1
	Pizza with meat	3.6	6.2*	4.8
	Condiments and toppings	3.0^	4.9*	3.9
	Sandwich with plain meat or poultry	3.9	3.8	3.8
	Hot dogs and corn dogs	4.6	2.3*	3.6
	Cheeseburger ^d	<3	3.5*	3.1

Top 10 Minor Food Groups		Percentage Contribution to Amount of Nutrient in NSLP Lunches Prepared		
		Elementary Schools	Secondary Schools	All Schools
Dietary Fiber	Fat-free milk, flavored ^f	8.2	7.9	8.1
	Apple	6.0	7.2*	6.5
	Breads, rolls, bagels, and other plain bread	5.6	6.0	5.8
	Sandwich with breaded meat, poultry, or fish	3.1^	5.9*	4.4
	Mexican-style entrees ^b	4.1	3.4	3.8
	Pizza without meat	3.3^	3.0	3.2
	Pizza with meat	<3	4.1*	3.1
	Sandwich with plain meat or poultry	3.0^	3.1	3.1
	Orange	3.4	2.6*	3.0
	Black, baked, and other beans ^g	3.6	2.4*	3.0
Cholesterol	Mexican-style entrees ^b	9.5	9.1	9.3
	Breaded/fried chicken nuggets ^c	8.4	7.5	8.0
	Sandwich with breaded meat, poultry, or fish	5.6	9.7*	7.5
	Sandwich with plain meat, poultry, or fish	7.3	7.8	7.5
	Fat-free milk, flavored	6.2	5.7	6.0
	Entrée salads	3.7	5.1	4.4
	Low-fat milk, unflavored	4.3	4.0	4.2
	Hot dogs and corn dogs	4.8	2.3*	3.8
	Cheeseburger ^d	3.3^	4.3*	3.8
	Pizza with meat	<3	4.6*	3.5

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

^aIncludes condiments, toppings, and salad dressings.

^bIncludes burritos, tacos, nachos, quesadillas, fajitas, and enchiladas.

^cIncludes breaded/fried chicken patties and similar products.

^dIncludes similar beef/pork sandwiches with cheese.

^eIncludes spaghetti with sauce, macaroni and cheese, chicken/meat mixtures with noodles or rice, and lasagna, ravioli, and stuffed shells.

^fSome of the ingredients in chocolate milk include dietary fiber. USDA's Food and Nutrient Database for Dietary Studies (version 2011-2012), which was used to analyze the Menu Survey data, indicates that one cup (8 fluid ounces) of fat-free chocolate milk contains 1.2 grams of dietary fiber. A comparable portion of unflavored fat-free milk contains 0 grams of dietary fiber.

^gIncludes other beans such as white beans, chickpeas, and hummus.

*Difference between elementary and secondary schools is significantly different from zero at the 0.05 level.

NSLP = National School Lunch Program.

^ Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 0 and 3 percent are displayed as <3.

2. Sources of Total Fat, Dietary Fiber, and Cholesterol

Total fat. Combination entrées contributed more than half of the total fat in NSLP lunches prepared (53 percent), followed by meats/meat alternates (14 percent). Among the entrées prepared, Mexican-style entrées were the leading contributors to total fat in NSLP lunches prepared in both elementary schools and in secondary schools, as were breaded/fried chicken nuggets and similar products in the meats/meat alternates group. Accompaniments were the third leading source of total fat in both elementary and secondary school lunches, supplying 10 percent of the fat in NSLP lunches prepared overall. In this group, salad dressings and condiments and toppings were leading contributors; however, condiments and toppings provided slightly but significantly more fat in secondary school lunches than in elementary school lunches.

Dietary fiber. Combination entrées contributed more than one-third of the dietary fiber in NSLP lunches prepared (35 percent), followed by fruits and vegetables (21 percent each). The leading entrée sources were Mexican-style entrées; pizza, both with and without meat; and sandwiches with breaded meat, poultry, or fish (particularly for secondary schools). Among fruits, apples and oranges (fresh) contributed the largest shares of dietary fiber. Among vegetables, black beans, baked beans, and other legumes (which include white beans, chickpeas, and hummus) were among the top 10 sources of dietary fiber. Discrete grains/breads contributed about 9 percent of total dietary fiber in NSLP lunches prepared, mainly in the form of breads, rolls, bagels, and other plain bread in both elementary and secondary schools (6 percent).

Cholesterol. Menu items composed mainly of animal products contributed almost all of the cholesterol in NSLP lunches prepared (95 percent). Combination entrées contributed 61 percent, separate meats/meat alternates contributed 22 percent, and milk contributed 12 percent. The top two sources of cholesterol in NSLP lunches were Mexican-style entrées (9 percent) and breaded/fried chicken nuggets and similar products (8 percent). Similar to the pattern observed for calories and saturated fat, sandwiches with breaded meat, poultry, or fish, pizza with meat, and cheeseburgers contributed significantly greater shares of the cholesterol in secondary school lunches than in elementary school lunches, and hot dogs and corn dogs accounted for more of the cholesterol in elementary school lunches than in secondary school lunches.

B. Sources of Calories and Nutrients in SBP Breakfasts Prepared

The study team examined the sources of calories and nutrient in SBP breakfasts prepared using the major and minor food groups described in the preceding section on NSLP lunches (see Table B.1). Similar to the approach used in the analysis of NSLP lunches, the study team aggregated some minor food groups to create an abbreviated set of minor food groups for use in this analysis. (The minor food groups differed for the analyses of NSLP lunches and SBP breakfasts because the mix of foods prepared for students differed for the two meals.) The study team estimated the percentage contribution of the major food groups and each of the minor food groups using the approach described in the preceding section on NSLP lunches.

Results are presented in Table 7.2. The table shows the relative contributions of each of the major food groups and identifies the 10 minor food groups that made the largest contributions to the calorie/nutrient content of SBP breakfasts prepared. Key findings are discussed in the sections that follow.

Table 7.2. Food Sources of Calories and Key Nutrients in SBP Breakfasts Prepared

Major Food Groups		Percentage Contribution to Amount of Nutrient in SBP Breakfasts Prepared		
		Elementary Schools	Secondary Schools	All Schools
Calories	Grains/Breads	35.2	33.3	34.5
	Milk	25.5	24.8	25.2
	Fruits	21.2	18.9*	20.4
	Combination Entrées	9.8	13.7*	11.3
	Meats/Meat Alternates	4.6	4.7	4.7
	Accompaniments ^a	3.0 [^]	3.6	3.2
	Vegetables	<3	<3	<3
	Desserts/Other	<3	<3	<3
Saturated Fat	Grains/Breads	33.4	31.5	32.6
	Milk	27.2	21.4*	24.9
	Combination Entrées	20.9	28.2*	23.8
	Meats/Meat Alternates	13.6	12.6	13.2
	Accompaniments ^a	3.0 [^]	4.3	3.5
	Fruits	<3	<3	<3
	Desserts/Other	<3	<3	<3
	Vegetables	<3	<3	<3
Sodium	Grains/Breads	45.3	39.5*	43.1
	Combination Entrées	20.3	27.6*	23.1
	Milk	21.9	19.5*	21.0
	Meats/Meat Alternates	8.5	9.0	8.7
	Accompaniments ^a	<3	2.8	2.5
	Fruits	<3	<3*	<3
	Desserts/Other	<3	<3	<3
	Vegetables	<3	<3	<3
Total Fat	Grains/Breads	45.5	40.4*	43.5
	Combination Entrées	21.2	27.9*	23.9
	Milk	14.8	11.8*	13.6
	Meats/Meat Alternates	12.1	12.3	12.2
	Fruits	<3	2.4*	2.7
	Accompaniments ^a	<3	3.1	2.6
	Vegetables	<3	<3	<3
	Desserts/Other	<3	<3	<3
Dietary Fiber	Grains/Breads	42.6	40.6	41.8
	Fruits	36.3	31.7*	34.6
	Combination Entrées	9.4	14.0*	11.2
	Milk	10.1	11.5*	10.6
	Vegetables	<3	<3	<3
	Accompaniments ^a	<3	<3	<3
	Meats/Meat Alternates	<3	<3	<3
	Desserts/Other	<3	<3	<3
Cholesterol	Combination Entrées	26.0	38.4*	30.9
	Meats/Meat Alternates	30.4	25.7	28.5
	Milk	23.6	18.6*	21.6
	Grains/Breads	18.3	15.1	17.0
	Accompaniments ^a	<3	<3	1.6
	Desserts/Other	<3	<3	<3
	Fruits	<3	<3	<3
	Vegetables	<3	<3	<3

Top 10 Minor Food Groups		Percentage Contribution to Amount of Nutrient in SBP Breakfasts Prepared		
		Elementary Schools	Secondary Schools	All Schools
Calories	Fat-free milk, flavored	13.1	15.2*	13.9
	Low-fat milk, unflavored	9.1	7.2*	8.4
	Sweetened cold cereal	7.9	4.9*	6.8
	Pancakes, waffles, and French toast	5.0	4.2*	4.7
	Orange juice	4.0	4.5	4.2
	Apple juice	4.1	4.0	4.1
	Muffins and sweet/quick breads	4.1	4.1	4.1
	Breakfast sandwich	<3	5.1*	3.5
	Condiments and toppings	<3	3.6	3.2
	Crackers, croutons, and pretzels	3.5	<3*	2.9
Saturated Fat	Low-fat milk, unflavored	19.4	14.1*	17.3
	Breakfast sandwich	6.4	12.5*	9.1
	Biscuits and cornbread	6.3	5.9	6.1
	Fat-free milk, flavored	5.4	5.7	5.5
	Pizza, with or without meat	5.5	5.3	5.4
	Cheese	5.3	4.0	4.8
	Granola bars and breakfast bars	4.0	5.4	4.5
	Muffins and sweet/quick breads	4.5	4.1	4.4
	Pancakes, waffles, and French toast	4.5	3.6*	4.1
	Sausage	3.6^	4.7	4.0
Sodium	Fat-free milk, flavored	9.1	10.0	9.4
	Sweetened cold cereal	10.9	6.5*	9.2
	Low-fat milk, unflavored	9.4	7.1*	8.5
	Breakfast sandwich	6.0	11.8*	8.2
	Pancakes, waffles, and French toast	7.3	5.6*	6.6
	Pizza, with or without meat	6.4	6.1	6.3
	Biscuits and cornbread	5.3	5.4	5.4
	Muffins and sweet/quick breads	3.4^	3.2	3.3
	Crackers, croutons, and pretzels	3.9	2.2*	3.3
	Sausage	<3	3.5	2.9
Total Fat	Low-fat milk, unflavored	10.4	7.6*	9.3
	Breakfast sandwich	6.4	11.4*	8.4
	Pancakes, waffles, and French toast	8.2	6.6*	7.6
	Muffins and sweet/quick breads	6.9	6.4	6.7
	Pizza, with or without meat	5.3	5.0	5.2
	Sweetened cold cereal	5.9	3.4*	4.9
	Sausage	4.1	5.5	4.7
	Biscuits and cornbread	4.7	4.5	4.6
	Granola bars and breakfast bars	3.7	5.2*	4.3
	Crackers, croutons, and pretzels	5.0	2.7*	4.1
Dietary Fiber	Apple	10.8	10.6	10.7
	Fat-free milk, flavored ^b	9.4	10.9*	10.0
	Sweetened cold cereal	11.1	7.0*	9.6
	Banana	4.9	4.0	4.6
	Pancakes, waffles, and French toast	4.8	4.0	4.5
	Orange	3.7	3.7	3.7
	Crackers, croutons, and pretzels	4.2	2.5*	3.6
	Muffins and sweet/quick breads	3.5^	3.5	3.5
	Toaster pastries	<3	5.1*	3.3
	Breakfast sandwich	<3	4.6*	3.1

Top 10 Minor Food Groups		Percentage Contribution to Amount of Nutrient in SBP Breakfasts Prepared		
		Elementary Schools	Secondary Schools	All Schools
Cholesterol	Eggs	20.9	14.6*	18.4
	Breakfast sandwich	12.8	23.6*	17.1
	Low-fat milk, unflavored	14.9	10.7*	13.2
	Muffins and sweet/quick breads	8.4	7.5	8.1
	Fat-free milk, flavored	6.0	6.2	6.1
	Breakfast burritos	5.1	6.3	5.6
	Sausage	4.8	6.8	5.6
	Pancakes, waffles, French toast	6.3	3.9*	5.4
	Pizza, with or without meat	4.2	3.7	4.0
	Cheese	<3	<3	2.3

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

^aIncludes condiments, toppings, and salad dressings.

^bSome of the ingredients in chocolate milk include dietary fiber. USDA's Food and Nutrient Database for Dietary Studies (version 2011-2012), which was used to analyze the Menu Survey data, indicates that one cup (8 fluid ounces) of fat-free chocolate milk contains 1.2 grams of dietary fiber. A comparable portion of unflavored fat-free milk contains 0 grams of dietary fiber.

*Difference between elementary and secondary schools is significantly different from zero at the 0.05 level.

SBP = School Breakfast Program.

[^] Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 0 and 3 percent are displayed as <3.

1. Sources of Calories, Saturated Fat, and Sodium

Calories. Grains/breads and milk were the two leading sources of calories in SBP breakfasts prepared, providing 35 and 25 percent of total calories, respectively. Fruits, including 100% fruit juices, were the third leading source of calories in SBP breakfasts (20 percent). Among the minor food groups, the top five contributors to calories in SBP breakfasts prepared were flavored fat-free milk (14 percent); unflavored low-fat milk (8 percent); sweetened cold cereal (7 percent); pancakes, waffles, and French toast (5 percent); and orange juice (4 percent). Sweetened cold cereal contributed significantly greater shares of calories in elementary school breakfasts than in secondary school breakfasts (8 percent versus 5 percent), and breakfast sandwiches accounted for more calories in secondary school breakfasts than in elementary school breakfasts (5 percent in secondary schools versus very small percentage in elementary schools).

Grains/breads were the largest source of calories, saturated fat, sodium, total fat, and dietary fiber in SBP breakfasts prepared.

Saturated fat. One-third (33 percent) of the saturated fat in SBP breakfasts prepared came from grains/breads for both elementary and secondary schools. Another one-quarter (25 percent) of the saturated fat came from milk; however, milk contributed a significantly larger share of the saturated fat in SBP breakfasts prepared in elementary schools than those in secondary schools (27 percent versus 21 percent). Combination entrées contributed almost one-quarter (24 percent) of the saturated fat in SBP breakfasts prepared overall; however, combination entrées accounted for a significantly larger share of the saturated fat in secondary school breakfasts than in

elementary school breakfasts (28 percent versus 21 percent). Among the minor food groups, the two top sources of saturated fat in SBP breakfasts prepared included unflavored low-fat milk and breakfast sandwiches. The other three top contributors to saturated fat were biscuits and cornbread, flavored fat-free milk, and pizza with or without meat.

Sodium. Forty-three percent of the sodium in SBP breakfasts prepared came from grains/breads. Major sources in the grains/breads group include sweetened cold cereal (9 percent); pancakes, waffles, and French toast (7 percent); and biscuits and cornbread (5 percent). Combination entrées and milk each provided 23 and 21 percent, respectively, of the total sodium in SBP breakfasts prepared. As noted for calories and saturated fat, sweetened cold cereal and unflavored low-fat milk—as well as pancakes, waffles, and French toast—were more important contributors to sodium in elementary school breakfasts than secondary school breakfasts, and secondary school breakfasts derived a greater proportion of sodium from breakfast sandwiches than did elementary school breakfasts.

2. Sources of Total Fat, Dietary Fiber, and Cholesterol

Total fat. Among the major food groups, the grains/breads group was the leading source of total fat (44 percent) in SBP breakfasts prepared, followed by combination entrées (24 percent), milk (14 percent), and meats/meat alternates (12 percent). Unflavored low-fat milk contributed the most fat to SBP breakfasts prepared (9 percent), but made a significantly greater contribution to elementary school breakfasts than to secondary school breakfasts (10 percent versus 8 percent). Breakfast sandwiches were the second largest contributor to total fat in SBP breakfasts prepared (8 percent), but made a significantly greater contributions to secondary school breakfasts than to elementary school breakfasts (11 percent versus 6 percent). Low-fat unflavored milk and pancakes, waffles, and French toast were the other two largest contributors to total fat for secondary schools. For elementary schools, pancakes, waffles, and French toast were also among the top contributors to the fat content of average SBP breakfasts prepared.

Dietary fiber. More than three-quarters (77 percent) of the dietary fiber in SBP breakfasts prepared came from grains/breads (42 percent) and fruits (35 percent). Apples (fresh) were the leading contributor to dietary fiber (11 percent), followed by flavored (primarily chocolate) fat-free milk (10 percent).⁷⁰ Sweetened cold cereals, some of which contain whole grain ingredients, were also among the top three contributors to dietary fiber, especially in elementary schools. Other leading contributors within the grains/breads group were pancakes, waffles, and French toast; crackers, croutons, and pretzels; muffins and sweet/quick breads; and toaster pastries. Fruits, specifically fresh bananas and oranges, were among the top 10 sources of dietary fiber for both school types.

Cholesterol. The two main sources of cholesterol in SBP breakfasts prepared were combination entrées (31 percent), to a larger degree for secondary schools than for elementary schools (38 percent versus 26 percent), and meats/meat alternates (29 percent). Milk (22 percent), especially for elementary schools, and grains/breads (17 percent) were also important

⁷⁰ Some of the ingredients in chocolate milk include dietary fiber. USDA's Food and Nutrient Database for Dietary Studies (version 2011–2012), which was used to analyze the menu survey data, indicates that one cup (8 fluid ounces) of fat-free chocolate milk contains 1.2 grams of dietary fiber. A comparable portion of unflavored fat-free milk contains 0 grams of dietary fiber.

sources of cholesterol. The top five contributors were eggs, breakfast sandwiches (which typically contain eggs), low-fat unflavored milk, muffins and sweet/quick breads, and flavored fat-free milk.

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8. FOOD AND NUTRIENT CONTENT OF AFTERSCHOOL SNACKS

This chapter presents data on the average food and nutrient content of afterschool snacks provided through the NSLP. Schools that participate in the NSLP have the option of providing reimbursable snacks to children in eligible afterschool programs. In SY 2014–2015, 25 percent of all schools offered either afterschool snacks or suppers, and among those schools, 80 percent provided afterschool snacks through the NSLP (Forrestal et al. 2019).

Data are presented on the types of foods offered in afterschool snacks, the amount of choice and variety available to students in afterschool snacks, and the average nutrient and USDA Food Pattern food group content of afterschool snacks. All findings are based on data from the Menu Survey, which was completed by SNMs over the course of one school week in the spring of SY 2014–2015. Data are presented for the 166 schools that provided afterschool snacks through the NSLP and also provided menu data on afterschool snacks. Data are presented for all schools combined rather than by school type. Tables and figures in the chapter present key results; supplementary tables appear in Appendix J, as noted throughout the chapter.

Estimates of nutrient and USDA Food Pattern food group content are based on an unweighted analysis that assumed that every child took one average serving of each meal component offered. If choices were offered within a meal component group—for example, two different types of milk—equal weight was given to each option. This approach is described in detail in Appendix D.

A. Foods Offered in NSLP Afterschool Snacks

To be reimbursable, afterschool snacks must contain at least two of the following meal components: a serving of fat-free (flavored or unflavored) or low-fat (unflavored) fluid milk; a serving of meat or meat alternate; a serving of fruit or vegetables or full-strength fruit or vegetable juice; or a serving of whole grain or enriched bread or cereal (USDA, FNS 2013c).

For these analyses, the study team assigned foods reported in daily afterschool snack menus to one of seven major food groups: milk, vegetables, fruits and 100% fruit juices, combination entrées, grains/breads, meats/meat alternates, and desserts. Foods in each major food group were further subdivided into minor food groups that classified foods based on characteristics that affect nutrient content, including ingredients and preparation methods.⁷¹

1. Amount of Choice and Variety Offered in NSLP Afterschool Snacks

To assess the amount of choice and variety offered in afterschool snacks, the study team examined the number of choices offered in daily snack menus, as well as the number of different items offered over the course of a five-day school week. The number of choices that were offered on daily menus was estimated for the following groups: milk; fruits, vegetables, and 100% juices; combination entrées and meats/meat alternates; separate grains/breads; and desserts and other menu items.

⁷¹See Table B.1 for more information on the major and minor food groups.

Students were offered very few choices in afterschool snacks overall (Table 8.1). When a major food group was offered on a daily menu, there was typically only one item offered. However, milk and fruits/vegetables/100% juices were exceptions. Twenty-one percent of daily afterschool snack menus offered a choice of milks, and 14 percent of menus included more than one type of fruit, vegetable, or 100% juice.

Afterschool snack menus included very few choices per day and little variety over the course of a week.

Findings from schools that provided afterschool snacks every day show that there was little variety over the course of the week in the number of items offered within a group. The separate grains/breads group contained the most variety, with a median of three different items offered over the course of a week. The median number of different fruit, vegetable, or 100% juice offerings was two.

Table 8.1. Choice and Variety in Afterschool Snacks

Percentage of Daily Snack Menus	
Number of Types of Milk Offered per Day	
None	44.3
1	30.0
2	20.7
3 or more	5.1
<i>Median number of different items per week^a</i>	1.3
Number of Fruits/Vegetables/100% Juices Offered per Day	
None	38.0
1	48.4
2	10.1
3 or more	3.5
<i>Median number of different items per week^a</i>	2.1
Number of Meats/Meat Alternates/Combination Entrées Offered per Day	
None	76.9
1 or more	23.1
<i>Median number of different items per week^a</i>	1.0
Number of Separate Grains/Breads Offered per Day	
None	26.9
1	69.1
2 or more	4.0
<i>Median number of different items per week^a</i>	2.7
Number of Desserts/Other Menu Item Offered per Day	
None	85.9
1	14.1
<i>Median number of different items per week^a</i>	1.0
Number of Daily Menus	654
Number of Schools	166

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program and providing reimbursable afterschool snacks.

^aIncludes only schools that provided menu information for five days.

2. Types and Frequency of Foods Offered

The study team used the major and minor food groups described previously to describe the types and frequency of foods offered in daily afterschool snack menus. Table 8.2 summarizes the foods/food groups that were offered in at least 2 percent of daily afterschool snack menus. Key findings include the following:

- Foods from the grains/breads group were offered most frequently in daily afterschool snack menus. Close to three-quarters (73 percent) of all afterschool snack menus included a grain/bread item, and 8 percent of menus included a grain as part of a combination entrée. Peanut butter sandwiches were the most commonly offered combination entrée. (Combination entrées are food items that include foods from at least two meal component groups: the grains/breads group and the meats/meat alternates group.)
- The specific type of grain/bread item offered most frequently was crackers and pretzels, offered in 42 percent of daily afterschool snack menus. Other grain/bread items were offered much less frequently. Granola bars and breakfast bars, corn/tortilla chips, and sweetened cold cereal were included in 10 percent or less of daily afterschool snack menus.
- The next most frequently offered food group was fruits and 100% fruit juices. Sixty percent of daily afterschool snack menus included fruit or 100% fruit juice. Fruit juice was more commonly offered than either fresh fruit or canned fruit (46 percent versus 15 percent and 4 percent, respectively, of daily afterschool snack menus).
- Milk was offered in more than half (56 percent) of daily afterschool snack menus. Unflavored low-fat and flavored fat-free milk were the most commonly offered types of milk, which is consistent with the nutrition standards for afterschool snacks.
- Meats/meat alternates were included in 16 percent of daily afterschool snack menus. Other protein, consisting primarily of cheese, nuts, and seeds, was the most commonly offered meat/meat alternate item offered (9 percent). Yogurt was offered in 7 percent of daily afterschool snack menus, most of which (6 percent) was low-fat and fat-free varieties.
- Fourteen percent of daily afterschool snack menus included a dessert or other menu item. These included grain-based desserts, primarily cookies and brownies (7 percent), and fruit drinks (5 percent).
- Vegetables were the least common food group offered in daily afterschool snack menus. Only 5 percent of daily afterschool snack menus included vegetables. These were mainly raw carrots, offered in 3 percent of daily menus.

Consistent with the nutrition standards, unflavored low-fat and flavored fat-free milk were the most commonly offered types of milk in daily afterschool snack menus.

Table 8.2. Foods Offered in Afterschool Snacks

	Percentage of Daily Snack Menus
Milk	55.7
Fat-free	37.5
Flavored	31.9
Unflavored	12.6
Low-fat	33.9
Unflavored	33.5
Flavored	2.4
Other milk beverage ^a	1.9 ^a
Vegetables	4.8
Raw carrots	2.7
Fruits and 100% Fruit Juices	60.3
Juice	45.9
Apple	25.4
Orange	13.3
Fruit juice blend	9.5
Grape	3.0
Fresh fruit	15.1
Apple	7.9
Banana	2.9
Canned fruit	3.9
Dried fruit	3.6
Raisins	2.5
Combination Entrées	7.7
Peanut butter sandwiches	2.8
Separate Grains/Breads	73.1
Crackers and pretzels	42.1
Granola bars and breakfast bars	9.5
Corn/tortilla chips	9.1
Sweetened cold cereal	5.4
Muffins and sweet/quick breads	3.7
Pastries	3.1
Meats/Meat Alternates	16.0
Other protein ^b	9.1
Cheese	7.2
Yogurt	6.6
Low-fat/fat-free	6.1
Desserts/Other Menu Items	14.1
Grain-based desserts	7.0
Cookies and brownies	6.8
Fruit drinks (not 100 percent juice)	4.5
Number of Daily Menus	654
Number of Schools	166

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program and providing reimbursable afterschool snacks.

Notes: Table is limited to food groups offered in at least 2 percent of menus. The table does not account for individual food items offered as part of prepackaged meals.

^aIncludes soy milk.

^bIncludes cheese, nuts, and seeds.

B. Average Calorie and Nutrient Content of NSLP Afterschool Snacks Offered

There are no nutrient-based requirements for afterschool snacks and thus, no benchmarks to use for comparison when assessing the average nutrient content of afterschool snacks. Instead, this section presents the average calorie and nutrient content for afterschool snacks offered during a typical school week in SY 2014–2015. Findings for calories and key nutrients are discussed below and are summarized in Table 8.3; results for additional nutrients and the distribution of nutrients in afterschool snacks are provided in Tables J.1 and J.2.

- In SY 2014–2015, the average afterschool snack offered provided 264 calories, with 20 percent of calories from total fat and 6 percent of calories from saturated fat.
- The average afterschool snack contained 3 g of dietary fiber.
- Average afterschool snacks offered to students provided 117 mcg of vitamin A and 20 mg of vitamin C.
- The average afterschool snack contained 243 mg of calcium, 1.8 mg of iron, and 264 mg of sodium.

Table 8.3. Average Calorie and Nutrient Content of Afterschool Snacks Offered

Average Amount	
Calories	264
Vitamins	
Vitamin A (mcg RAE)	117
Vitamin C (mg)	20
Minerals	
Calcium (mg)	243
Iron (mg)	1.8
Sodium (mg)	264
Other Dietary Components	
Dietary fiber (g)	3
Average Percentage of Calories from:	
Total Fat	19.8
Saturated Fat	6.0
Number of Schools	166

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program and providing reimbursable afterschool snacks.

RAE = retinol activity equivalents.

C. Potential Contribution of NSLP Afterschool Snacks to Recommended USDA Food Patterns

In this section, the average USDA Food Pattern food group content of afterschool snacks offered is compared with USDA Food Patterns for 1,800, 2,000, and 2,400 calories. These are the calorie levels that were used by the IOM in developing its recommendations for the updated nutrition standards for school meals (IOM 2010). USDA Food Pattern recommendations for the different calorie levels are summarized in Chapter 6, Table 6.1.

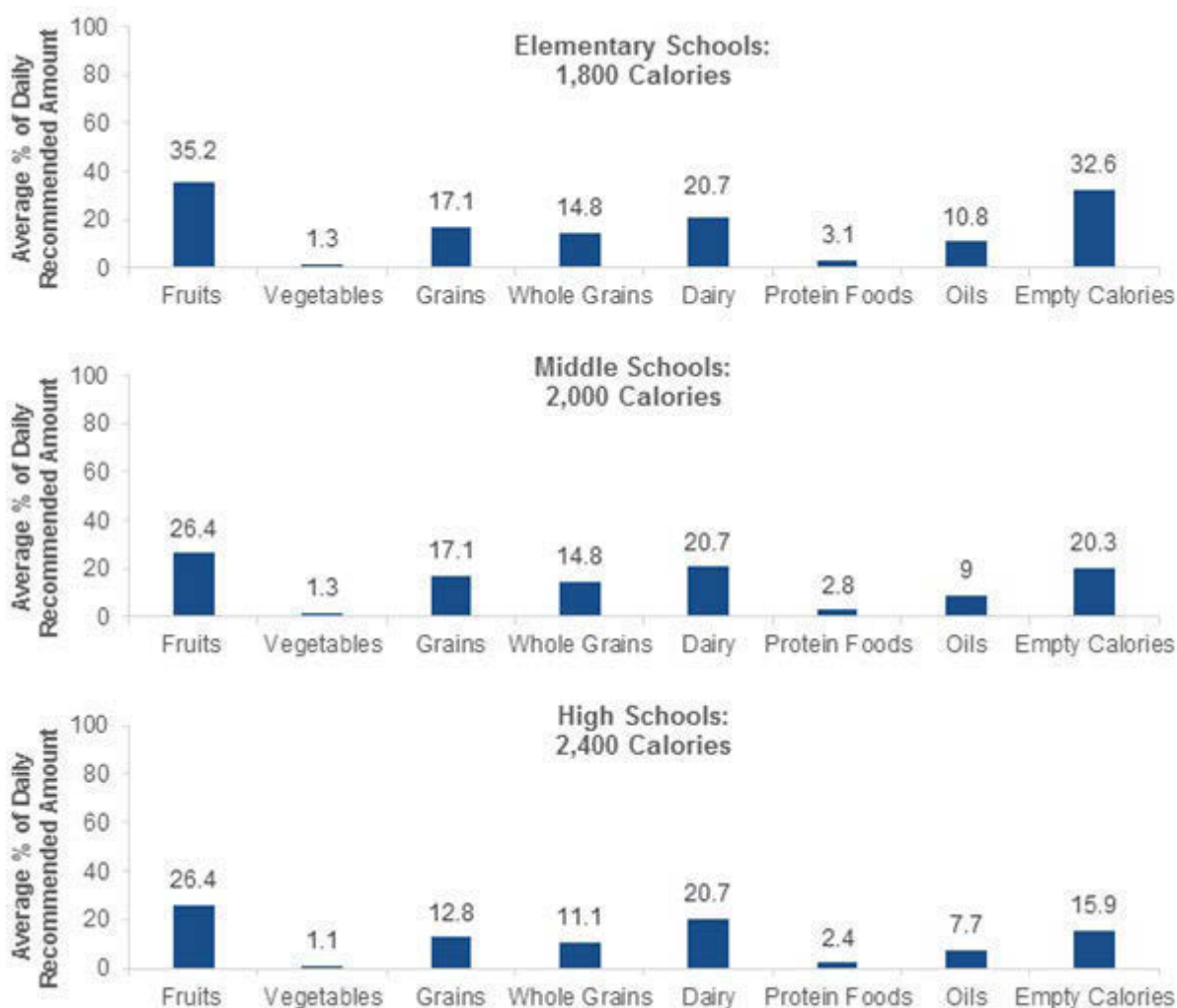
Figure 8.1 shows the relative contribution of afterschool snacks to recommended daily amounts of USDA Food Pattern food groups. Additional data on the average food group content of afterschool snacks are provided in Tables J.3 and J.4.

- Average afterschool snacks provided large amounts of fruits relative to the recommended daily amount and relative to other food groups present in afterschool snacks. On average, afterschool snacks provided 26 to 35 percent of the daily recommended amount of fruits for the different calorie levels.
- On average, afterschool snacks also provided appreciable amounts of dairy, contributing 21 percent of the recommended daily amounts of this group.⁷²
- Average afterschool snacks provided smaller amounts of grains (13 to 17 percent of recommended daily amounts), whole grains (11 to 15 percent of recommended daily amounts), and oils (8 to 11 percent of recommended daily amounts).
- The average afterschool snack provided marginal amounts of protein foods (2 to 3 percent of recommended amounts) and vegetables (1 percent of recommended amounts).
- Average afterschool snacks contributed large amounts of empty calories relative to the maximum daily limits specified in the USDA Food Patterns, contributing 16 to 33 percent of the daily limits.

On average, afterschool snacks contributed 26 to 35 percent of the daily amounts of fruits recommended in the USDA Food Patterns. They also contributed large amounts of empty calories (16 to 33 percent) relative to the maximum daily limits.

⁷² In the USDA Food Patterns, the dairy group includes cheese and yogurt, as well as fluid milk. Under the meal components used in planning afterschool snacks, milk is counted as its own meal component, and cheese and yogurt are counted as meat alternates.

Figure 8.1. Percentage Contribution of Afterschool Snacks Offered to Daily Amounts of Food Groups Recommended in Reference USDA Food Patterns



Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program and providing reimbursable afterschool snacks.

Notes: The reference USDA Food Patterns are based on the calorie levels used by the Institute of Medicine (IOM 2010) in developing recommendations for the updated nutrition standards for school meals.

The USDA Food Pattern food groups are largely consistent with the meal components used in planning afterschool snacks provided through the NSLP, with two exceptions. In afterschool snacks: (1) fluid milk is considered a separate meal component, and (2) other dairy foods such as yogurt and cheese are counted as meat alternates. Fluid milk, yogurt, and cheese are counted under the dairy group in the USDA Food Patterns.

The fruits group includes both whole fruit (any fresh, canned, dried, or frozen fruit) and 100% fruit juice.

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9. CHANGES IN SCHOOL MEALS AND AFTERSCHOOL SNACKS SINCE THE FOURTH SCHOOL NUTRITION DIETARY ASSESSMENT

The SNMCS continues FNS's long-standing commitment to periodically assess the school meal programs. The SNMCS is the first nationally representative, comprehensive assessment of the programs since major reforms began in SY 2012–2013, including the implementation of updated nutrition standards for school meals. The updated nutrition standards were designed to improve the alignment of school meals with the *Dietary Guidelines for Americans* (USDA and DHHS 2010); increase the amounts of fruits, vegetables, and whole grains in school meals; limit milk to fat-free or low-fat varieties; substantially reduce the sodium content of meals over time; control saturated fat and calorie levels; and eliminate synthetic *trans* fat (that is, *trans* fat that is not naturally occurring in foods) (USDA, FNS 2012). The updated nutrition standards represent the first changes to school meal requirements since the previous SMI standards were launched in 1995.

This chapter compares findings from the SNMCS, conducted in SY 2014–2015, to the most recent prior assessment of schools meals—SNDA-IV—which was conducted in SY 2009–2010. The study team conducted several analyses to compare findings between the two studies. The first analysis compares HEI-2010 total and component scores for NSLP lunches and SBP breakfasts at the two points in time. Findings from this analysis show how the nutritional quality of school meals has changed since the implementation of the updated nutrition standards. The second analysis compares the average calorie and nutrient content of NSLP lunches and SBP breakfasts at the two points in time. In addition to calories, the analysis examined a broad array of nutrients. The chapter focuses on nutrients that are addressed in the existing nutrition standards (calories, saturated fat, and sodium); nutrients that were addressed in the former SMI nutrition standards (total fat, protein, calcium, vitamins A and C, and iron); and dietary fiber.⁷³ In combination, findings from this analysis provide insights about (1) whether the calorie, saturated fat, and sodium content of school meals have moved in the desired directions since implementation of the updated nutrition standards, (2) how levels of nutrients targeted in the SMI but not explicitly addressed in the updated nutrition standards have changed since implementation of the updated nutrition standards, and (3) how levels of dietary fiber have changed.⁷⁴ The discussion of NSLP lunches also compares the relative availability of self-serve food bars and fresh fruits and vegetables. The chapter concludes with a comparison of the average calorie and nutrient content of afterschool snacks. Although the updated nutrition standards for school meals do not address afterschool snacks provided through the NSLP, it is reasonable to expect some changes in these snacks due to the use of centralized food purchasing.

All findings are based on analysis of data from the Menu Survey, which was completed by SNMs over the course of one school week in the spring of SY 2014–2015 for SNMCS and SY

⁷³ Dietary fiber was not addressed in a quantitative way in either the SMI standards or the existing nutrition standards, but it was examined in both SNDA-IV and SNMCS because it was identified as a nutrient of concern in the relevant *Dietary Guidelines for Americans*.

⁷⁴ It is important to note that the observed changes described in this chapter may also have occurred between 2010 and 2012, after SNDA-IV was conducted but before the formal incorporation of the updated standards, and SY 2012–2013, the first year the updated nutrition standards were phased in.

2009–2010 for SNDA-IV. Data are presented separately for all schools and, with the exception of the component scores for the HEI-2010, by school type: elementary, middle, and high schools. The statistical significance of differences between the two school years (SY 2009–2010 and SY 2014–2015) was tested for each school type using two-tailed t-tests. All differences between school years that are discussed in the text are statistically significant, unless otherwise noted. Tables and figures in the chapter present key results; supplementary tables appear in Appendix K, as noted throughout the chapter.

A. Trends in HEI-2010 Scores for NSLP Lunches

The HEI-2010 provides a measure of the nutritional quality of schools meals by assessing conformance to key recommendations of the 2010 *Dietary Guidelines for Americans*. It assesses quality based on scores for 9 adequacy components (total fruit, whole fruit, total vegetables, greens and beans, whole grains, dairy, total protein foods, seafood and plant proteins, and fatty acids) and 3 moderation components (refined grains, sodium, and empty calories), as well as an overall total score. Each component has a maximum score that is assigned based on the concentration of the component in school meals. Higher scores for each component and for the total score reflect better conformance with *Dietary Guidelines for Americans* recommendations and higher nutritional quality. Additional details on the HEI-2010 are provided in Chapter 5.

This section describes changes in HEI-2010 total and component scores for NSLP lunches between SY 2009–2010 (SNDA-IV) and SY 2014–2015 (SNMCS). The analysis is based on estimates of the calorie, nutrient, and USDA Food Pattern food group content of NSLP menus *served*. These estimates for NSLP menus *served* differ slightly from (but are closely related to) the HEI-2010 scores presented in Chapter 5 for NSLP menus *prepared*.⁷⁵ Findings in this section compare HEI-2010 scores expressed as a percentage of the maximum possible score. Changes in scores between SY 2009–2010 and SY 2014–2015 were similar across school types, so findings presented for component scores focus on all schools. Findings by school type are presented in Table K.1. Table K.2 provides a comparison of mean HEI-2010 scores.

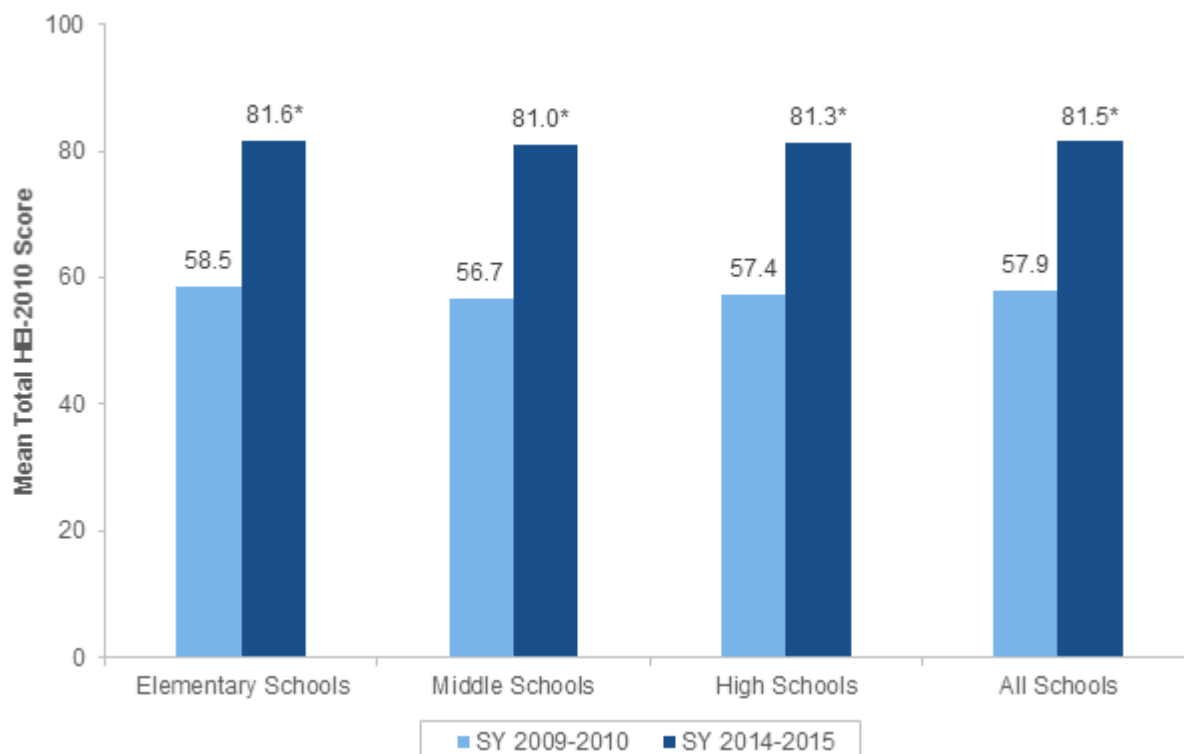
1. HEI-2010 Total Scores

Between SY 2009–2010 and SY 2014–2015, the mean total HEI-2010 score for NSLP lunches served increased significantly by at least 23 points for all school types (Figure 9.1). The mean total HEI-2010 score for NSLP lunches served was 57.9 in SY 2009–2010. In SY 2014–2015, the mean total HEI-2010 score was 81.5. The large increases in HEI-2010 total scores observed for all school types suggests that the updated nutrition standards have significantly improved the nutritional quality of NSLP lunches.

Between SY 2009–2010 and SY 2014–2015, the mean total HEI-2010 score for NSLP lunches increased significantly by at least 23 points for all school types, indicating a substantial improvement in the nutritional quality of NSLP lunches.

⁷⁵ This analysis uses estimates based on “meals served” because SNDA-IV did not collect the data needed to produce estimates for “menus prepared.” Estimates for meals served take student selection patterns into account and give greater weight to menu items that were most frequently selected by students as part of reimbursable meals.

Figure 9.1. Comparison of Mean Healthy Eating Index-2010 Scores for NSLP Lunches Served in SY 2009–2010 and SY 2014–2015: Total Scores



Source: Data for school year 2009–2010 are from the School Nutrition Dietary Assessment Study-IV Menu Survey. Data for school year 2014–2015 are from the School Nutrition and Meal Cost Study Menu Survey. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Note: Higher scores reflect higher nutritional quality.

*Difference between SY 2009–2010 and SY 2014–2015 is significantly different from zero at the 0.05 level.

NSLP = National School Lunch Program; SY = school year.

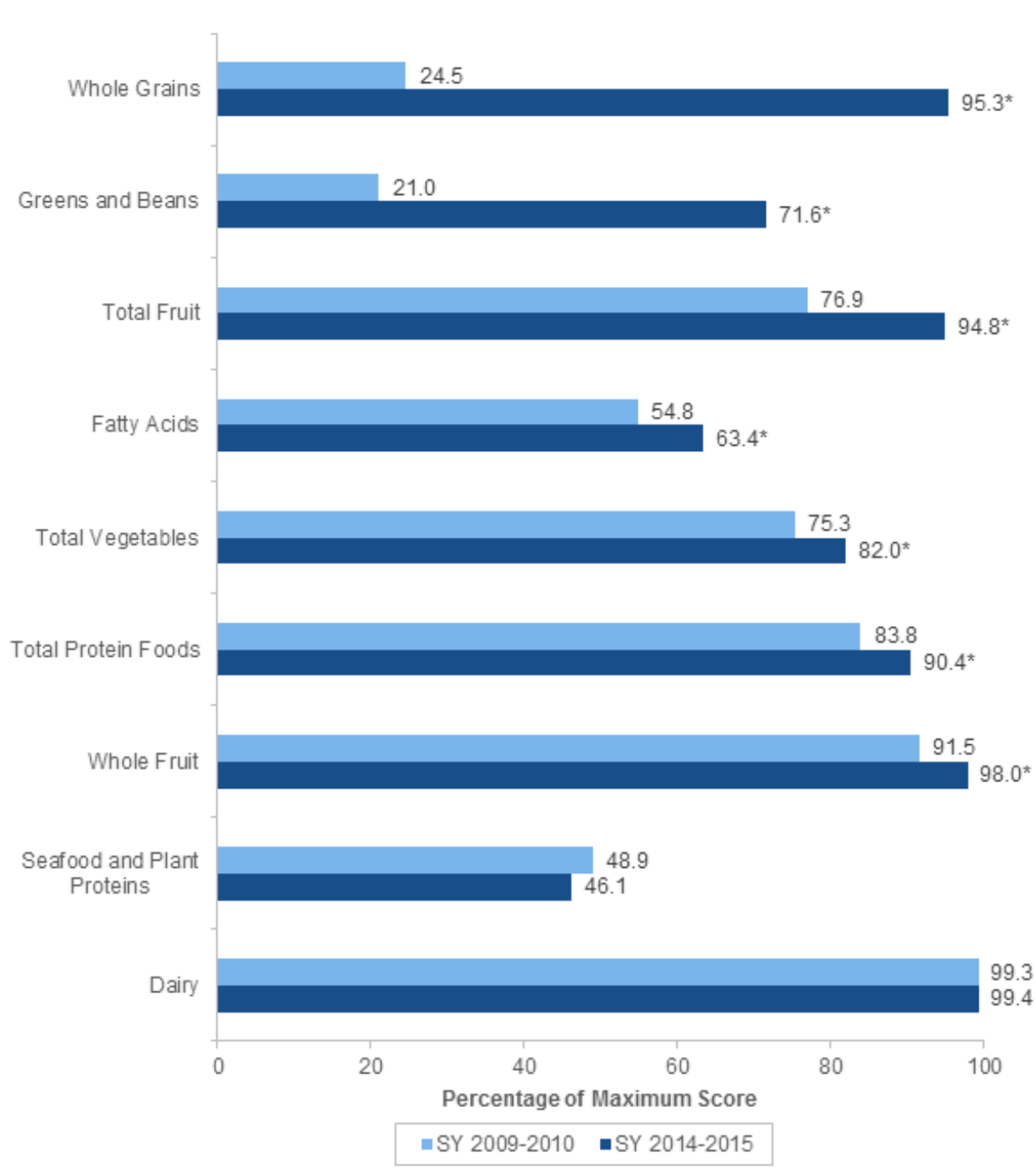
2. HEI-2010 Adequacy Components

The nine adequacy components included in the HEI-2010 are total fruit, whole fruit, total vegetables, greens and beans, whole grains, dairy, total protein foods, seafood and plant proteins, and fatty acids. For NSLP lunches served, scores for 7 of the 9 adequacy components in the HEI-2010 increased significantly between SY 2009–2010 and SY 2014–2015 (Figure 9.2).

The largest increases were observed for whole grains and greens and beans. Between SY 2009–2010 and SY 2014–2015, the score for whole grains increased by 71 percentage points (from 25 to 95 percent of the maximum score), and the score for greens and beans increased by 51 percentage points (from 21 to 72 percent of the maximum score).

Between SY 2009–2010 and SY 2014–2015, the score for whole grains increased by 71 percentage points, and the score for greens and beans increased by 51 percentage points.

Figure 9.2. Comparison of Healthy Eating Index-2010 Scores, as a Percentage of Maximum Scores, for NSLP Lunches Served in SY 2009–2010 and SY 2014–2015: Adequacy Components



Source: Data for school year 2009–2010 are from the School Nutrition Dietary Assessment Study-IV Menu Survey. Data for school year 2014–2015 are from the School Nutrition and Meal Cost Study Menu Survey. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Note: Higher scores for adequacy components indicate higher concentrations in NSLP lunches.

*Difference between SY 2009–2010 and SY 2014–2015 is significantly different from zero at the 0.05 level.

NSLP = National School Lunch Program; SY = school year.

In addition, the score for total fruit increased by 18 percentage points (from 77 to 95 percent of the maximum score). Scores for whole fruit, total vegetables, total protein foods, and fatty acids increased by 7 to 8 percentage points between SY 2009–2010 and SY 2014–2015. For total fruit, whole fruit, and whole grains, scores increased to 95 percent or more of the maximum scores. These near-perfect scores indicate that the concentrations of these food groups in NSLP lunches served was very consistent with the relevant *Dietary Guidelines for Americans* recommendations. Scores for dairy remained relatively constant over time (99 percent of the maximum score). Scores for seafood and plant proteins decreased slightly between SY 2009–2010 and SY 2014–2015, but the difference was not statistically significant.

The significant increases in scores for 7 of the 9 adequacy components in the HEI-2010 suggests that the updated nutrition standards have positively influenced the type and amounts of food being served in NSLP lunches, particularly whole grains and fruits and vegetables.

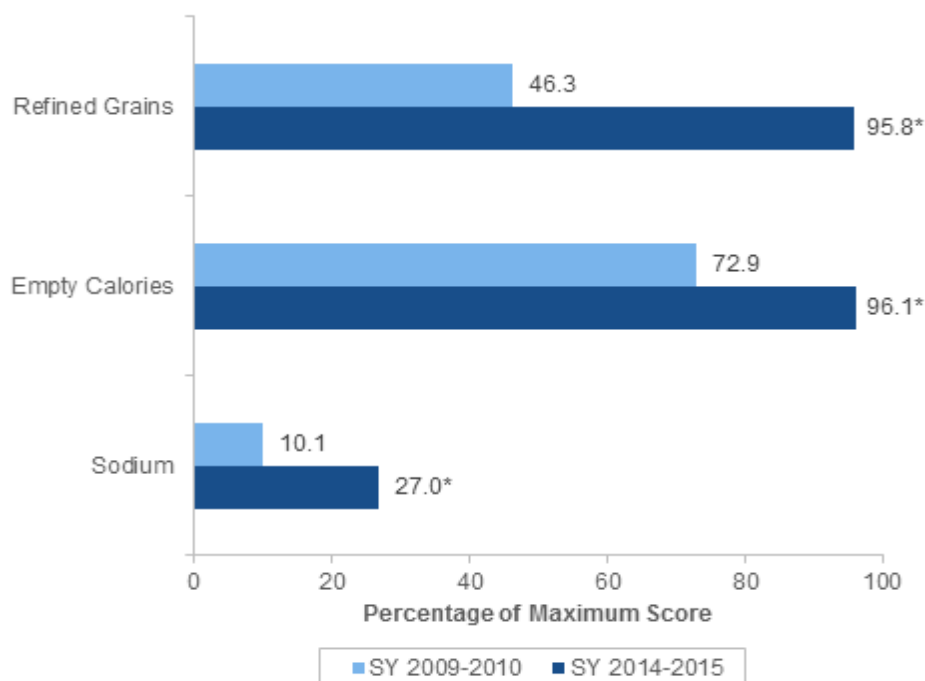
3. HEI-2010 Moderation Components

The three moderation components included in the HEI-2010 are refined grains, sodium, and empty calories (defined as calories from solid fats and added sugars). Between SY 2009–2010 and SY 2014–2015, the scores for all three moderation components in the HEI-2010 increased significantly for NSLP lunches served (Figure 9.3). Higher scores for the moderation components reflect lower concentrations in NSLP lunches (which is desirable). The score for refined grains increased by 50 percentage points (from 46 to 96 percent of the maximum score), indicating that the concentration of refined grains in NSLP lunches decreased substantially over time. This is consistent with the large increase in the score for whole grains reported in the preceding section. In addition, the score for empty calories increased from 73 to 96 percent of the maximum score. For both refined grains and empty calories, the near-perfect scores (96 percent of the maximum scores) for NSLP lunches served in SY 2014–2015 indicate that these lunches were very consistent with the relevant *Dietary Guidelines for Americans* recommendations.

Between SY 2009–2010 and SY 2014–2015, the concentrations of refined grains, empty calories, and sodium decreased significantly in NSLP lunches.

The score for sodium increased by 17 percentage points (from 10 to 27 percent of the maximum score) between SY 2009–2010 and SY 2014–2015, indicating that the concentration of sodium in NSLP lunches decreased over time. The former SMI standards encouraged SFAs to reduce levels of sodium in school meals but did not establish a quantitative target. The updated nutrition standards established a limit on the sodium content of NSLP lunches. The significant increase in the HEI-2010 score for sodium since SY 2009–2010 indicates that the sodium limit included in the updated nutrition standards has successfully reduced the sodium content of NSLP lunches (this is consistent with the decrease in average sodium content reported later in section B).

Figure 9.3. Comparison of Healthy Eating Index-2010 Scores, as a Percentage of Maximum Scores, for NSLP Lunches Served in SY 2009–2010 and SY 2014–2015: Moderation Components



Source: Data for school year 2009–2010 are from the School Nutrition Dietary Assessment Study-IV Menu Survey. Data for school year 2014–2015 are from the School Nutrition and Meal Cost Study Menu Survey. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Note: Higher scores for moderation components indicate lower concentrations in NSLP lunches.

*Difference between SY 2009–2010 and SY 2014–2015 is significantly different from zero at the 0.05 level.

NSLP = National School Lunch Program; SY = school year.

B. Trends in the Calorie and Nutrient Content of NSLP Lunches

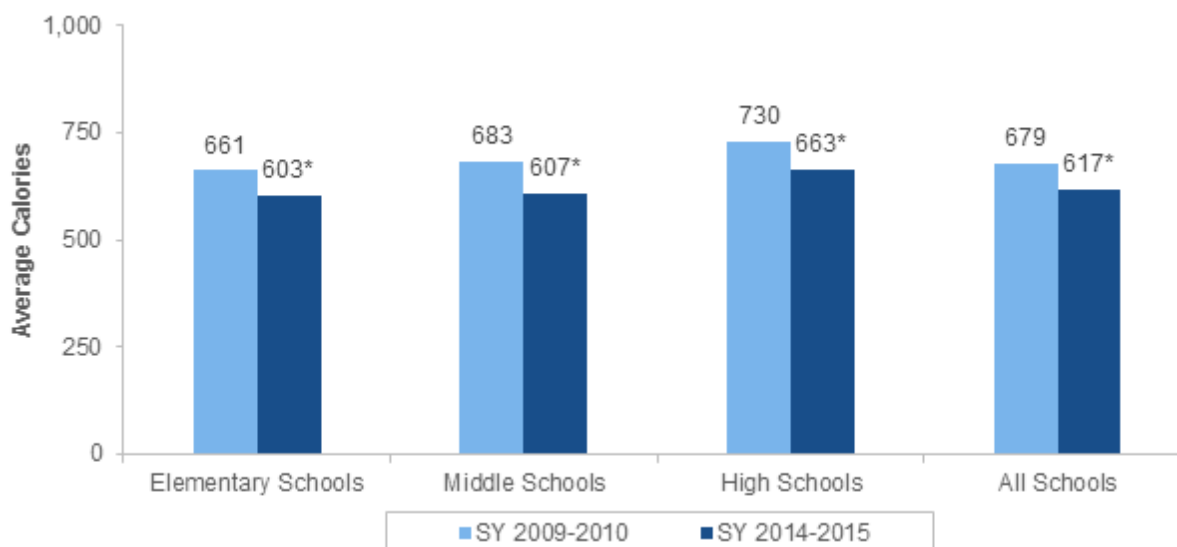
This analysis compared the average calorie and nutrient content of NSLP lunches in SY 2009–2010 (SNDA-IV) and SY 2014–2015 (SNMCS). The analysis is based on estimates of the calorie and nutrient content of NSLP lunches *served*. These estimates differ slightly from (but are closely related to) the estimates of NSLP lunches *prepared* presented in previous chapters.⁷⁶ Findings for calories and key nutrients are presented below. Findings for additional nutrients are presented in Table K.3.

⁷⁶ This analysis uses estimates based on “meals served” because SNDA-IV did not collect the data needed to produce estimates for “meals prepared.” Estimates for meals served take student selection patterns into account and give greater weight to menu items that were most frequently selected by students as part of reimbursable meals.

1. Calories and Nutrients Targeted in the Updated Nutrition Standards

Calories. The data suggest that the maximum calorie levels included (for the first time) in the nutrition standards that went into effect beginning in SY 2012–2013 have influenced the calorie content of NSLP lunches (Figure 9.4). Between SY 2009–2010 and SY 2014–2015, the average calorie content of NSLP lunches served decreased by at least 50 calories in all school types. Overall, average calories decreased significantly by 9 percent (62 calories). However, it is important to note that a decrease in calories may not be desirable for some schools, particularly high schools where students' calorie needs are greatest. As reported previously (see Chapter 3), two-thirds (66 percent) of average weekly lunch menus in high schools in SY 2014–2015 did not meet the minimum calorie level specified in the updated nutrition standards. The same was true for 13 percent of average weekly menus in elementary schools and 24 percent in middle schools.

Figure 9.4. Comparison of the Average Calorie Content of NSLP Lunches Served in SY 2009–2010 and SY 2014–2015



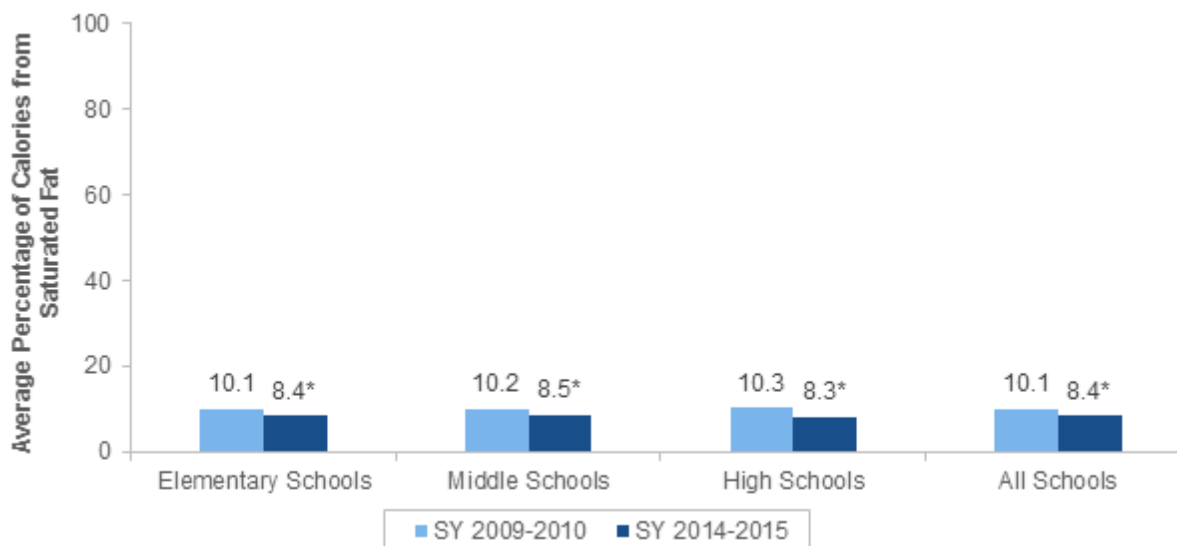
Source: Data for school year 2009–2010 are from the School Nutrition Dietary Assessment Study-IV Menu Survey. Data for school year 2014–2015 are from the School Nutrition and Meal Cost Study Menu Survey. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

*Difference between SY 2009–2010 and SY 2014–2015 is significantly different from zero at the 0.05 level.

NSLP = National School Lunch Program; SY = school year.

Saturated Fat. The updated nutrition standards may also have affected the saturated fat content of NSLP lunches. Between SY 2009–2010 and SY 2014–2015, the average percentage of calories from saturated fat in NSLP lunches served decreased in all school types by roughly 2 percentage points (Figure 9.5). Overall, this represents a 17 percent decrease in the percentage of calories from saturated fat over time (from 10.1 to 8.4 percent). Moreover, in all school types, the average saturated fat content of NSLP lunches served in SY 2014–2015 was consistent with the saturated fat requirement in both the updated nutrition standards and the prior SMI standards (less than 10 percent of total calories). In SY 2009–2010, average saturated fat content of NSLP lunches served was just above this target in all school types, with about 10 percent of calories in NSLP lunches coming from saturated fat.

Figure 9.5. Comparison of the Average Saturated Fat Content of NSLP Lunches Served in SY 2009–2010 and SY 2014–2015



Source: Data for school year 2009–2010 are from the School Nutrition Dietary Assessment Study-IV Menu Survey. Data for school year 2014–2015 are from the School Nutrition and Meal Cost Study Menu Survey. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

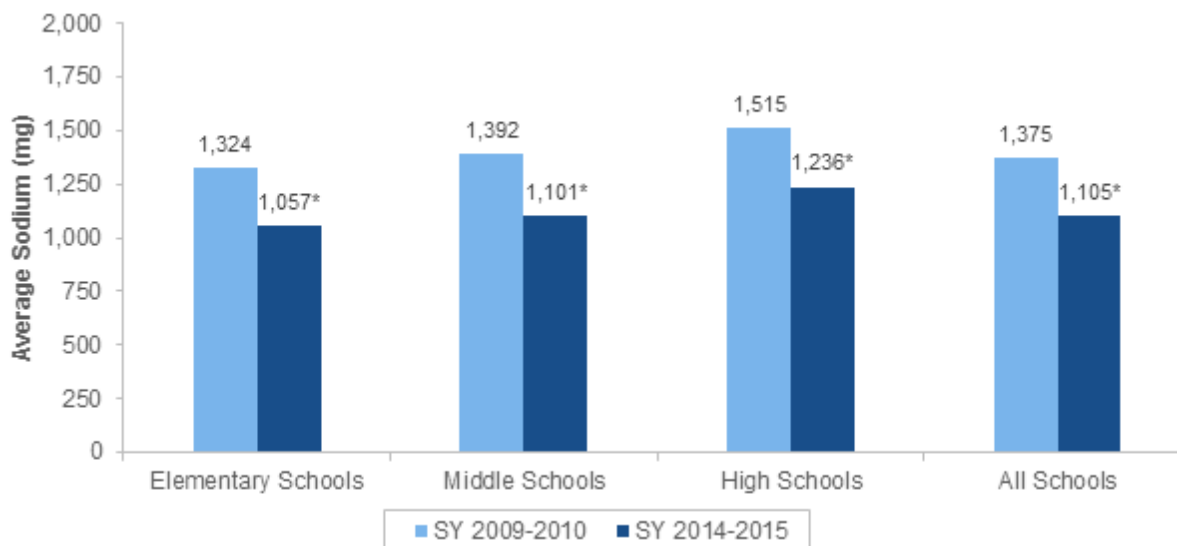
*Difference between SY 2009–2010 and SY 2014–2015 is significantly different from zero at the 0.05 level.

NSLP = National School Lunch Program; SY = school year.

Sodium. Like calories and saturated fat, the average sodium content of NSLP lunches served was lower in SY 2014–2015 than in SY 2009–2010 (Figure 9.6). In all three school types, average sodium content decreased by at least 250 mg. Overall, the average sodium content of NSLP lunches served decreased by 19 percent—from 1,375 mg to 1,105 mg. The former SMI standards encouraged SFAs to reduce levels of sodium in school meals but did not establish quantitative targets. The updated nutrition standards established maximum limits on sodium content, which were designed to be phased in over a 10-year period. In SY 2014–2015, schools were expected to be meeting Target 1 levels of sodium (see Table 1.3). In SY 2014–2015, the sodium content of the average NSLP lunch served was well below the limit established in the first targets for sodium (by 173 to 259 mg), but exceeded the later targets.

For all school types, average amounts of calories, saturated fat, and sodium in NSLP lunches served decreased significantly between SY 2009–2010 and SY 2014–2015.

Figure 9.6. Comparison of the Average Sodium Content of NSLP Lunches Served in SY 2009–2010 and SY 2014–2015



Source: Data for school year 2009–2010 are from the School Nutrition Dietary Assessment Study-IV Menu Survey. Data for school year 2014–2015 are from the School Nutrition and Meal Cost Study Menu Survey. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

*Difference between SY 2009–2010 and SY 2014–2015 is significantly different from zero at the 0.05 level.

NSLP = National School Lunch Program; SY = school year.

2. Nutrients Targeted in the SMI Nutrition Standards

Total Fat. On average, NSLP lunches served in SY 2014–2015 provided fewer calories from fat than lunches served in SY 2009–2010 (Table 9.1). This is consistent with the previously reported findings about reductions in calories and saturated fat. Average NSLP lunches served in SY 2014–2015 provided 17 percent fewer calories from fat than lunches served in SY 2009–2010 (average calories from fat decreased from 32 to 26 percent). However, it is important to note that the recommended target (based on the AMDR) for total fat intake for school-age children is 25 to 35 percent of calories from total fat (IOM 2005). Thus, it would not be desirable for average NSLP lunches to fall below the recommended minimum target of 25 percent of calories from total fat.

Key Nutrients. The SMI nutrition standards required that NSLP lunches provide one-third of the Recommended Dietary Allowance (RDA) for protein, vitamins A and C, iron, and calcium. Although these nutrients are not specifically targeted in the updated nutrition standards, the concentrations of these nutrients in NSLP lunches served either increased or remained relatively constant between SY 2009–2010 and SY 2014–2015 (Table 9.1).

The average protein content of NSLP lunches served remained constant for elementary and high schools and decreased slightly among middle schools (this difference was statistically significant).

Table 9.1. Changes in the Average Nutrient Content of NSLP Lunches Served Between SY 2009–2010 and SY 2014–2015

	Average		Difference (SY 2014–2015 – SY 2009–2010)
	SY 2009–2010 (SNDA-IV)	SY 2014–2015 (SNMCS)	
Elementary Schools			
Percentage of Calories from Total Fat	31.5	26.3	-5.2*
Protein (g)	28	28	0
Vitamin A (mcg RAE)	279	310	31*
Vitamin C (mg)	23	30	7*
Iron (mg)	4.2	3.9	-0.3*
Calcium (mg)	481	495	14*
Dietary Fiber (g)	6	9	3*
Number of Schools	317	451	
Middle Schools			
Percentage of Calories from Total Fat	32.4	27.5	-4.9*
Protein (g)	29	28	-1*
Vitamin A (mcg RAE)	255	275	20*
Vitamin C (mg)	23	30	7*
Iron (mg)	4.4	4.0	-0.4*
Calcium (mg)	470	462	-8
Dietary Fiber (g)	6	9	3*
Number of Schools	285	384	
High Schools			
Percentage of Calories from Total Fat	33.5	27.3	-6.2*
Protein (g)	30	30	0
Vitamin A (mcg RAE)	273	309	36*
Vitamin C (mg)	25	36	11*
Iron (mg)	4.7	4.3	-0.4*
Calcium (mg)	489	479	-10
Dietary Fiber (g)	7	10	3*
Number of Schools	278	371	
All Schools			
Percentage of Calories from Total Fat	32.1	26.7	-5.4*
Protein (g)	29	28	-1*
Vitamin A (mcg RAE)	273	303	30*
Vitamin C (mg)	23	31	8*
Iron (mg)	4.3	4.0	-0.3*
Calcium (mg)	481	485	4
Dietary Fiber (g)	6	9	3*
Number of Schools	880	1,206	

Source: Data for school year 2009–2010 are from the School Nutrition Dietary Assessment Study-IV Menu Survey. Data for school year 2014–2015 are from the School Nutrition and Meal Cost Study Menu Survey. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

*Difference between SY 2009–2010 and SY 2014–2015 is significantly different from zero at the 0.05 level.

NSLP = National School Lunch Program; RAE = retinol activity equivalents; SNMCS = School Nutrition and Meal Cost Study; SNDA = School Nutrition Dietary Assessment Study; SY = school year.

Average amounts of vitamins A and C increased significantly in all three school types between SY 2009–2010 and SY 2014–2015. Overall, the vitamin C content of NSLP lunches served increased by 35 percent, and the vitamin A content increased by 11 percent. Fruits and vegetables are leading contributors of vitamins A and C in NSLP lunches (Fox et al. 2012), so these increases may be associated with several aspects of the updated nutrition standards that focus on fruit and vegetable offerings. Specifically, the updated nutrition standards require that NSLP lunches include at least one serving of both a fruit and a vegetable and that weekly menus meet minimum requirements for five different vegetable subgroups.

The average iron content of NSLP lunches served decreased (by less than 0.5 mg) in all three school types between SY 2009–2010 and SY 2014–2015; all of these differences were statistically significant. There were modest variations in the average calcium content of NSLP lunches served (increased in elementary schools and decreased in middle and high schools), but the difference was only significant in elementary schools.

Dietary Fiber. Average amounts of dietary fiber consistently increased (an average increase of 3 g for all three school types) in NSLP lunches served between SY 2009–2010 and SY 2014–2015 (Table 9.1). Whole grains, fruits, and vegetables are leading contributors of dietary fiber in NSLP lunches (Fox et al. 2012), so these increases may be associated with several aspects of the updated nutrition standards that focus on increased whole grains and fruit and vegetable offerings. The SMI standards encouraged schools to increase the availability of fiber but did not establish quantitative targets.

C. Trends in the Availability of Self-Serve Food Bars and Fresh Fruits and Vegetables in NSLP Lunches

One of the key strategies for aligning school meals with the *Dietary Guidelines for Americans* was to increase the availability of fruits and vegetables (USDA, FNS 2012). Because previous studies have indicated that schools with salad bars offer a wider variety of fruits and vegetables, USDA encourages schools to make use of self-serve food bars, particularly salad bars, in reimbursable lunches as a way to encourage the consumption of fruits, vegetables, and legumes (USDA, FNS 2013a; Harris et al. 2012). FNS has provided resources and updated guidance to SFAs and schools on the effective use of salad bars in school meals. In addition, the Let's Move Salad Bars to Schools initiative provided grants to schools for salad bar equipment, starting in 2010 (Gretchen Swanson Center for Nutrition 2014).

This section describes changes in the availability of self-serve food bars and fresh fruits and vegetables in NSLP lunches between SY 2009–2010 (SNDA-IV) and SY 2014–2015 (SNMCS). Table 9.2 presents data for self-serve food bars and Table 9.3 presents data for fresh fruits and vegetables.

1. Availability of Self-Serve Food Bars in NSLP Lunches

Between SY 2009–2010 and SY 2014–2015, the availability of self-serve food bars in NSLP lunches remained constant or decreased slightly. The availability of self-serve food bars decreased significantly in elementary schools for both food bars offered every day (from 16 percent to 8 percent) and at least once per week (from 21 percent to 15 percent) (Table 9.2). In middle and high schools, the availability of self-serve food bars remained essentially unchanged. At both points in time, about 3 in 10 middle schools and 4 in 10 high schools offered self-serve food bars at least once per week, and about one-quarter of middle schools and 30 percent of high schools offered them every day.

Between SY 2009–2010 and SY 2014–2015, the availability of self-serve food bars in NSLP lunches remained constant or decreased slightly.

Between SY 2009–2010 and SY 2014–2015, the availability of salad bars in middle and high schools was also essentially unchanged (Table 9.2). Although estimates of the proportions of middle and high schools offering salad bars every day or at least once per week were slightly higher in SY 2014–2015 than in SY 2009–2010, the differences were not statistically significant. In contrast, the availability of salad bars decreased in elementary schools between SY 2009–2010 and SY 2014–2015—by 5 percentage points (from 19 percent to 15 percent) for salad bars offered at least once per week and by 7 percentage points (from 15 percent to 8 percent) for salad bars offered every day. This change was largely driven by a significant decrease in the availability of side salad bars in elementary schools.

Most changes in the availability of sandwich/deli bars and other types of self-serve food bars over time were not statistically significant. However in high schools, the availability of other entrée food bars, including nacho and taco bars, baked potato bars, and pasta bars, offered every day increased significantly (from 2 percent to 6 percent). There was also a slight increase in the percent of high schools offering sandwich/deli bars at least once per week (from 13 percent to 17 percent) and every day (from 9 percent to 12 percent), but the changes were not statistically significant.

Table 9.2. Percentage of Schools That Offered Self-Serve Food Bars in NSLP Lunches in SY 2014–2015 and SY 2009–2010

	Percentage of Schools							
	Elementary Schools		Middle Schools		High Schools		All Schools	
	SY 2009– 2010 (SNDA-IV)	SY 2014– 2015 (SNMCS)	SY 2009– 2010 (SNDA-IV)	SY 2014– 2015 (SNMCS)	SY 2009– 2010 (SNDA-IV)	SY 2014– 2015 (SNMCS)	SY 2009– 2010 (SNDA-IV)	SY 2014– 2015 (SNMCS)
Any Self-Serve Food Bar								
At least once per week	21	14.6*	33	31.5	41	39.6	27	23.2
Every day	16	8.2*	24	22.8	30	29.8	21	15.6*
Any Salad Bar								
At least once per week	19	14.5	26	30.6	33	38.1	23	22.7
Every day	15	8.1*	17	20.2	22	28.5	17	14.9
Side Salad Bar								
At least once per week	17	11.1*	19	25.6	21	28.5	18	17.6
Every day	13	4.9*	13	16.4	16	21.1	13	10.6
Salad Bar as Entrée								
At least once per week	<3	5.2	8	8.4	14	16.9	6	8.4
Every day	<3	<3	5^	4.6	7	10.3	3	4.7
Sandwich/Deli Bar								
At least once per week	<3	<3	12	11.5	13	16.8	6	6.2
Every day	<3	<3	8	7.3	9	12.4	4	4.3
Other Entrée Food Bars ^a								
At least once per week	<3	<3	10	6.6	14	12.5	6	4.2
Every day	<3	<3	3^	<3	<3	5.5*	<3	1.6
Number of Schools	318	451	287	384	279	372	884	1,207

Source: Data for school year 2009–2010 are from the School Nutrition Dietary Assessment Study-IV Menu Survey. Data for school year 2014–2015 are from the School Nutrition and Meal Cost Study Menu Survey. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Note: Estimates for SNDA-IV were reported as whole numbers.

^aIncludes nacho and taco bars, baked potato bars, and Italian/pasta bars.

*Difference between SY 2009–2010 and SY 2014–2015 is significantly different from zero at the 0.05 level.

SNMCS = School Nutrition and Meal Cost Study; SNDA = School Nutrition Dietary Assessment Study; SY = school year.

^ Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 0 and 3 percent are displayed as <3.

2. Availability of Fresh Fruits and Vegetables in NSLP Lunches

Overall, there was a significant increase (12 percentage points) between SY 2009–2010 and SY 2014–2015 in the percentage of schools offering fresh fruits and/or vegetables every day in NSLP lunches (from 69 percent to 81 percent) (Table 9.3). This pattern was observed in all three school types. The nutrition standards, which require that NSLP lunches include at least one serving of both fruit and vegetables, likely influenced this trend. This trend may also reflect a general increase in schools' access to fresh produce through Farm to School programs that have gained popularity in schools nationwide (USDA, FNS 2016), and USDA's expanded use of DoD's purchasing and distribution system to increase the amount and variety of locally-sourced fresh fruits and vegetables available to schools (USDA, FNS 2013b).

Overall, more fresh fruits and vegetables were available every day in NSLP lunches in SY 2014–2015 compared with SY 2009–2010.

Fresh vegetables (served raw or cooked) were offered more frequently in NSLP lunches in SY 2014–2015 than in SY 2009–2010. Overall, 68 percent of schools in SY 2014–2015 offered fresh vegetables every day, compared with 51 percent of schools in SY 2009–2010. This pattern was noted for all three school types, and all differences were statistically significant. Most of this increase was driven by an increase in the percentage of schools offering raw vegetables every day (as opposed to cooked fresh vegetables).

The proportion of schools offering fresh fruits every day also increased significantly between SY 2009–2010 and SY 2014–2015, but by a smaller percentage than for vegetables (from 38 to 48 percent of schools overall). In addition, there was a significant decline (from 14 percent to 5 percent) over the same time frame in the percentage of schools that did not offer fresh fruits on any day.

D. Trends in HEI-2010 Scores for SBP Breakfasts

This section describes changes in HEI-2010 total and component scores of SBP breakfasts in SY 2009–2010 (SNDA-IV) and SY 2014–2015 (SNMCS). Like the preceding analysis of NSLP lunches, the analysis is based on estimates of the calorie, nutrient, and USDA Food Pattern food group content of SBP menus *served* and findings presented for component scores focus on all schools.⁷⁷ Findings by school type are presented in Table K.4. Table K.5 provides a comparison of mean HEI-2010 scores.

⁷⁷ This analysis uses estimates based on “menus served” because SNDA-IV did not collect the data needed to produce estimates for “menus prepared.” Estimates for menus served take student selection patterns into account and give greater weight to menu items that were most frequently selected by students as part of reimbursable meals.

Table 9.3. Percentage of Schools That Offered Fresh Fruits and Vegetables in NSLP Lunches in SY 2014-2015 and SY 2009-2010

	Percentage of Schools							
	Elementary Schools		Middle Schools		High Schools		All Schools	
	SY 2009– 2010 (SNDA-IV)	SY 2014– 2015 (SNMCS)	SY 2009– 2010 (SNDA-IV)	SY 2014– 2015 (SNMCS)	SY 2009– 2010 (SNDA-IV)	SY 2014– 2015 (SNMCS)	SY 2009– 2010 (SNDA-IV)	SY 2014– 2015 (SNMCS)
Number of Days Any Fresh Fruits or Vegetables Were Offered								
None	<3	<3	<3	<3	<3	<3	<3	0.3
1 or 2	12	4.0*	9	<3*	5^	<3	10	3.0*
3 or 4	24	19.9	16	11.5	13	9.3	20	16.1
5	64	75.8*	75	86.0*	80	89.6*	69	80.7*
<i>Average number of days offered</i>	4.2	4.6	4.5	4.8	4.6	4.9	4.3	4.7
<i>Median number of days offered</i>	4.2	4.3	4.3	4.4	4.4	4.4	4.3	4.4
Number of Days Any Fresh Vegetables (Served Raw or in Cooked Form) Were Offered ^a								
None	3^	<3	3^	<3	3^	<3	3	1.4
1 or 2	23	11.6*	19	7.6*	12	<3*	20	8.9*
3 or 4	28	25.5	22	15.7	22	18.8	26	22.2
5	45	61.1*	57	76.0*	63	77.7*	51	67.5*
<i>Average number of days offered</i>	3.6	4.2	3.9	4.5	4.1	4.6	3.8	4.3
<i>Median number of days offered</i>	3.7	4.2	4.1	4.3	4.2	4.4	4.0	4.3
Number of Days Any Raw Fresh Vegetables Were Offered ^a								
None	3^	<3	3^	<3	3^	<3	3	1.4
1 or 2	28	13.5*	21	7.6*	13	<3*	24	10.1*
3 or 4	25	24.9	21	17.4	23	19.6	24	22.4
5	44	59.9*	55	74.3*	61	76.8*	49	66.2*
<i>Average number of days offered</i>	3.5	4.1	3.8	4.4	4.1	4.6	3.7	4.3
<i>Median number of days offered</i>	3.6	4.2	4.1	4.3	4.2	4.3	3.9	4.2

	Percentage of Schools							
	Elementary Schools		Middle Schools		High Schools		All Schools	
	SY 2009– 2010 (SNDA-IV)	SY 2014– 2015 (SNMCS)	SY 2009– 2010 (SNDA-IV)	SY 2014– 2015 (SNMCS)	SY 2009– 2010 (SNDA-IV)	SY 2014– 2015 (SNMCS)	SY 2009– 2010 (SNDA-IV)	SY 2014– 2015 (SNMCS)
Number of Days Any Cooked Fresh Vegetables Were Offered^a								
None	76	75.9	72	66.0	67	66.3	74	72.0
1 or 2	22	22.9	23	30.7	30	29.8	24	25.8
3 or 4	<3	<3	5 [^]	<3	<3	<3	<3	1.8
5	<3	<3	<3	<3	<3	<3	<3	0.4
<i>Average number of days offered</i>	0.4	0.3	0.5	0.5	0.5	0.5	0.4	0.4
<i>Median number of days offered</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Number of Days Any Fresh Fruits Were Offered^b								
None	14	5.5*	16	4.2*	12	4.2*	14	5.0*
1 or 2	33	24.2*	25	13.6*	21	10.9*	30	19.4*
3 or 4	21	28.8	12	26.2*	17	27.8*	19	28.1*
5	32	41.5*	47	56.0	50	57.1	38	47.5*
<i>Average number of days offered</i>	2.9	3.5	3.2	4.0	3.4	4.1	3.0	3.7
<i>Median number of days offered</i>	2.3	3.4	3.6	4.1	4.0	4.1	2.8	3.8
Number of Schools	257	347	224	307	215	294	696	948

Source: Data for school year 2009–2010 are from the School Nutrition Dietary Assessment Study-IV Menu Survey. (SNDA-IV percentages were updated to fix an error in the programming code.) Data for school year 2014–2015 are from the School Nutrition and Meal Cost Study Menu Survey. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: Includes only schools that provided menu information for five days. Differences in medians were not tested for statistical significance. Estimates for SNDA-IV were reported as whole numbers.

^aExcludes canned and frozen vegetables.

^bExcludes canned, frozen, and dried fruits and fruit juices.

^aIncludes nacho and taco bars, baked potato bars, and Italian/pasta bars.

*Difference between SY 2009–2010 and SY 2014–2015 is significantly different from zero at the 0.05 level.

NSLP = National School Lunch Program; SNMCS = School Nutrition and Meal Cost Study; SNDA = School Nutrition Dietary Assessment Study; SY = school year.

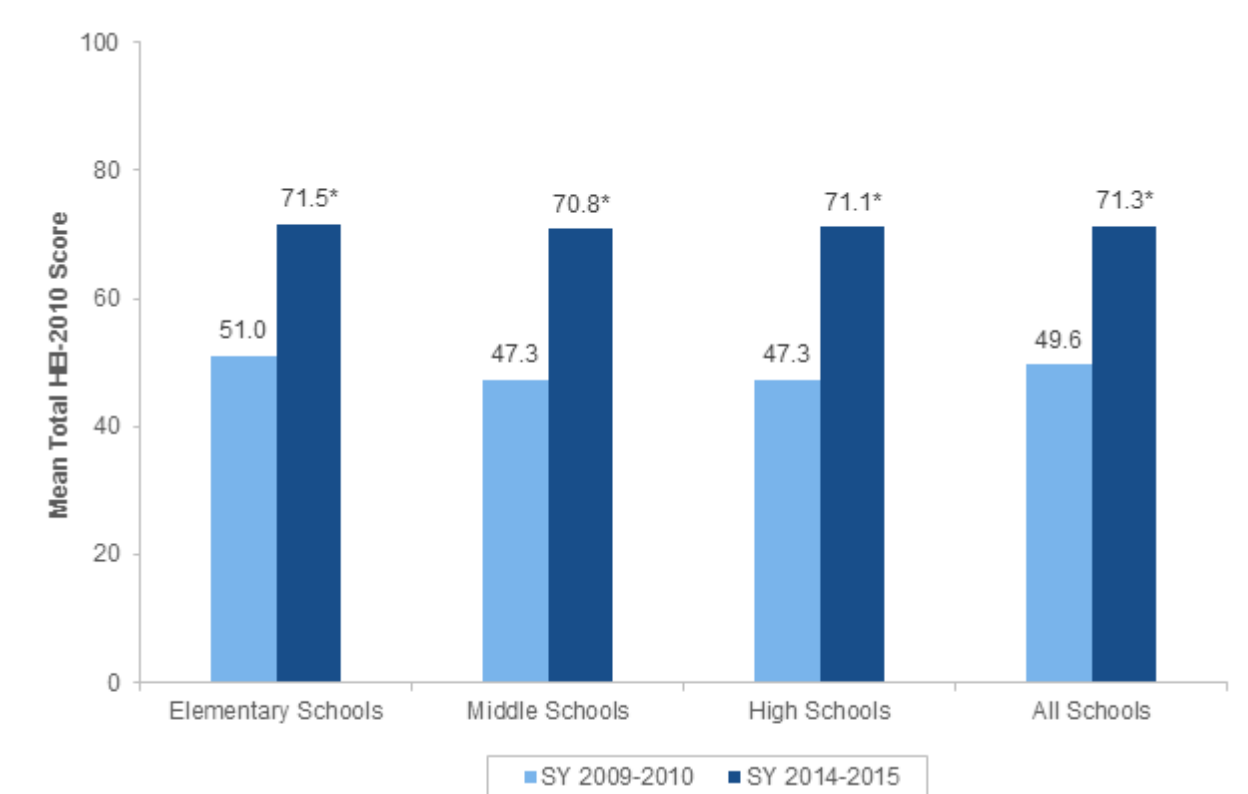
[^] Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 0 and 3 percent are displayed as <3.

1. HEI-2010 Total Scores

Between SY 2009–2010 and SY 2014–2015, the HEI-2010 total score for SBP breakfasts served increased significantly by at least 21 percentage points for all school types (Figure 9.7). The HEI-2010 total score for SBP breakfast served was 50 percent of the maximum score in SY 2009–2010. In SY 2014–2015, the HEI-2010 total score was 71 percent of the maximum score. The large increases in HEI-2010 total scores observed for all school types suggests that the updated nutrition standards have significantly improved the nutrition quality of SBP breakfasts.

Between SY 2009–2010 and SY 2014–2015, the HEI-2010 total score for SBP breakfasts increased significantly by at least 21 percentage points across all school types, indicating a substantial improvement in the nutritional quality of SBP breakfasts.

Figure 9.7. Comparison of Healthy Eating Index-2010 Scores, as a Percentage of Maximum Scores, for SBP Breakfasts Served in SY 2009–2010 and SY 2014–2015: Total Score



Source: Data for school year 2009–2010 are from the School Nutrition Dietary Assessment Study-IV Menu Survey. Data for school year 2014–2015 are from the School Nutrition and Meal Cost Study Menu Survey. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Note: Higher scores reflect higher nutritional quality.

*Difference between SY 2009–2010 and SY 2014–2015 is significantly different from zero at the 0.05 level.

SBP = School Breakfast Program; SY = school year.

2. HEI-2010 Adequacy Components

For SBP breakfasts served, scores for 4 of the 9 adequacy components in the HEI-2010 increased significantly between SY 2009–2010 and SY 2014–2015 (Figure 9.8). The largest increases were observed for whole grains and whole fruit. Between SY 2009–2010 and SY 2014–2015, the score for whole grains increased by 58 percentage points (from 38 to 96 percent of the maximum score). The score for whole fruit increased by 39 percentage points (from 50 to 89 percent of the maximum score). In addition, the scores for total fruit and fatty acids increased by 5 to 9 percentage points (from 95 to 100 percent of the maximum score for total fruit; and from 36 to 45 percent of the maximum score for fatty acids).⁷⁸ For whole grains and total fruit, scores increased to 96 percent or more of the maximum scores. These near-perfect scores indicated that the concentration of these food groups in SBP breakfasts served was very consistent with the relevant *Dietary Guidelines for Americans* recommendations. Scores for the remaining adequacy components (total protein foods, dairy, total vegetables, seafood and plant proteins, and greens and beans) remained relatively constant over time.

Between SY 2009–2010 and SY 2014–2015, scores for whole grains, whole fruit, total fruit, and fatty acids increased significantly for SBP breakfasts.

The significant increases in scores for 4 of the 9 adequacy components in the HEI-2010 suggest that the updated nutrition standards have positively influenced the type and amounts of foods being served in SBP breakfasts, particularly whole grains and fruits.

3. HEI-2010 Moderation Components

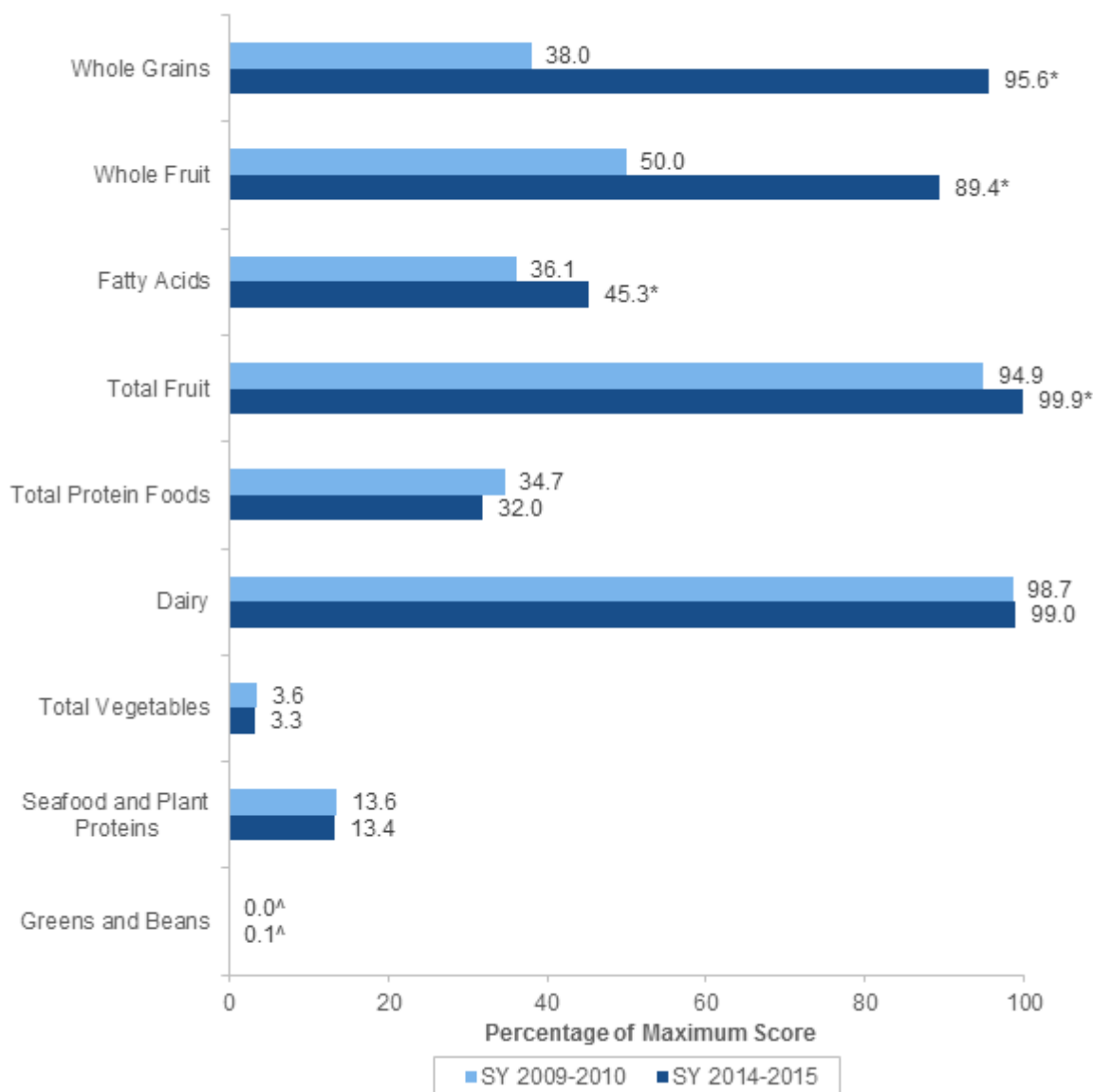
Between SY 2009–2010 and SY 2014–2015, the scores for all three moderation components in the HEI-2010 increased significantly for SBP breakfasts served (Figure 9.9). Higher scores for moderation components reflect lower concentrations in SBP breakfasts (which is desirable). The score for refined grains increased by 50 percentage points (from 45 to 95 percent of the maximum score), indicating that the concentration of refined grains in SBP breakfast decreased substantially over time. This is consistent with the large increase in the score for whole grains reported in the previous section. There was also a substantial increase (29 percentage points) in the score for empty calories (from 54 to 83 percent of the maximum score), indicating that the concentration of this component in SBP breakfasts decreased significantly between SY 2009–2010 and SY 2014–2015. The score for sodium increased by 21 percentage points (from 72 to 93 percent of the maximum score), indicating that the new sodium limit has successfully reduced the sodium content of SBP breakfasts (this is consistent with the decrease in average sodium content reported later in section E). For both refined grains and sodium, the near-perfect scores (93 percent or more of the maximum scores)

Between SY 2009–2010 and SY 2014–2015, the concentrations of refined grains, empty calories, and sodium decreased significantly in SBP breakfasts.

⁷⁸ The increase in the score for fatty acids between SY 2009–2010 and SY 2014–2015 was not statistically significant for middle and high schools.

for SBP breakfasts served in SY 2014–2015 indicate that these breakfasts were very consistent with the relevant *Dietary Guidelines for Americans* recommendations.

Figure 9.8. Comparison of Healthy Eating Index-2010 Scores, as a Percentage of Maximum Scores, for SBP Breakfasts Served between SY 2009–2010 and SY 2014–2015: Adequacy Components



Source: Data for school year 2009–2010 are from the School Nutrition Dietary Assessment Study-IV Menu Survey. Data for school year 2014–2015 are from the School Nutrition and Meal Cost Study Menu Survey. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

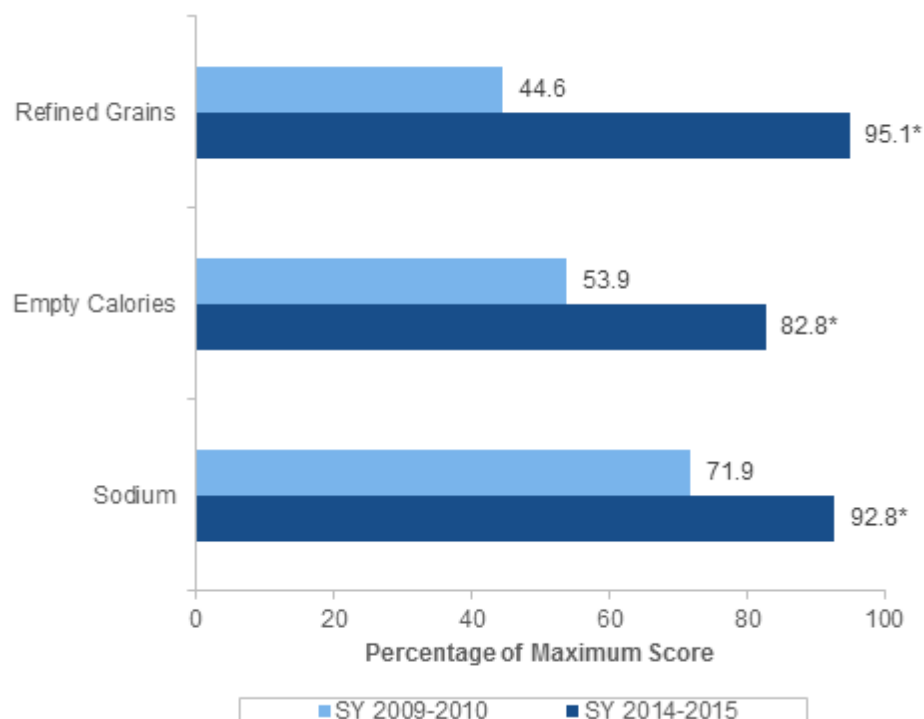
Note: Higher scores for adequacy components indicate higher concentrations in SBP breakfasts.

*Difference between SY 2009–2010 and SY 2014–2015 is significantly different from zero at the 0.05 level.

SBP = School Breakfast Program; SY = school year.

[^] Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1.

Figure 9.9. Comparison of Healthy Eating Index-2010 Scores for SBP Breakfasts Served in SY 2009–2010 and SY 2014–2015: Moderation Components



Source: Data for school year 2009–2010 are from the School Nutrition Dietary Assessment Study-IV Menu Survey. Data for school year 2014–2015 are from the School Nutrition and Meal Cost Study Menu Survey. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Note: Higher scores for moderation components indicate lower concentrations in SBP breakfasts.

*Difference between SY 2009–2010 and SY 2014–2015 is significantly different from zero at the 0.05 level.

SBP = School Breakfast Program; SY = school year.

E. Trends in the Calorie and Nutrient Content of SBP Breakfasts

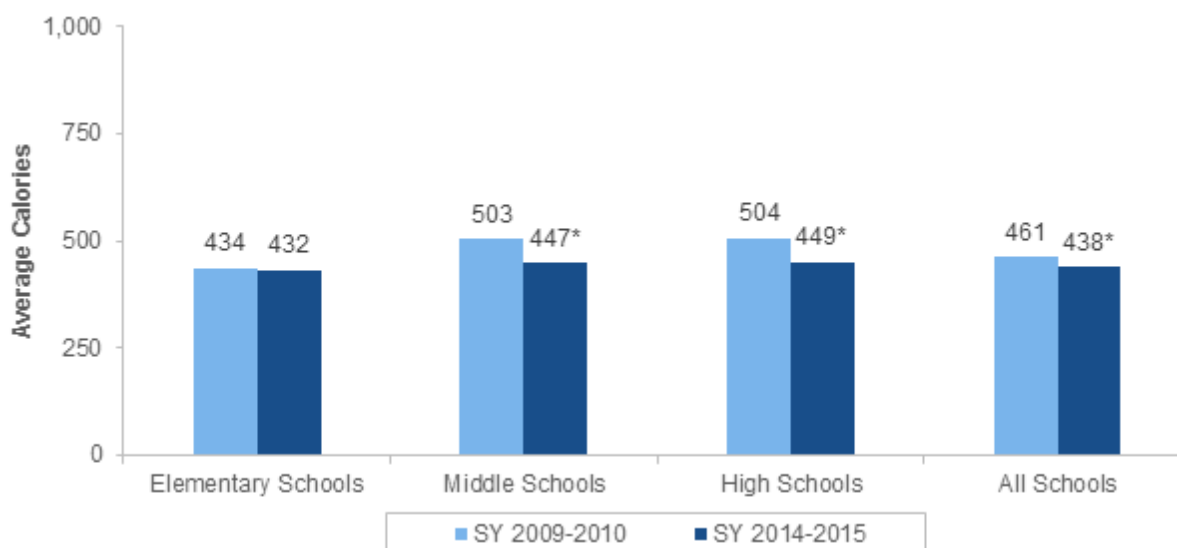
This analysis compared the average calorie and nutrient content of SBP breakfasts in SY 2009–2010 (SNDA-IV) and SY 2014–2015 (SNMCS). The analysis is based on estimates of the calorie and nutrient content of SBP breakfasts served. Findings for calories and key nutrients are presented below. Findings for additional nutrients are presented in Table K.6.

1. Calories and Nutrients Targeted in the Updated Nutrition Standards

Calories. Between SY 2009–2010 and SY 2014–2015, the average calorie content of SBP breakfasts served decreased significantly in both middle and high schools (by roughly 50 calories) (Figure 9.10). There was no significant change in the average calorie content of SBP breakfasts served in elementary schools. This finding suggests that the maximum calorie levels included in the updated nutrition standards may have influenced the calorie content of SBP breakfasts in secondary schools. However, it is important to note that a decrease in calories may not be desirable for some schools, particularly high schools where students' calorie needs are greatest. As reported previously (see Chapter 4), almost 1 in 5 (18 percent) average weekly breakfast menus in high schools in SY 2014–2015 did not meet the minimum calorie level specified in the updated nutrition standards. The same was true for 5 to 6 percent of average weekly menus in elementary and middle schools.

Between SY 2009–2010 and SY 2014–2015, the average calorie content of SBP breakfasts served decreased significantly in both middle and high schools (by roughly 50 calories) but stayed essentially the same in elementary schools.

Figure 9.10. Comparison of the Average Calorie Content of SBP Breakfasts Served in SY 2009–2010 and SY 2014–2015



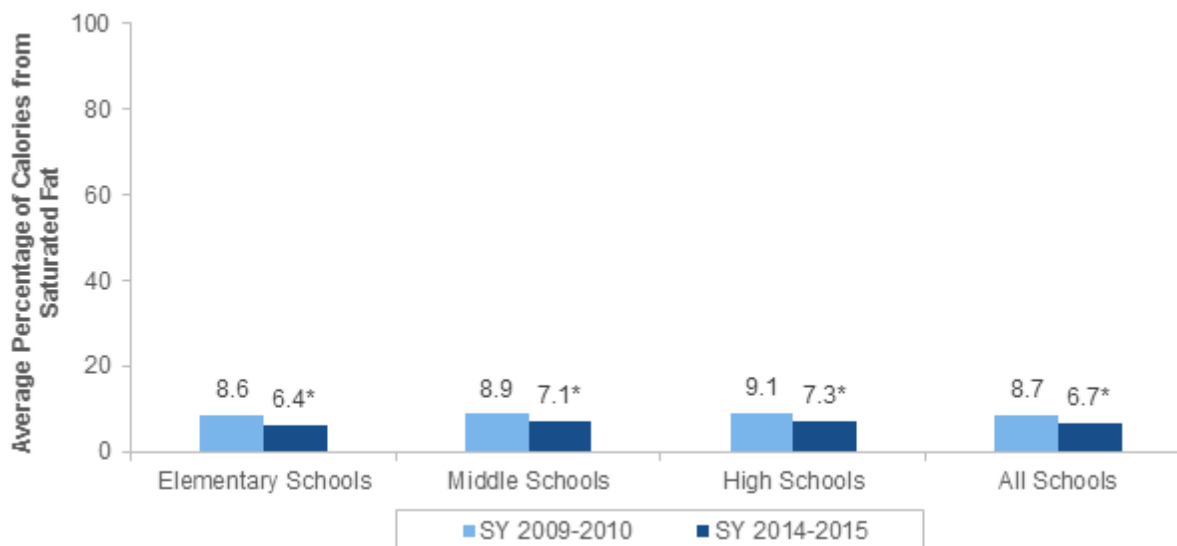
Source: Data for school year 2009–2010 are from the School Nutrition Dietary Assessment Study-IV Menu Survey. Data for school year 2014–2015 are from the School Nutrition and Meal Cost Study Menu Survey. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

*Difference between SY 2009–2010 and SY 2014–2015 is significantly different from zero at the 0.05 level.

SBP = School Breakfast Program; SY = school year.

Saturated Fat. The saturated fat content of SBP breakfasts served decreased significantly between SY 2009–2010 and SY 2014–2015. The average percentage of calories provided by saturated fat decreased by at least 20 percent across all three school types (Figure 9.11).

Figure 9.11. Comparison of the Average Saturated Fat Content of SBP Breakfasts Served in SY 2009–2010 and SY 2014–2015



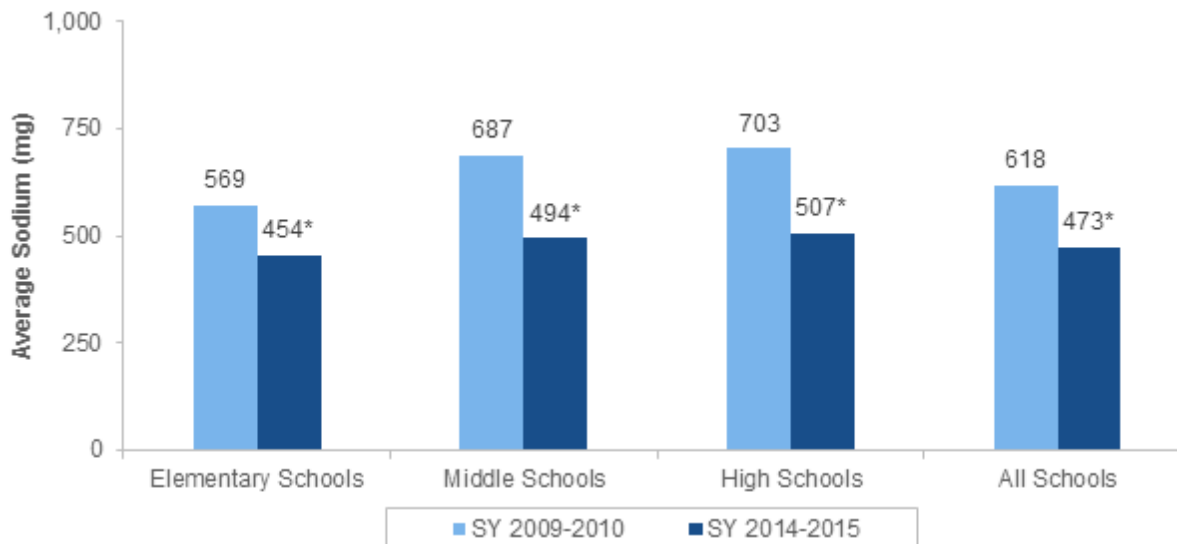
Source: Data for school year 2009–2010 are from the School Nutrition Dietary Assessment Study-IV. Data for school year 2014–2015 are from the School Nutrition and Meal Cost Study, Menu Survey. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

*Difference between SY 2009–2010 and SY 2014–2015 is significantly different from zero at the 0.05 level.

SBP = School Breakfast Program; SY = school year.

Sodium. Similar to lunch, the average sodium content of SBP breakfasts decreased significantly between SY 2009–2010 and SY 2014–2015 across all three school types (Figure 9.12). The average sodium content of SBP breakfasts served decreased by 23 percent overall and at least 20 percent across all school types (a decrease of 145 mg, on average). In SY 2014–2015, for all school types, the sodium content of the average SBP breakfast was below the limits established in the first and second targets for sodium. Average SBP breakfasts served were very close to meeting the final target for sodium (USDA, FNS 2012).

The average sodium and saturated fat content of SBP breakfasts decreased by at least 20 percent across all school types between SY 2009–2010 and SY 2014–2015.

Figure 9.12. Comparison of the Average Sodium Content of SBP Breakfasts Served in SY 2009–2010 and SY 2014–2015

Source: Data for school year 2009–2010 are from the School Nutrition Dietary Assessment Study-IV Menu Survey. Data for school year 2014–2015 are from the School Nutrition and Meal Cost Study Menu Survey. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

*Difference between SY 2009–2010 and SY 2014–2015 is significantly different from zero at the 0.05 level.

SBP = School Breakfast Program; SY = school year.

2. Nutrients Targeted in the SMI Nutrition Standards

Total Fat. The percentage of calories from total fat in SBP breakfasts served decreased by nearly the same amount in all school types between SY 2009–2010 and SY 2014–2015 (Table 9.4). The decrease was consistently more than 5 percentage points for each school type. As noted previously, the recommended target (based on the AMDR) for total fat intake for school-age children is 25 to 35 percent of calories from total fat (IOM 2005). Average SBP breakfasts served in both school years fell below the minimum recommended target.

Key Nutrients. The SMI standards established the requirement that breakfasts provide 25 percent of the 1989 RDAs for energy (calories), protein, vitamins A and C, calcium, and iron (before the SMI, there were no quantitative nutrition standards for the SBP). Although these nutrients are not specifically targeted in the updated nutrition standards, there were some changes in the concentrations of these nutrients in SBP breakfasts served between SY 2009–2010 and SY 2014–2015 (Table 9.4).

Between SY 2009–2010 and SY 2014–2015, the average protein content of SBP breakfasts did not change in elementary schools, but decreased significantly by 2 g in middle schools and increased significantly by 2 g in high schools. Average amounts of vitamin A in SBP breakfasts served decreased significantly across all school types (by 23 to 53 mcg RAE). For all school types, average amounts of vitamin C and calcium in SBP breakfasts served increased between SY 2009–2010 and SY 2014–2015, but differences were significant only among elementary schools. Average amounts of iron in SBP breakfasts served decreased slightly but significantly, by about 1 mg or less, across all school types between SY 2009–2010 and SY 2014–2015.

Table 9.4. Changes in the Average Nutrient Content of SBP Breakfasts Served between SY 2009–2010 and SY 2014–2015

	Average		Difference (SY 2014–2015 – SY 2009–2010)
	SY 2009–2010 (SNDA-IV)	SY 2014–2015 (SNMCS)	
Elementary Schools			
Percentage of Calories from Total Fat	23.8	18.3	-5.5*
Protein (g)	15	15	0
Vitamin A (mcg RAE)	248	225	-23*
Vitamin C (mg)	28	34	6*
Iron (mg)	4.5	4.1	-0.4*
Calcium (mg)	382	410	28*
Dietary Fiber (g)	3	5	2*
Number of Schools	282	414	
Middle Schools			
Percentage of Calories from Total Fat	26.0	20.5	-5.5*
Protein (g)	17	15	-2*
Vitamin A (mcg RAE)	244	193	-51*
Vitamin C (mg)	32	34	2
Iron (mg)	4.5	3.6	-0.9*
Calcium (mg)	390	393	3
Dietary Fiber (g)	3	5	2*
Number of Schools	263	352	
High Schools			
Percentage of Calories from Total Fat	26.6	20.8	-5.8*
Protein (g)	13	15	2*
Vitamin A (mcg RAE)	237	184	-53*
Vitamin C (mg)	33	35	2
Iron (mg)	4.6	3.5	-1.1*
Calcium (mg)	373	388	15
Dietary Fiber (g)	3	5	2*
Number of Schools	257	344	
All Schools			
Percentage of Calories from Total Fat	24.8	19.2	-5.6*
Protein (g)	16	15	-1*
Vitamin A (mcg RAE)	245	210	-35*
Vitamin C (mg)	30	34	4*
Iron (mg)	4.5	3.9	-0.6*
Calcium (mg)	382	402	20*
Dietary Fiber (g)	3	5	2*
Number of Schools	802	1,110	

Source: Data for school year 2009–2010 are from the School Nutrition Dietary Assessment Study-IV Menu Survey. Data for school year 2014–2015 are from the School Nutrition and Meal Cost Study Menu Survey. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

*Difference between SY 2009–2010 and SY 2014–2015 is significantly different from zero at the 0.05 level.

SBP = School Breakfast Program; RAE = retinol activity equivalents; SNMCS = School Nutrition and Meal Cost Study; SNDA = School Nutrition Dietary Assessment Study; SY = school year.

Dietary Fiber. Between SY 2009–2010 and SY 2014–2015, average amounts of dietary fiber in SBP breakfasts served consistently increased by 2 g for all school types (Table 9.4). Whole grains and fruits are leading contributors of dietary fiber in SBP breakfasts (Fox et al. 2012), so these increases may be associated with several aspects of the updated nutrition standards that focus on increased whole grains and fruit offerings. A new requirement that students must select at least one serving of fruit in order for their meal to be eligible for Federal reimbursement may have also contributed to the increase in dietary fiber in SBP breakfasts. The SMI standards encouraged schools to increase the availability of fiber but did not establish quantitative targets.

F. Trends in the Calorie and Nutrient Content of Afterschool Snacks

As noted previously, the updated nutrition standards for school meals do not address afterschool snacks provided through the NSLP. However, because many of the foods included in afterschool snacks are also included in reimbursable meals, the updated nutrition standards may have influenced the calorie and nutrient content of afterschool snacks. This section compares the average calorie and nutrient content of afterschool snacks offered to students in SY 2009–2010 (SNDA-IV) and SY 2014–2015 (SNMCS). Findings for calories and key nutrients are presented in Table 9.5 and summarized below. Findings for additional nutrients are presented in Table K.7.

Table 9.5. Changes in the Average Calorie and Nutrient Content of Afterschool Snacks Offered between SY 2009–2010 and SY 2014–2015

	Average		Difference (SY 2014–2015 – SY 2009–2010)
	SY 2009–2010 (SNDA-IV)	SY 2014–2015 (SNMCS)	
All Schools			
Calories	264	264	0
Percentage of Calories from Saturated Fat	7.6	6.0	-1.6*
Sodium (mg)	283	264	-19
Percentage of Calories from Total Fat	23.2	19.8	-3.4*
Protein (g)	8	9	1
Vitamin A (mcg RAE)	120	117	-3
Vitamin C (mg)	18	20	2
Iron (mg)	1.8	1.8	0.0
Calcium (mg)	221	243	22
Dietary Fiber (g)	2	3	1*
Number of Schools	172	166	

Source: Data for school year 2009–2010 are from the School Nutrition Dietary Assessment Study-IV Menu Survey. Data for school year 2014–2015 are from the School Nutrition and Meal Cost Study Menu Survey. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program and providing reimbursable afterschool snacks.

*Difference between SY 2009–2010 and SY 2014–2015 is significantly different from zero at the 0.05 level.

RAE = retinol activity equivalents; SNMCS = School Nutrition and Meal Cost Study; SNDA = School Nutrition Dietary Assessment Study; SY = school year.

1. Calories and Nutrients Targeted in the Updated Nutrition Standards

Between SY 2009–2010 and SY 2014–2015, there was a no change in the average calorie content of afterschool snacks offered. However, the average percentage of calories from saturated fat in afterschool snacks offered decreased significantly by 21 percent (from 8 to 6 percent). There was also a modest (7 percent) reduction in the average sodium content of afterschool snacks (from 283 mg to 264 mg), but the difference was not statistically significant.

The average saturated fat content of afterschool snacks offered decreased by 22 percent between SY 2009–2010 and SY 2014–2015. The percentage of calories from total fat also decreased by 15 percent.

2. Nutrients Targeted in the SMI Nutrition Standards

The average percentage of calories from total fat in afterschool snacks offered decreased significantly by 15 percent between SY 2009–2010 and SY 2014–2015 (from 23 to 20 percent). There was a small increase (1 g) in the average protein content of afterschool snacks offered between SY 2009–2010 and SY 2014–2015, but the difference was not statistically significant. Changes in the average vitamin A, vitamin C, iron, and calcium content of afterschool snacks were minor and not statistically significant. The average amount of dietary fiber in afterschool snacks offered increased by 50 percent, from 2 to 3 g, a small but statistically significant change.

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APPENDIX A

CHAPTER 1 SUPPLEMENTAL TABLES

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TABLES

A.1 Grade Spans in NSLP Schools A.5

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Table A.1. Grade Spans in NSLP Schools

	Number of Sample Schools (Unweighted)	Number of Schools (Weighted)	Percentage of Schools (Weighted)
Elementary Schools			
Pre-K - 1	3	191	0.3
Pre-K - 2	16	1,600	2.9
Pre-K - 3	10	885	1.6
Pre-K - 4	25	2,702	4.9
Pre-K - 5	98	14,822	26.6
Pre-K - 6	34	4,340	7.8
Pre-K - 7	2	176	0.3
Pre-K - 8	17	2,626	4.7
Pre-K - 12	5	600	1.1
K - 2	7	626	1.1
K - 3	8	969	1.7
K - 4	21	1,906	3.4
K - 5	87	10,899	19.6
K - 6	40	5,436	9.8
K - 8	19	2,698	4.9
K - 12	2	573	1.0
1 - 2	2	73	0.1
1 - 4	2	224	0.4
1 - 5	3	338	0.6
1 - 6	3	299	0.5
1 - 8	3	186	0.3
2 - 3	1	42	0.1
2 - 4	1	127	0.2
2 - 5	4	549	1.0
2 - 6	1	34	0.1
2 - 7	1	51	0.1
3 - 4	1	83	0.2
3 - 5	11	742	1.3
3 - 6	5	512	0.9
3 - 8	3	173	0.3
4 - 5	3	133	0.2
4 - 6	4	256	0.5
5 only	1	42	0.1
5 - 6	7	657	1.2
5 - 7	1	78	0.1
Middle Schools			
4 - 8	3	291	1.7
4 - 9	1	45	0.3
5 - 8	32	2,169	12.8
5 - 9	2	158	0.9
6 only	1	78	0.5
6 - 7	6	128	0.8
6 - 8	245	10,888	64.1
6 - 9	7	319	1.9
7 - 8	71	2,273	13.4
7 - 9	11	412	2.4
8 only	1	31	0.2
8 - 9	3	150	0.9
9 only	1	48	0.3

	Number of Sample Schools (Unweighted)	Number of Schools (Weighted)	Percentage of Schools (Weighted)
High Schools			
6 - 12	11	1,056	5.1
7 - 10	1	27	0.1
7 - 12	32	2,576	12.5
8 - 10	1	7	0.0
8 - 12	14	755	3.7
9 - 10	1	105	0.5
9 - 12	295	15,644	75.7
10 - 12	17	488	2.4
Number of Schools	1,207	93,293	

Source: School Nutrition and Meal Cost Study, school year 2014-2015. Tabulations are weighted to be representative of all public, non-charter schools offering the National School Lunch Program.

Note: Data on grade spans were taken from the U.S. Department of Education's Common Core of Data (CCD) 2011-2012 unless updated during the data collection planning process based on reports from school food authorities and schools.

NSLP = National School Lunch Program.

APPENDIX B

CHAPTER 2 SUPPLEMENTAL TABLES

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TABLES

B.1 Food Grouping System B.5

B.2 Availability of Self-Serve Food Bars in SBP Breakfasts.....B.9

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Table B.1. Food Grouping System

Major Food Group	Minor Food Group	Examples
Milk	Whole, unflavored 2%, unflavored 2%, flavored Low-fat, unflavored Low-fat, flavored Fat-free, unflavored Fat-free, flavored Other milk beverages	Whole milk with no added flavoring 2% milk with no added flavoring 2% chocolate or strawberry milk Low-fat milk with no added flavoring Low-fat chocolate or strawberry milk Fat-free milk with no added flavoring Fat-free chocolate or strawberry milk Soy milk or almond milk
Vegetables	Cooked, dark green Cooked, beans and peas ^a Cooked, other Cooked, red and orange Cooked, starchy Cooked, mixtures Raw, dark green Raw, other Raw, red and orange Raw, starchy Raw, mixtures	Broccoli, spinach, collards, turnip greens, kale, mustard greens Baked beans, black beans, pinto/kidney beans, chickpeas, bean soups String beans, summer squash, cabbage, cauliflower, asparagus, onions Carrots, sweet potato, tomato soup, winter squash, red peppers French fries, tater tots, white potatoes, green peas, corn, plantains Mixed vegetables, peas and carrots, corn and peppers, vegetable soup Broccoli, side salads with spinach Cucumber, celery, green peppers, side salads with iceberg lettuce, coleslaw Carrots, tomatoes, red peppers Jicama Side salad bars, lettuce and tomato, carrots and celery, side salad with vegetable mixtures
Fruits	Canned, sweetened Canned, unsweetened Dried Fresh Frozen Juice	Any canned fruit in light or heavy syrup or juice-packed, including fruit cocktail, peaches, pears, sweetened applesauce Any canned fruit water-packed or drained, including fruit cocktail, peaches, pears, unsweetened applesauce Any dried fruit, including raisins, cranberries, apples, apricots, mixtures Any fresh fruit, including apples, oranges, bananas, pears, grapes Any frozen fruit including blueberries, peaches, strawberries Apple juice, orange juice, grape juice, fruit juice blends
Combination Entrées	Breakfast burritos Breakfast sandwich Cheeseburgers and similar beef/pork sandwiches Entrée food bars Entrée salads Hot dogs, corn dogs, and similar sausage sandwiches Hamburger and similar beef/pork sandwiches	Burrito with egg, cheese, sausage, ham or bacon Sandwich with egg and cheese or meat, sausage biscuit Cheeseburger, barbecue rib sandwich with cheese Self-serve sandwich or deli bar, entrée salad bar, nacho or taco bar, pasta or Italian bar, baked potato bar Chef's salad, cobb salad, grilled chicken Caesar salad, crispy chicken salad, taco salad Hot dog on bun, chicken hot dog on bun, corn dog, pancake-on-a-stick Hamburger, barbecue rib sandwich, sloppy joe

Major Food Group	Minor Food Group	Examples
	Mexican-style entrees	Burrito, taco, nachos, quesadillas, fajitas, and enchiladas
	Mixtures with grain, meat/meat alternate, and/or vegetables	Spaghetti with sauce, macaroni and cheese, lasagna, ravioli, chicken, beef or pork with rice or noodles
	Other mixtures with meat/meat alternate and/or vegetables	Chili with meat and/or beans, baked potato with cheese and/or meat, mixtures with chicken, potatoes and corn
	Parfaits	Parfaits with yogurt, fruit, and granola
	Peanut butter sandwich	Peanut butter sandwich, peanut butter and jelly sandwich, Uncrustables
	Pizza with meat	Sausage, pepperoni, chicken, and breakfast pizzas
	Pizza without meat	Cheese pizzas and vegetable pizzas
	Pizza pockets, pizza sticks, and calzones	Pizza pocket, calzone, Italian dunkers, cheese breadsticks
	Prepackaged meals	Bag lunches, pre-plated meals
	Sandwich with breaded/fried meat, poultry, or fish	Chicken patty, breaded beef or pork patty, breaded fish patty sandwiches
	Sandwich with mayonnaise-based poultry, tuna, or egg salad	Chicken, egg, and tuna salad sandwiches
	Sandwich with meat substitute	Burger with vegetarian patty
	Sandwich with cheese only	Grilled cheese, sandwich with cheese and vegetables
	Sandwich with plain meat or poultry	Turkey, ham, turkey ham, grilled chicken, roast beef sandwiches
Grains/Breads	Biscuits and cornbread	Biscuits, cornbread, croissant, hush puppy, bread stuffing
	Bread or bread alternate with added fat	Buttered toast or English muffin, bagel stuffed with cream cheese, garlic bread
	Breads, rolls, bagels, and other plain breads	Bread, rolls, bagels, English muffins, tortillas, soft pretzels
	Cold cereal, sweetened ^b	Any type of sweetened cold cereal: Cinnamon Toast Crunch, Cocoa Puffs, Lucky Charms, Honey Nut Cheerios, Trix
	Cold cereal, unsweetened	Any type of unsweetened cold cereal: Cheerios, Frosted Mini-Wheats, Rice Krispies, Kix, Rice Chex, Special K
	Corn/tortilla chips	Corn chips, tortilla chips, taco shells
	Crackers, croutons, pretzels ^c	Animal crackers, graham crackers, saltines, hard pretzels, hard breadsticks
	Granola and breakfast bars	Granola bars, Milk 'n Cereal bars, Benefit bars, Ultimate Breakfast Rounds, PowerBars
	Hot cereal	Oatmeal, grits, cream of wheat
	Muffins and sweet/quick breads	Blueberry muffin, chocolate chip muffin, pumpkin bread, zucchini bread
	Other grains/breads	Egg rolls, won tons, dumplings
	Pancakes, waffles, French toast	Pancakes, waffles, waffle sticks, French toast, French toast sticks
	Pasta	Macaroni, spaghetti, noodles, pasta salad without meat, macaroni and cheese as a side dish
	Pastries ^d	Cinnamon rolls, doughnuts, toaster pastries, scones, fruit-filled breadsticks, strudels
	Rice	White, brown, wild, or yellow rice, rice pilaf

Major Food Group	Minor Food Group	Examples
Meats/Meat Alternates	Chicken and turkey, breaded or fried	Chicken nuggets, patties, tenders, poppers, fried chicken
	Chicken and turkey, plain	Grilled chicken, chicken fajita strips, roasted chicken breast, roasted turkey
	Chicken and turkey, with sauce, gravy or mayonnaise	Chicken or turkey salad, barbecue chicken, chicken or turkey with gravy, sweet and sour chicken or turkey
	Fish and shellfish, breaded or fried	Breaded fish patty or nuggets
	Fish and shellfish, plain	Baked or broiled cod, haddock, salmon
	Fish and shellfish, with sauce, gravy or mayonnaise	Tuna salad with mayonnaise
	Meat, breaded or fried	Breaded beef, breaded pork chop or patty
	Meat, plain	Ground beef, beef or pork crumbles, beef patty, ham, pork roast, rib patty
	Meat with sauce, gravy or mayonnaise	Beef stroganoff, spaghetti sauce with meat, meatballs with sauce, barbecue pork, beef or pork with gravy, sausage gravy
	Other protein, cheese	Cheddar cheese, mozzarella cheese, American cheese, cheese sticks, cheese sauce, cottage cheese
	Other protein, eggs	Omelets with meat, cheese, and/or vegetables; hard-boiled, scrambled and fried eggs
Desserts and Other Menu Items	Other protein, meat substitutes, hummus, legumes ^e	Hummus, meatless chicken, tofu, chickpeas, black beans, pinto beans, refried beans
	Other protein, nuts, nut butters and seeds	Peanut butter, almond butter, soy nuts, sunflower seeds
	Sausage, frankfurters, cold cuts	Beef, pork, chicken or turkey sausage or hot dog, turkey ham, deli turkey or ham
	Yogurt	Fruited or plain yogurt, nonfat, lowfat, and regular
	Dairy-based desserts	Ice cream, frozen yogurt, ice cream bars or sticks, pudding
	Desserts containing fruit or fruit juice	Gelatin with fruit, sorbet, Italian Ice
	Grain-based desserts, brownies	Brownies with or without icing
	Grain-based desserts, cakes ^d	Cake or cupcake with or without icing, doughnut, cinnamon roll
	Grain-based desserts, cookies ^c	Chocolate chip cookie, oatmeal cookie, sugar cookie, animal crackers, graham crackers
	Grain-based desserts, fruit cobblers and crisps ^d	Blueberry, peach, cherry crisp or cobbler, Danish, fruit-filled breadstick
	Bacon	Pork or turkey bacon
Accompaniments	Bottled water	Unsweetened bottled water, tap water
	Other items	Non-vegetable/non-entrée soups, gelatin without fruit, fruit snacks
	Snacks	Potato chips, Cheetos, Funyuns, Bugles
	Condiments and toppings	Mayonnaise, mustard, catsup, gravy, jelly, margarine, butter, barbecue sauce, cheese topping, salsa, hot sauce, sour cream, syrup
	Condiment bars	Self-serve condiment or fixins' bar
	Salad dressing	Ranch, Caesar, Italian, honey mustard, blue cheese, French, Thousand Island

^aIncludes beans and peas credited as vegetables on the Menu Survey.

^bA cereal was classified as sweetened if it contained 21.3 grams of sugar or more per 100 gram serving—the current criterion for cereals allowed under the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC).

^cAnimal crackers and graham crackers are included as grains/breads at breakfast and as grain-based desserts at lunch.

^dPastries such as cinnamon rolls, doughnuts, fruit-filled breadsticks, toaster pastries, and Danishes are included as grains/breads at breakfast and as grain-based desserts at lunch.

^eIncludes beans and peas credited as meat alternates on the Menu Survey.

Table B.2. Availability of Self-Serve Food Bars in SBP Breakfasts

	Percentage of Schools			
	Elementary Schools	Middle Schools	High Schools	All Schools
Any Self-Serve Food Bar				
At least once per week	<3	<3	<3	<3
Every day	<3	<3	<3	<3
Any Fruit Bar				
At least once per week	<3	<3	<3	<3
Every day	<3	<3	<3	<3
Breakfast Entrée Bar				
At least once per week	<3	<3	<3	<3
Every day	<3	<3	<3	<3
Number of Schools	415	352	344	1,111

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Note: None of the differences between school types were statistically significant.

SBP = School Breakfast Program.

<3 = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 0 and 3 percent are displayed as <3.

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APPENDIX C

CHAPTER 3 SUPPLEMENTAL TABLES

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Table C.1. Percentage of Daily Lunch Menus That Met Each and All of the Daily NSLP Meal Pattern Requirements

	Percentage of Daily Lunch Menus			
	Elementary Schools	Middle Schools	High Schools	All Schools
Fruits	97.9	96.3 ^{†††}	86.3 ^{###}	95.1
Vegetables	80.2 [*]	85.7	80.2	81.2
Grains	89.4 ^{***}	79.4 ^{†††}	55.4 ^{###}	80.1
Meats/Meat Alternates	96.9	95.3 ^{†††}	70.7 ^{###}	90.8
Milk	>97	>97	>97	99.6
Allowed milk types ^a	91.2	91.8	91.4	91.3
All Daily Meal Pattern Requirements	64.2	60.2 ^{†††}	29.5 ^{###}	55.8
Number of Daily Menus	2,123	1,820	1,758	5,701

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Note: Meal pattern requirements are minimum required amounts, unless otherwise noted.

^aCompliance with the allowed milk types requirement requires that a menu day includes at least two allowed milk types and no unallowed milk types.

Difference between elementary and middle schools is significantly different from zero at the *** 0.001 level or * 0.05 level.

Difference between middle and high schools is significantly different from zero at the ^{†††} 0.001 level.

Difference between elementary and high schools is significantly different from zero at the ^{###} 0.001 level.

NSLP = National School Lunch Program.

>97 = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 97 and 100 percent are displayed as >97.

Table C.2. Percentage of Daily Lunch Menus That Met Each and All of the Daily NSLP Meal Pattern Requirements, by School Size

	Percentage of Daily Lunch Menus			
	Small (Fewer than 500 students)	Medium (500 to 999 students)	Large (1,000 or more students)	All Schools
Fruits	93.6**	97.5 ^{††}	92.8	95.1
Vegetables	80.3	81.5	83.7	81.2
Grains	84.9	80.7 ^{†††}	58.9 ^{###}	80.1
Meats/Meat Alternates	91.7	94.3 ^{†††}	76.0 ^{###}	90.8
Milk	>97	>97	>97	99.6
Allowed milk types ^a	91.3	91.8	89.6	91.3
All Daily Meal Pattern Requirements	58.9	58.5 ^{†††}	35.0 ^{###}	55.8
Number of Daily Menus	2,030	2,348	1,323	5,701

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Note: Meal pattern requirements are minimum required amounts, unless otherwise noted.

^aCompliance with the allowed milk types requirement requires that a menu day includes at least two allowed milk types and no unallowed milk types.

Difference between small and medium-sized schools is significantly different from zero at the ** 0.01 level.

Difference between medium-sized and large schools is significantly different from zero at the ^{†††} 0.001 level or ^{††} 0.01 level.

Difference between large and small schools is significantly different from zero at the ^{###} 0.001 level.

NSLP = National School Lunch Program.

>97 = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 97 and 100 percent are displayed as >97.

Table C.3. Percentage of Daily Lunch Menus That Met Each and All of the Daily NSLP Meal Pattern Requirements, by Urbanicity

	Percentage of Daily Lunch Menus			
	Urban	Suburban	Rural	All Schools
Fruits	97.6	95.8 [†]	92.5 ^{###}	95.1
Vegetables	82.5	82.9	78.3	81.2
Grains	81.3	79.5	80.1	80.1
Meats/Meat Alternates	92.6	92.7 [†]	87.4 [#]	90.8
Milk	>97	>97	>97	99.6
Allowed milk types ^a	93.4	91.1	90.3	91.3
All Daily Meal Pattern Requirements	58.5	58.9 [†]	50.4	55.8
Number of Daily Menus	1,154	2,809	1,738	5,701

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: Meal pattern requirements are minimum required amounts, unless otherwise noted. None of the differences between urban and suburban schools were statistically significant.

^aCompliance with the allowed milk types requirement requires that a menu day includes at least two allowed milk types and no unallowed milk types.

Difference between suburban and rural schools is significantly different from zero at the [†] 0.05 level.

Difference between urban and rural schools is significantly different from zero at the ^{###} 0.001 level or [#] 0.05 level.

NSLP = National School Lunch Program.

>97 = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 97 and 100 percent are displayed as >97.

Table C.4 Percentage of Daily Lunch Menus That Met Each and All of the Daily NSLP Meal Pattern Requirements, by District Child Poverty Rate

	Percentage of Daily Lunch Menu		
	Lower (less than 20 percent)	Higher (20 percent or more)	All Schools
Fruits	95.5	94.6	95.1
Vegetables	82.1	80.1	81.2
Grains	80.4	79.7	80.1
Meats/Meat Alternates	91.4	90.1	90.8
Milk	>97	99.2	99.6
Allowed milk types ^a	92.5	89.9	91.3
All Daily Meal Pattern Requirements	57.3	54.1	55.8
Number of Daily Menus	3,173	2,528	5,701

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: Meal pattern requirements are minimum required amounts, unless otherwise noted. Data on child poverty rates were from the 2011 U.S. Census Bureau's Small Area Income and Poverty Estimates school district file. None of the differences between lower and higher poverty schools were statistically significant.

^aCompliance with the allowed milk types requirement requires that a menu day includes at least two allowed milk types and no unallowed milk types.

NSLP = National School Lunch Program.

>97 = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 97 and 100 percent are displayed as >97.

Table C.5. Percentage of Schools That Met Each and All of the Daily NSLP Meal Pattern Requirements

	Percentage of Schools			
	Elementary Schools	Middle Schools	High Schools	All Schools
Fruits	92.7	90.2 ^{††}	77.5 ^{###}	88.9
Vegetables	63.3	69.4 [†]	59.5	63.5
Grains	72.4 ^{***}	58.3 ^{†††}	18.9 ^{###}	58.0
Meats/Meat Alternates	92.6	88.2 ^{†††}	40.8 ^{###}	80.3
Milk	>97	>97	>97	>97
Allowed milk types ^a	85.7	86.3	85.3	85.7
All Daily Meal Pattern Requirements	39.7	34.6 ^{†††}	7.6 ^{###}	31.7
Number of Schools	451	384	372	1,207

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: Meal pattern requirements are minimum required amounts, unless otherwise noted. Compliance at the school level requires that all menu days within a school met the requirement.

^aCompliance with the allowed milk types requirement requires that a menu day includes at least two allowed milk types and no unallowed milk types.

Difference between elementary and middle schools is significantly different from zero at the *** 0.001 level.

Difference between middle and high schools is significantly different from zero at the ††† 0.001 level, †† 0.01 level or † 0.05 level.

Difference between elementary and high schools is significantly different from zero at the ### 0.001 level.

NSLP = National School Lunch Program.

>97 = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 97 and 100 percent are displayed as >97.

Table C.6. Percentage of Weekly Lunch Menus That Met Each and All of the Weekly NSLP Meal Pattern Requirements

	Percentage of Weekly Lunch Menus			
	Elementary Schools	Middle Schools	High Schools	All Schools
Fruits	94.8	93.9 ^{††}	83.3 ^{###}	92.1
Fruit juice limit	96.4	>97	96.9 [^]	96.8
Vegetables	79.9	85.7 ^{††}	71.9	79.2
Dark green	93.6 ^{***}	>97	96.8 [^]	95.4
Red/orange	92.9 [*]	>97 [†]	92.6	93.6
Legumes	76.9	81.4	84.3	79.3
Starchy	94.2 [*]	>97	93.7	94.7
Other	91.4	94.2	92.3	92.1
Vegetable juice limit	>97	>97	>97	>97
Grains	57.4 ^{***}	40.9	33.2 ^{###}	49.0
At least half of grains are whole grain-rich	87.5	86.4	86.4	87.1
All grains are whole grain-rich	29.7	26.3	20.7 [#]	27.1
Grain-based desserts	96.3	>97 [†]	92.7	95.6
Meats/Meat Alternates	66.3 ^{***}	48.7	42.8 ^{###}	57.9
Milk	>97	>97	>97	>97
All Weekly Meal Pattern Requirements	9.4 [*]	4.6	3.1 ^{##^}	7.1
All Weekly Meal Pattern Requirements, using the 50% Whole Grain-Rich Target	22.0 [*]	15.3 ^{††}	7.4 ^{###}	17.5
Number of Weekly Menus	451	384	372	1,207

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Note: Meal pattern requirements are minimum required amounts, unless otherwise noted.

Difference between elementary and middle schools is significantly different from zero at the *** 0.001 level or * 0.05 level.

Difference between middle and high schools is significantly different from zero at the ††† 0.001 level or †† 0.01 level.

Difference between elementary and high schools is significantly different from zero at the ### 0.001 level, ## 0.01 level, or # 0.05 level.

NSLP = National School Lunch Program.

[^] = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 97 and 100 percent are displayed as >97.

Table C.7. Percentage of Weekly Lunch Menus Met Each and All of the Weekly NSLP Meal Pattern Requirements, by School Size

	Percentage of Weekly Lunch Menus			
	Small (Fewer than 500 students)	Medium (500 to 999 students)	Large (1,000 or more students)	All Schools
Fruits	90.3	95.1 [†]	89.5	92.1
Fruit juice limit	>97	95.6	>97	96.8
Vegetables	77.5	81.3	79.1	79.2
Dark green	92.8 [*]	>97	>97 ^{###}	95.4
Red/orange	92.2	94.5	96.3 [^]	93.6
Legumes	76.2	81.3	86.0 [#]	79.3
Starchy	92.9	96.2	96.7 [^]	94.7
Other	90.0	94.2	93.9	92.1
Vegetable juice limit	>97	>97	>97	>97
Grains	54.9	46.8 ^{††}	32.4 ^{###}	49.0
At least half of grains are whole grain-rich	85.3	89.3	87.5	87.1
All grains are whole grain-rich	25.9	30.0	22.7	27.1
Grain-based desserts	94.6	>97	94.2	95.6
Meats/Meat Alternates	65.1 [*]	54.0 [†]	41.5 ^{###}	57.9
Milk	>97	>97	>97	>97
All Weekly Meal Pattern Requirements	8.4	6.6	3.6 [^]	7.1
All Weekly Meal Pattern Requirements, using the 50% Whole Grain-Rich Target	19.7	17.2 [†]	9.7 ^{##}	17.5
Number of Weekly Menus	435	495	277	1,207

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Note: Meal pattern requirements are minimum required amounts, unless otherwise noted.

Difference between small and medium-sized schools is significantly different from zero at the * 0.05 level.

Difference between medium-sized and large schools is significantly different from zero at the ^{††} 0.01 level or [†] 0.05 level.

Difference between large and small schools is significantly different from zero at the ^{###} 0.001 level, ^{##} 0.01 level, or [#] 0.05 level.

NSLP = National School Lunch Program.

[^] = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 97 and 100 percent are displayed as >97.

Table C.8. Percentage of Weekly Lunch Menus That Met Each and All of the Weekly NSLP Meal Pattern Requirements, by Urbanicity

	Percentage of Weekly Lunch Menus			
	Urban	Suburban	Rural	All Schools
Fruits	93.6	93.2	89.8	92.1
Fruit juice limit	>97	95.6	>97	96.8
Vegetables	82.3	81.0	75.0	79.2
Dark green	96.1 [^]	96.5	93.5	95.4
Red/orange	>97	95.7 ^{††}	88.4 ^{###}	93.6
Legumes	78.5	79.6	79.5	79.3
Starchy	>97 [*]	94.9	92.0 ^{##}	94.7
Other	92.3	91.6	92.7	92.1
Vegetable juice limit	>97	>97	>97	>97
Grains	46.7	46.4	53.7	49.0
At least half of grains are whole grain-rich	84.4	89.0	86.5	87.1
All grains are whole grain-rich	32.1	25.1	26.5	27.1
Grain-based desserts	>97 [*]	94.4	95.9	95.6
Meats/Meat Alternates	58.3	56.7	59.2	57.9
Milk	>97	>97	>97	>97
All Weekly Meal Pattern Requirements	10.4	6.1	6.4	7.1
All Weekly Meal Pattern Requirements, using the 50% Whole Grain-Rich Target	17.2	15.8	19.8	17.5
Number of Weekly Menus	240	597	370	1,207

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Note: Meal pattern requirements are minimum required amounts, unless otherwise noted.

Difference between urban and suburban schools is significantly different from zero at the * 0.05 level.

Difference between suburban and rural schools is significantly different from zero at the †† 0.01 level.

Difference between urban and rural schools is significantly different from zero at the ### 0.001 level or ## 0.01 level.

NSLP = National School Lunch Program.

[^] = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 97 and 100 percent are displayed as >97.

Table C.9. Percentage of Weekly Lunch Menus That Met Each and All of the Weekly NSLP Meal Pattern Requirements, by District Child Poverty Rate

	Percentage of Weekly Lunch Menus		
	Lower (less than 20 percent)	Higher (20 percent or more)	All Schools
Fruits	93.9	90.0	92.1
Fruit juice limit	>97	95.5	96.8
Vegetables	79.7	78.6	79.2
Dark green	96.1	94.4	95.4
Red/orange	94.3	92.7	93.6
Legumes	82.2	75.9	79.3
Starchy	93.9	95.6	94.7
Other	90.9	93.6	92.1
Vegetable juice limit	>97	>97	>97
Grains	50.1	47.8	49.0
At least half of grains are whole grain-rich	88.3	85.8	87.1
All grains are whole grain-rich	25.4	29.2	27.1
Grain-based desserts	95.4	96.0	95.6
Meats/Meat Alternates	54.7	61.7	57.9
Milk	>97	>97	>97
All Weekly Meal Pattern Requirements	6.8	7.5	7.1
All Weekly Meal Pattern Requirements, using the 50% Whole Grain-Rich Target	18.1	16.9	17.5
Number of Weekly Menus	673	534	1,207

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: Meal pattern requirements are minimum required amounts, unless otherwise noted. Data on child poverty rates were from the 2011 U.S. Census Bureau's Small Area Income and Poverty Estimates school district file. None of the differences between lower and higher poverty schools were statistically significant.

NSLP = National School Lunch Program.

>97 = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 97 and 100 percent are displayed as >97.

Table C.10. Percentage of Weekly Lunch Menus That Met Each and All of the NSLP Dietary Specifications

	Percentage of Weekly Lunch Menus			
	Elementary Schools	Middle Schools	High Schools	All Schools
Calorie Minimum and Maximum ^a	47.3	42.2 ^{†††}	20.5 ^{###}	41.4
Calorie minimum	87.5 ^{**}	75.7 ^{†††}	34.0 ^{###}	75.3
Calorie maximum	59.9	66.5 ^{†††}	86.5 ^{###}	66.1
Percentage of Calories from Saturated Fat	92.2	94.3	94.1	93.0
Sodium	72.4	76.2 [†]	65.3	71.5
All Dietary Specifications ^a	40.0	38.0 ^{†††}	10.6 ^{###}	34.1
Number of Weekly Menus	451	384	372	1,207

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Note: Compliance with the dietary specifications is based on estimates of NSLP menus prepared, which take into account the amounts of food prepared (number of servings) and give greater weight to menu items that were prepared in larger quantities.

^aFor schools that have grades that span more than one of the established grade groups (K–5, 6–8, and 9–12), average weekly menus must meet the calorie minimum for the oldest grade group and the calorie maximum for the youngest grade group. In the NSLP dietary specifications, the calorie minimums and maximums for the oldest and youngest grade groups do not overlap for schools that span all three grade groups or schools that include both the 6–8 and 9–12 grade groups. For this reason, weekly menus in schools that spanned these grade groups (n=90) were excluded from this analysis.

Difference between elementary and middle schools is significantly different from zero at the ^{**} 0.01 level.

Difference between middle and high schools is significantly different from zero at the ^{†††} 0.001 level or [†] 0.05 level.

Difference between elementary and high schools is significantly different from zero at the ^{###} 0.001 level.

NSLP = National School Lunch Program.

Table C.11. Percentage of Weekly Lunch Menus That Met Each and All of the NSLP Dietary Specifications, by School Size

	Percentage of Weekly Lunch Menu			
	Small (Fewer than 500 students)	Medium (500 to 999 students)	Large (1,000 or more students)	All Schools
Calorie Minimum and Maximum ^a	40.2	46.5 ^{†††}	29.0 [#]	41.4
Calorie minimum	82.1	76.1 ^{†††}	45.4 ^{###}	75.2
Calorie maximum	58.2 ^{**}	70.4 ^{††}	83.6 ^{###}	66.1
Percentage of Calories from Saturated Fat	93.0	92.2	95.1 [^]	93.0
Sodium	61.1 ^{***}	82.2	79.1 ^{###}	71.5
All Dietary Specifications ^a	31.4 [*]	40.8 ^{†††}	22.4	34.1
Number of Weekly Menus	435	495	277	1,207

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Note: Compliance with the dietary specifications is based on estimates of NSLP menus prepared, which take into account the amounts of food prepared (number of servings) and give greater weight to menu items that were prepared in larger quantities.

^aFor schools that have grades that span more than one of the established grade groups (K–5, 6–8, and 9–12), average weekly menus must meet the calorie minimum for the oldest grade group and the calorie maximum for the youngest grade group. In the NSLP dietary specifications, the calorie minimums and maximums for the oldest and youngest grade groups do not overlap for schools that span all three grade groups or schools that include both the 6–8 and 9–12 grade groups. For this reason, weekly menus in schools that spanned these grade groups (n=90) were excluded from this analysis.

Difference between small and medium-sized schools is significantly different from zero at the *** 0.001 level, ** 0.01 level, or * 0.05 level.

Difference between medium-sized and large schools is significantly different from zero at the ††† 0.001 level or †† 0.01 level.

Difference between large and small schools is significantly different from zero at the ### 0.001 level or # 0.05 level.

NSLP = National School Lunch Program.

Table C.12. Percentage of Weekly Lunch Menus That Met Each and All of the NSLP Dietary Specifications, by Urbanicity

	Percentage of Weekly Lunch Menus			
	Urban	Suburban	Rural	All Schools
Calorie Minimum and Maximum ^a	41.8	44.3	37.0	41.4
Calorie minimum	65.8 ^{**}	79.9	75.5 [#]	75.2
Calorie maximum	76.0 [*]	64.4	61.5 [#]	66.1
Percentage of Calories from Saturated Fat	92.4	93.2	93.0	93.0
Sodium	83.5	78.4 ^{†††}	55.5 ^{####}	71.5
All Dietary Specifications ^a	35.8	39.2 ^{††}	25.8	34.1
Number of Weekly Menus	240	597	370	1,207

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Note: Compliance with the dietary specifications is based on estimates of NSLP menus prepared, which take into account the amounts of food prepared (number of servings) and give greater weight to menu items that were prepared in larger quantities.

^aFor schools that have grades that span more than one of the established grade groups (K–5, 6–8, and 9–12), average weekly menus must meet the calorie minimum for the oldest grade group and the calorie maximum for the youngest grade group. In the NSLP dietary specifications, the calorie minimums and maximums for the oldest and youngest grade groups do not overlap for schools that span all three grade groups or schools that include both the 6–8 and 9–12 grade groups. For this reason, weekly menus in schools that spanned these grade groups (n=90) were excluded from this analysis.

Difference between urban and suburban schools is significantly different from zero at the ^{**} 0.01 or ^{*} 0.05 level.

Difference between suburban and rural schools is significantly different from zero at the ^{†††} 0.001 level or ^{††} 0.01 level.

Difference between urban and rural schools is significantly different from zero at the ^{####} 0.001 level or [#] 0.05 level.

NSLP = National School Lunch Program.

Table C.13. Percentage of Weekly Lunch Menus That Met Each and All of the NSLP Dietary Specifications, by District Child Poverty Rate

	Percentage of Weekly Lunch Menu		
	Lower (less than 20 percent)	Higher (20 percent or more)	All Schools
Calorie Minimum and Maximum ^a	40.7	42.2	41.4
Calorie minimum	78.6*	71.1	75.3
Calorie maximum	62.1*	71.0	66.1
Percentage of Calories from Saturated Fat	93.8	92.0	93.0
Sodium	70.0	73.4	71.5
All Dietary Specifications ^a	34.2	34.1	34.1
Number of Weekly Menus	673	534	1,207

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: Compliance with the dietary specifications is based on estimates of NSLP menus prepared, which take into account the amounts of food prepared (number of servings) and give greater weight to menu items that were prepared in larger quantities. Data on child poverty rates were from the 2011 U.S. Census Bureau's Small Area Income and Poverty Estimates school district file.

^aFor schools that have grades that span more than one of the established grade groups (K–5, 6–8, and 9–12), average weekly menus must meet the calorie minimum for the oldest grade group and the calorie maximum for the youngest grade group. In the NSLP dietary specifications, the calorie minimums and maximums for the oldest and youngest grade groups do not overlap for schools that span all three grade groups or schools that include both the 6–8 and 9–12 grade groups. For this reason, weekly menus in schools that spanned these grade groups (n=90) were excluded from this analysis.

Difference between lower and higher poverty schools is significantly different from zero at the * 0.05 level.

NSLP = National School Lunch Program.

Table C.14. Percentage of Weekly Lunch Menus Meeting NSLP Requirements/Dietary Specifications and Distribution of Weekly Lunch Menus Not Meeting NSLP Requirements/Dietary Specifications

Percentage Meeting/Below/Above Requirement/Specification	Percentage of Weekly Lunch Menu			
	Elementary Schools	Middle Schools	High Schools	All Schools
Weekly Meal Pattern Requirements				
Fruits				
Percentage Meeting Requirement	94.8	93.9 ^{††}	83.3 ^{###}	92.1
Percentage Below Requirement	5.2	6.1 ^{††}	16.7 ^{###}	7.9
> 0 to ≤ 5%	<3	<3	<3	<3
> 5 to ≤ 10%	<3	<3	<3	2.0
> 10 to ≤ 15%	<3	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3	<3
> 20 to ≤ 25%	<3	<3	<3	<3
> 25 to ≤ 50%	<3	<3	7.7 ^{###}	2.8
> 50%	<3	<3	<3	<3
Vegetables				
Percentage Meeting Requirement	79.9	85.7 ^{††}	71.9	79.2
Percentage Below Requirement	20.1	14.3 ^{††}	28.1	20.8
> 0 to ≤ 5%	<3	<3 ^{†††}	5.9 ^{###}	1.9
> 5 to ≤ 10%	<3	<3	<3	1.4
> 10 to ≤ 15%	<3	<3 [†]	5.0	2.8
> 15 to ≤ 20%	<3	<3	<3	2.1
> 20 to ≤ 25%	<3	<3	<3	1.7
> 25 to ≤ 50%	9.4 [*]	4.8	7.6	8.2
> 50%	<3	<3	4.4	2.8
Dark Green Vegetables				
Percentage Meeting Requirement	93.6 ^{***}	>97	96.8 [^]	95.4
Percentage Below Requirement	6.4 ^{***}	<3	3.2 [^]	4.6
> 0 to ≤ 5%	<3	<3	<3	<3
> 5 to ≤ 10%	<3	<3	<3	<3
> 10 to ≤ 15%	<3	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3	<3
> 20 to ≤ 25%	<3 [*]	<3	<3 [#]	<3
> 25 to ≤ 50%	<3	<3	<3	2.3
> 50%	<3 ^{**}	<3	<3	1.3
Red/Orange Vegetables				
Percentage Meeting Requirement	92.9 [*]	>97 [†]	92.6	93.6
Percentage Below Requirement	7.1 [*]	<3 [†]	7.4	6.4
> 0 to ≤ 5%	<3	<3	<3	<3
> 5 to ≤ 10%	<3	<3	<3	<3
> 10 to ≤ 15%	<3	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3	<3
> 20 to ≤ 25%	<3	<3	<3	<3
> 25 to ≤ 50%	3.5 [*]	<3	<3	2.8
> 50%	<3 [†]	<3	<3	1.8

Percentage Meeting/Below/Above Requirement/Specification	Percentage of Weekly Lunch Menus			
	Elementary Schools	Middle Schools	High Schools	All Schools
Legumes				
Percentage Meeting Requirement	76.9	81.4	84.3	79.3
Percentage Below Requirement	23.1	18.6	15.7	20.7
> 0 to ≤ 5%	<3	<3	<3	<3
> 5 to ≤ 10%	<3	<3	<3	<3
> 10 to ≤ 15%	<3	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3	<3
> 20 to ≤ 25%	<3	<3	<3	<3
> 25 to ≤ 50%	4.6	3.2 ^	<3##	3.6
> 50%	17.6	15.0	14.1	16.4
Starchy Vegetables				
Percentage Meeting Requirement	94.2*	>97	93.7	94.7
Percentage Below Requirement	5.8*	<3	6.3	5.3
> 0 to ≤ 5%	<3	<3	<3	<3
> 5 to ≤ 10%	<3	<3	<3	<3
> 10 to ≤ 15%	<3	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3	<3
> 20 to ≤ 25%	<3	<3	<3	<3
> 25 to ≤ 50%	<3	<3	<3	<3
> 50%	4.3	<3	3.9 ^	3.8
Other Vegetables				
Percentage Meeting Requirement	91.4	94.2	92.3	92.1
Percentage Below Requirement	8.6	5.8	7.7	7.9
> 0 to ≤ 5%	<3	<3	<3	<3
> 5 to ≤ 10%	<3	<3	<3	<3
> 10 to ≤ 15%	<3	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3	<3
> 20 to ≤ 25%	<3	<3	<3	<3
> 25 to ≤ 50%	<3	<3	<3	2.1
> 50%	5.9	3.1 ^	3.2 ^	4.8
Grains				
Percentage Meeting Requirement	57.4***	40.9	33.2###	49.0
Percentage Below Requirement	42.6***	59.1	66.8###	51.0
> 0 to ≤ 5%	3.7	3.1 [†] ^	8.4	4.6
> 5 to ≤ 10%	6.2	6.6	6.4	6.3
> 10 to ≤ 15%	5.4	6.4	8.6	6.3
> 15 to ≤ 20%	4.7	3.5 [†] ^	8.7	5.4
> 20 to ≤ 25%	3.8*	9.4	4.8	5.0
> 25 to ≤ 50%	12.5	13.3	14.9	13.2
> 50%	6.3***	16.8	15.1##	10.1
At Least Half of Grains Are Whole Grain-Rich				
Percentage Meeting Requirement	87.5	87.0	86.4	87.1
Percentage Below Requirement	12.5	13.0	13.6	12.9
> 0 to ≤ 5%	<3	<3	<3	<3
> 5 to ≤ 10%	<3	<3	<3	<3
> 10 to ≤ 15%	<3	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3	<3
> 20 to ≤ 25%	<3	<3	<3	<3
> 25 to ≤ 50%	3.6	3.6 ^	<3	3.4
> 50%	5.3	6.3	6.1	5.7

Percentage Meeting/Below/Above Requirement/Specification	Percentage of Weekly Lunch Menus			
	Elementary Schools	Middle Schools	High Schools	All Schools
All Grains Are Whole Grain-Rich				
Percentage Meeting Requirement	29.7	26.3	20.7 [#]	27.1
Percentage Below Requirement	70.3	73.7	79.3 [#]	72.9
> 0 to ≤ 5%	11.9 [*]	18.6	21.6 ^{##}	15.3
> 5 to ≤ 10%	10.5	12.3	8.8	10.4
> 10 to ≤ 15%	9.0	7.6	10.7	9.1
> 15 to ≤ 20%	7.5	5.4	7.1	7.0
> 20 to ≤ 25%	4.4	<3	<3	3.7
> 25 to ≤ 50%	14.4	14.0	15.1	14.5
> 50%	12.5	13.0	13.6	12.9
Meats/Meat Alternates				
Percentage Meeting Requirement	66.3 ^{***}	48.7	42.8 ^{###}	57.9
Percentage Below Requirement	33.7 ^{***}	51.3	57.2 ^{###}	42.1
> 0 to ≤ 5%	<3 ^{**}	6.2	6.4 [#]	3.8
> 5 to ≤ 10%	6.9	9.4	13.3 [#]	8.8
> 10 to ≤ 15%	4.7	8.1	8.6	6.2
> 15 to ≤ 20%	<3 [*]	5.1	5.5 [#]	3.4
> 20 to ≤ 25%	4.3	<3	4.7	4.0
> 25 to ≤ 50%	12.7	17.5	15.8	14.2
> 50%	<3	<3	<3	1.6
Milk				
Percentage Meeting Requirement	>97	>97	>97	>97
Percentage Below Requirement	<3	<3	<3	<3
> 0 to ≤ 5%	<3	<3	<3	<3
> 5 to ≤ 10%	<3	<3	<3	<3
> 10 to ≤ 15%	<3	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3	<3
> 20 to ≤ 25%	<3	<3	<3	<3
> 25 to ≤ 50%	<3	<3	<3	<3
> 50%	<3	<3	<3	<3
Dietary Specifications				
Calorie Minimum and Maximum^a				
Percentage Meeting Both Calorie Minimum and Maximum	47.3	42.2 ^{†††}	20.5 ^{###}	41.4
Percentage Above Calorie Maximum	40.1	33.5 ^{†††}	13.5 ^{###}	33.9
> 0 to ≤ 5%	13.1	11.2 [†]	4.9 ^{###}	11.2
> 5 to ≤ 10%	10.0	7.4 ^{††}	<3 ^{###}	8.1
> 10 to ≤ 15%	8.0	7.1	<3 ^{##}	6.8
> 15 to ≤ 20%	4.4	<3 [†]	<3 ^{##}	3.4
> 20 to ≤ 25%	<3	<3	<3 [#]	1.5
> 25 to ≤ 50%	<3	3.1 [^]	3.0 [^]	2.5
> 50%	<3	<3	<3	<3
Percentage Below Calorie Minimum	12.5 ^{**}	24.3 ^{†††}	66.0 ^{###}	24.7
> 0 to ≤ 5%	5.4 ^{**}	12.7	13.4 ^{##}	8.3
> 5 to ≤ 10%	4.5	4.1 ^{†††^}	17.3 ^{###}	6.8
> 10 to ≤ 15%	<3	3.3 ^{†††^}	15.8 ^{###}	4.8
> 15 to ≤ 20%	<3	<3 ^{††}	9.6 ^{###}	2.2
> 20 to ≤ 25%	<3	<3 ^{††}	6.2 ^{###}	1.5
> 25 to ≤ 50%	<3 [*]	<3	<3 ^{##}	<3
> 50%	<3	<3	<3	<3

Percentage Meeting/Below/Above Requirement/Specification	Percentage of Weekly Lunch Menus			
	Elementary Schools	Middle Schools	High Schools	All Schools
Percentage of Calories from Saturated Fat				
Percentage Meeting Requirement	92.2	94.3	94.1	93.0
Percentage Above Requirement	7.8	5.7	5.9	7.0
> 0 to ≤ 5%	3.2 [^]	3.2 [^]	<3	3.1
> 5 to ≤ 10%	<3 [†]	<3	<3	1.9
> 10 to ≤ 15%	<3	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3	<3
> 20 to ≤ 25%	<3	<3	<3	<3
> 25 to ≤ 50%	<3	<3	<3	<3
> 50%	<3	<3	<3	<3
Sodium^b				
Percentage Meeting Requirement	72.4	76.2 [†]	65.3	71.5
Percentage Above Requirement	27.6	23.8 [†]	34.7	28.5
> 0 to ≤ 5%	6.6	7.1	6.7	6.7
> 5 to ≤ 10%	6.5	4.4	7.1	6.2
> 10 to ≤ 15%	4.9	<3	5.7	4.6
> 15 to ≤ 20%	<3	<3	5.2	3.1
> 20 to ≤ 25%	<3	<3	<3	2.2
> 25 to ≤ 50%	3.4	3.7 [^]	7.0	4.2
> 50%	<3	<3	<3	1.3
Number of Weekly Menus	451	384	372	1,207

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

^aFor schools that have grades that span more than one of the established grade groups (K–5, 6–8, and 9–12), average weekly menus must meet the calorie minimum for the oldest grade group and the calorie maximum for the youngest grade group. In the NSLP, the calorie minimums and maximums for the oldest and youngest grade groups do not overlap for schools that span all three grade groups or schools that include both the 6–8 and 9–12 grade groups. For this reason, weekly menus in schools that spanned these grade groups (n=90) were excluded from this analysis.

^bBased on sodium targets for school year 2014-2015.

Difference between elementary and middle schools is significantly different from zero at the *** 0.001 level, ** 0.01 level, or * 0.05 level.

Difference between middle and high schools is significantly different from zero at the +++ 0.001 level, ++ 0.01 level, or + 0.05 level.

Difference between elementary and high schools is significantly different from zero at the ### 0.001 level, ## 0.01 level, or # 0.05 level.

NSLP = National School Lunch Program.

[^] Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 0 and 3 percent are displayed as <3 and flagged percentages between 97 and 100 percent are displayed as >97.

Table C.15. Percentage of Weekly Lunch Menus Meeting NSLP Requirements/Dietary Specifications and Distribution of Weekly Lunch Menus Not Meeting NSLP Requirements/Dietary Specifications, by School Size

Percentage Meeting/Below/Above Requirement/Specification	Percentage of Weekly Lunch Menu			
	Small (Fewer than 500 students)	Medium (500 to 999 students)	Large (1,000 or more students)	All Schools
Weekly Meal Pattern Requirements				
Fruits				
Percentage Meeting Requirement	90.3	95.1 [†]	89.5	92.1
Percentage Below Requirement	9.7	4.9 [†]	10.5	7.9
> 0 to ≤ 5%	<3	<3	<3	<3
> 5 to ≤ 10%	<3	<3	<3	2.0
> 10 to ≤ 15%	<3	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3	<3
> 20 to ≤ 25%	<3	<3	<3	<3
> 25 to ≤ 50%	3.9 ^{**}	<3 [†]	5.4 [^]	2.8
> 50%	<3	<3	<3	<3
Vegetables				
Percentage Meeting Requirement	77.5	81.3	79.1	79.2
Percentage Below Requirement	22.5	18.7	20.9	20.8
> 0 to ≤ 5%	<3	<3	4.9 [^]	1.9
> 5 to ≤ 10%	<3	<3	<3	1.4
> 10 to ≤ 15%	3.0 [^]	<3	<3	2.8
> 15 to ≤ 20%	<3	<3	<3	2.1
> 20 to ≤ 25%	<3	<3	<3	1.7
> 25 to ≤ 50%	6.5	10.3	7.8	8.2
> 50%	4.9 ^{**}	<3	<3	2.8
Dark Green Vegetables				
Percentage Meeting Requirement	92.8 [*]	>97	>97 ^{###}	95.4
Percentage Below Requirement	7.2 [*]	<3	<3 ^{###}	4.6
> 0 to ≤ 5%	<3	<3	<3	<3
> 5 to ≤ 10%	<3	<3	<3	<3
> 10 to ≤ 15%	<3	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3	<3
> 20 to ≤ 25%	<3 [*]	<3	<3 [#]	<3
> 25 to ≤ 50%	4.0 [*]	<3	<3 [#]	2.3
> 50%	<3	<3 [†]	<3 [#]	1.3
Red/Orange Vegetables				
Percentage Meeting Requirement	92.2	94.5	96.3 [^]	93.6
Percentage Below Requirement	7.8	5.5	3.7 [^]	6.4
> 0 to ≤ 5%	<3	<3	<3	<3
> 5 to ≤ 10%	<3	<3	<3	<3
> 10 to ≤ 15%	<3	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3	<3
> 20 to ≤ 25%	<3	<3	<3	<3
> 25 to ≤ 50%	<3	3.0 [^]	<3	2.8
> 50%	<3	<3	<3	1.8

Percentage Meeting/Below/Above Requirement/Specification	Percentage of Weekly Lunch Menus			
	Small (Fewer than 500 students)	Medium (500 to 999 students)	Large (1,000 or more students)	All Schools
Legumes				
Percentage Meeting Requirement	76.2	81.3	86.0 [#]	79.3
Percentage Below Requirement	23.8	18.7	14.0 [#]	20.7
> 0 to ≤ 5%	<3	<3	<3	<3
> 5 to ≤ 10%	<3	<3	<3	<3
> 10 to ≤ 15%	<3	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3	<3
> 20 to ≤ 25%	<3	<3	<3	<3
> 25 to ≤ 50%	5.1	<3	<3 [#]	3.6
> 50%	18.7	14.9	11.8	16.4
Starchy Vegetables				
Percentage Meeting Requirement	92.9	96.2	96.7 [^]	94.7
Percentage Below Requirement	7.1	3.8	3.3 [^]	5.3
> 0 to ≤ 5%	<3	<3	<3	<3
> 5 to ≤ 10%	<3	<3	<3	<3
> 10 to ≤ 15%	<3	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3	<3
> 20 to ≤ 25%	<3	<3	<3	<3
> 25 to ≤ 50%	<3	<3	<3	<3
> 50%	5.4 [*]	<3	3.1 [^]	3.8
Other Vegetables				
Percentage Meeting Requirement	90.0	94.2	93.9	92.1
Percentage Below Requirement	10.0	5.8	6.1	7.9
> 0 to ≤ 5%	<3	<3	<3	<3
> 5 to ≤ 10%	<3	<3	<3	<3
> 10 to ≤ 15%	<3	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3	<3
> 20 to ≤ 25%	<3	<3	<3	<3
> 25 to ≤ 50%	<3	<3	<3	2.1
> 50%	6.3	3.1	4.0 [^]	4.8
Grains				
Percentage Meeting Requirement	54.9	46.8 ^{††}	32.4 ^{###}	49.0
Percentage Below Requirement	45.1	53.2 ^{††}	67.6 ^{###}	51.0
> 0 to ≤ 5%	5.9	<3	5.4 [^]	4.6
> 5 to ≤ 10%	5.8	6.8	6.7	6.3
> 10 to ≤ 15%	6.0	6.3	7.0	6.3
> 15 to ≤ 20%	5.4	5.1	6.2	5.4
> 20 to ≤ 25%	4.2	6.1	5.1 [^]	5.0
> 25 to ≤ 50%	10.6	15.6	16.0	13.2
> 50%	7.1	10.5 ^{††}	21.3 ^{###}	10.1
At Least Half of Grains Are Whole Grain-Rich				
Percentage Meeting Requirement	85.3	89.3	87.5	87.1
Percentage Below Requirement	14.7	10.7	12.5	12.9
> 0 to ≤ 5%	<3	<3	<3	<3
> 5 to ≤ 10%	<3	<3	<3	<3
> 10 to ≤ 15%	<3	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3	<3
> 20 to ≤ 25%	<3	<3	<3	<3
> 25 to ≤ 50%	3.6	3.2	3.4 [^]	3.4
> 50%	6.1	5.6	4.1 [^]	5.7

Percentage Meeting/Below/Above Requirement/Specification	Percentage of Weekly Lunch Menus			
	Small (Fewer than 500 students)	Medium (500 to 999 students)	Large (1,000 or more students)	All Schools
All Grains Are Whole Grain-Rich				
Percentage Meeting Requirement	25.9	30.0	22.7	27.1
Percentage Below Requirement	74.1	70.0	77.3	72.9
> 0 to ≤ 5%	12.1	16.4 [†]	24.8 ^{###}	15.3
> 5 to ≤ 10%	10.0	10.5	11.8	10.4
> 10 to ≤ 15%	9.5	9.2	7.2	9.1
> 15 to ≤ 20%	7.5	7.4	3.8 [^]	7.0
> 20 to ≤ 25%	3.2 [^]	3.5	6.1	3.7
> 25 to ≤ 50%	17.1	12.3	11.1	14.5
> 50%	14.7	10.7	12.5	12.9
Meats/Meat Alternates				
Percentage Meeting Requirement	65.1 [*]	54.0 [†]	41.5 ^{###}	57.9
Percentage Below Requirement	34.9 [*]	46.0 [†]	58.5 ^{###}	42.1
> 0 to ≤ 5%	<3	3.9	7.8 [#]	3.8
> 5 to ≤ 10%	8.1	9.0	11.2	8.8
> 10 to ≤ 15%	4.8	8.1	5.6	6.2
> 15 to ≤ 20%	<3 ^{**}	4.3 [†]	9.6 ^{###}	3.4
> 20 to ≤ 25%	3.5 [^]	4.6	4.7 [^]	4.0
> 25 to ≤ 50%	12.6	15.5	16.8	14.2
> 50%	<3	<3	<3	1.6
Milk				
Percentage Meeting Requirement	>97	>97	>97	>97
Percentage Below Requirement	<3	<3	<3	<3
> 0 to ≤ 5%	<3	<3	<3	<3
> 5 to ≤ 10%	<3	<3	<3	<3
> 10 to ≤ 15%	<3	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3	<3
> 20 to ≤ 25%	<3	<3	<3	<3
> 25 to ≤ 50%	<3	<3	<3	<3
> 50%	<3	<3	<3	<3
Dietary Specifications				
Calorie Minimum and Maximum^a				
Percentage Meeting Both Calorie Minimum and Maximum	40.2	46.5 ^{†††}	29.0 [#]	41.4
Percentage Above Calorie Maximum	41.8 ^{**}	29.6 ^{††}	16.4 ^{###}	33.9
> 0 to ≤ 5%	11.5	12.5 [†]	5.5 [^]	11.2
> 5 to ≤ 10%	9.4	8.0 [†]	3.3 ^{###}	8.1
> 10 to ≤ 15%	8.6	6.1 [†]	<3 ^{##}	6.8
> 15 to ≤ 20%	5.5 ^{**}	<3	<3	3.4
> 20 to ≤ 25%	<3	<3	<3	1.5
> 25 to ≤ 50%	4.1 [*]	<3	<3	2.5
> 50%	<3	<3	<3	<3
Percentage Below Calorie Minimum	17.9	23.9 ^{†††}	54.6 ^{###}	24.7
> 0 to ≤ 5%	4.7 ^{**}	11.3	12.4 ^{##}	8.3
> 5 to ≤ 10%	5.2	6.4 ^{††}	14.7 ^{###}	6.8
> 10 to ≤ 15%	5.3	<3 ^{†††}	11.8 [#]	4.8
> 15 to ≤ 20%	<3	<3 [†]	6.8 [#]	2.2
> 20 to ≤ 25%	<3	<3	3.8 [^]	1.5
> 25 to ≤ 50%	<3	<3 [†]	4.0 [^]	<3
> 50%	<3	<3	<3	<3

Percentage Meeting/Below/Above Requirement/Specification	Percentage of Weekly Lunch Menus			
	Small (Fewer than 500 students)	Medium (500 to 999 students)	Large (1,000 or more students)	All Schools
Percentage of Calories from Saturated Fat				
Percentage Meeting Requirement	93.0	92.2	95.1 ^	93.0
Percentage Above Requirement	7.0	7.8	4.9 ^	7.0
> 0 to ≤ 5%	3.4 ^	<3	<3	3.1
> 5 to ≤ 10%	<3	<3	<3	1.9
> 10 to ≤ 15%	<3	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3	<3
> 20 to ≤ 25%	<3	<3	<3	<3
> 25 to ≤ 50%	<3	<3	<3	<3
> 50%	<3	<3	<3	<3
Sodium^b				
Percentage Meeting Requirement	61.1***	82.2	79.1###	71.5
Percentage Above Requirement	38.9***	17.8	20.9###	28.5
> 0 to ≤ 5%	7.7	5.0	8.2	6.7
> 5 to ≤ 10%	8.2	4.2	5.0 ^	6.2
> 10 to ≤ 15%	5.1	4.5	3.0 ^	4.6
> 15 to ≤ 20%	5.6**	<3	<3###	3.1
> 20 to ≤ 25%	3.0 ^	<3	<3	2.2
> 25 to ≤ 50%	6.9**	<3	<3#	4.2
> 50%	<3*	<3	<3	1.3
Number of Weekly Menus	435	495	277	1,207

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

^aFor schools that have grades that span more than one of the established grade groups (K–5, 6–8, and 9–12), average weekly menus must meet the calorie minimum for the oldest grade group and the calorie maximum for the youngest grade group. In the NSLP dietary specifications, the calorie minimums and maximums for the oldest and youngest grade groups do not overlap for schools that span all three grade groups or schools that include both the 6–8 and 9–12 grade groups. For this reason, weekly menus in schools that spanned these grade groups (n=90) were excluded from this analysis.

^bBased on sodium targets for school year 2014-2015.

Difference between small and medium-sized schools is significantly different from zero at the *** 0.001 level, ** 0.01 level, or * 0.05 level.

Difference between medium and large schools is significantly different from zero at the +++ 0.001 level, ++ 0.01 level, or + 0.05 level.

Difference between large and small schools is significantly different from zero at the ### 0.001 level, ## 0.01 level, or # 0.05 level.

NSLP = National School Lunch Program.

^ Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 0 and 3 percent are displayed as <3 and flagged percentages between 97 and 100 percent are displayed as >97.

Table C.16. Percentage of Weekly Lunch Menus Meeting NSLP Requirements/Dietary Specifications and Distribution of Weekly Lunch Menus Not Meeting NSLP Requirements/Dietary Specifications, by Urbanicity

Percentage Meeting/Below/Above Requirement/Specification	Percentage of Weekly Lunch Menus			
	Urban	Suburban	Rural	All Schools
Weekly Meal Pattern Requirements				
Fruits				
Percentage Meeting Requirement	93.6	93.2	89.8	92.1
Percentage Below Requirement	6.4	6.8	10.2	7.9
> 0 to ≤ 5%	<3	<3	<3	<3
> 5 to ≤ 10%	3.3 [^]	<3	<3	2.0
> 10 to ≤ 15%	<3	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3	<3
> 20 to ≤ 25%	<3	<3	<3	<3
> 25 to ≤ 50%	<3	<3 [†]	5.5 ^{###}	2.8
> 50%	<3	<3	<3	<3
Vegetables				
Percentage Meeting Requirement	82.3	81.0	75.0	79.2
Percentage Below Requirement	17.7	19.0	25.0	20.8
> 0 to ≤ 5%	<3	<3	<3	1.9
> 5 to ≤ 10%	<3	<3	<3	1.4
> 10 to ≤ 15%	<3	<3	3.2 [^]	2.8
> 15 to ≤ 20%	<3	<3 [†]	4.4 [#]	2.1
> 20 to ≤ 25%	<3	<3	3.0 [^]	1.7
> 25 to ≤ 50%	8.6	8.8	7.1	8.2
> 50%	<3 [†]	3.0	4.1 ^{#^}	2.8
Dark Green Vegetables				
Percentage Meeting Requirement	96.1 [^]	96.5	93.5	95.4
Percentage Below Requirement	3.9 [^]	3.5	6.5	4.6
> 0 to ≤ 5%	<3	<3	<3	<3
> 5 to ≤ 10%	<3	<3	<3	<3
> 10 to ≤ 15%	<3	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3	<3
> 20 to ≤ 25%	<3	<3	<3	<3
> 25 to ≤ 50%	<3	<3	4.8	2.3
> 50%	<3	<3	<3	1.3
Red/Orange Vegetables				
Percentage Meeting Requirement	>97	95.7 ^{††}	88.4 ^{###}	93.6
Percentage Below Requirement	<3	4.3 ^{††}	11.6 ^{###}	6.4
> 0 to ≤ 5%	<3	<3	<3	<3
> 5 to ≤ 10%	<3	<3	<3	<3
> 10 to ≤ 15%	<3	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3	<3
> 20 to ≤ 25%	<3	<3	<3	<3
> 25 to ≤ 50%	<3	<3	4.7	2.8
> 50%	<3 [†]	<3	4.1 ^{#^}	1.8

Percentage Meeting/Below/Above Requirement/Specification	Percentage of Weekly Lunch Menus			
	Urban	Suburban	Rural	All Schools
Legumes				
Percentage Meeting Requirement	78.5	79.6	79.5	79.3
Percentage Below Requirement	21.5	20.4	20.5	20.7
> 0 to ≤ 5%	<3	<3	<3	<3
> 5 to ≤ 10%	<3	<3	<3	<3
> 10 to ≤ 15%	<3	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3	<3
> 20 to ≤ 25%	<3	<3	<3	<3
> 25 to ≤ 50%	5.4 ^	<3	3.8 ^	3.6
> 50%	14.6	17.3	16.4	16.4
Starchy Vegetables				
Percentage Meeting Requirement	>97*	94.9	92.0##	94.7
Percentage Below Requirement	<3*	5.1	8.0##	5.3
> 0 to ≤ 5%	<3	<3	<3	<3
> 5 to ≤ 10%	<3	<3	<3	<3
> 10 to ≤ 15%	<3	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3	<3
> 20 to ≤ 25%	<3	<3	<3	<3
> 25 to ≤ 50%	<3	<3	<3	<3
> 50%	<3	3.5	6.0#	3.8
Other Vegetables				
Percentage Meeting Requirement	92.3	91.6	92.7	92.1
Percentage Below Requirement	7.7	8.4	7.3	7.9
> 0 to ≤ 5%	<3	<3	<3	<3
> 5 to ≤ 10%	<3	<3	<3	<3
> 10 to ≤ 15%	<3	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3	<3
> 20 to ≤ 25%	<3	<3	<3	<3
> 25 to ≤ 50%	<3	<3	3.7###	2.1
> 50%	5.7 ^	5.9	<3	4.8
Grains				
Percentage Meeting Requirement	46.7	46.4	53.7	49.0
Percentage Below Requirement	53.3	53.6	46.3	51.0
> 0 to ≤ 5%	<3*	5.7	5.1#	4.6
> 5 to ≤ 10%	7.4	6.7	5.3	6.3
> 10 to ≤ 15%	5.6 ^	6.6	6.2	6.3
> 15 to ≤ 20%	6.0 ^	3.8	7.0	5.4
> 20 to ≤ 25%	9.5	4.1	3.5#^	5.0
> 25 to ≤ 50%	15.1	14.5	10.5	13.2
> 50%	8.1	12.2	8.8	10.1
At Least Half of Grains Are Whole Grain-Rich				
Percentage Meeting Requirement	84.4	89.0	86.5	87.1
Percentage Below Requirement	15.6	11.0	13.5	12.9
> 0 to ≤ 5%	<3	<3	<3	<3
> 5 to ≤ 10%	<3	<3	<3	<3
> 10 to ≤ 15%	<3*	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3	<3
> 20 to ≤ 25%	<3	<3	<3	<3
> 25 to ≤ 50%	4.3 ^	3.9	<3	3.4
> 50%	8.3	3.6	6.6	5.7

Percentage Meeting/Below/Above Requirement/Specification	Percentage of Weekly Lunch Menus			
	Urban	Suburban	Rural	All Schools
All Grains Are Whole Grain-Rich				
Percentage Meeting Requirement	32.1	25.1	26.5	27.1
Percentage Below Requirement	67.9	74.9	73.5	72.9
> 0 to ≤ 5%	15.2	18.9 [†]	10.9	15.3
> 5 to ≤ 10%	12.8	11.2	8.0	10.4
> 10 to ≤ 15%	3.7 ^{***}	10.9	10.2 [#]	9.1
> 15 to ≤ 20%	8.4	6.8	6.5	7.0
> 20 to ≤ 25%	<3	4.2	3.9 [^]	3.7
> 25 to ≤ 50%	10.0	11.9 [†]	20.5 [#]	14.5
> 50%	15.6	11.0	13.5	12.9
Meats/Meat Alternates				
Percentage Meeting Requirement	58.3	56.7	59.2	57.9
Percentage Below Requirement	41.7	43.3	40.8	42.1
> 0 to ≤ 5%	<3	4.5	3.8 [^]	3.8
> 5 to ≤ 10%	9.1	8.9	8.5	8.8
> 10 to ≤ 15%	9.1	4.7	6.3	6.2
> 15 to ≤ 20%	4.8 [^]	3.0	<3	3.4
> 20 to ≤ 25%	3.7 [^]	4.1	4.2	4.0
> 25 to ≤ 50%	11.6	17.7	11.6	14.2
> 50%	<3	<3	3.6 [^]	1.6
Milk				
Percentage Meeting Requirement	>97	>97	>97	>97
Percentage Below Requirement	<3	<3	<3	<3
> 0 to ≤ 5%	<3	<3	<3	<3
> 5 to ≤ 10%	<3	<3	<3	<3
> 10 to ≤ 15%	<3	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3	<3
> 20 to ≤ 25%	<3	<3	<3	<3
> 25 to ≤ 50%	<3	<3	<3	<3
> 50%	<3	<3	<3	<3
Dietary Specifications				
Calorie Minimum and Maximum^a				
Percentage Meeting Both Calorie Minimum and Maximum	41.8	44.3	37.0	41.4
Percentage Above Calorie Maximum	24.0 [*]	35.6	38.5 [#]	33.9
> 0 to ≤ 5%	12.3	13.4 [†]	7.4	11.2
> 5 to ≤ 10%	6.7	8.7	8.2	8.1
> 10 to ≤ 15%	<3 ^{***}	8.9	7.6 ^{##}	6.8
> 15 to ≤ 20%	<3	<3 ^{††}	7.7 ^{##}	3.4
> 20 to ≤ 25%	<3 [*]	<3	<3 [#]	1.5
> 25 to ≤ 50%	<3	<3	4.4 [^]	2.5
> 50%	<3	<3	<3	<3
Percentage Below Calorie Minimum	34.2 ^{**}	20.1	24.5 [#]	24.7
> 0 to ≤ 5%	11.5	6.6	8.3	8.3
> 5 to ≤ 10%	7.6	5.2	8.6	6.8
> 10 to ≤ 15%	7.9	4.4	3.2 [^]	4.8
> 15 to ≤ 20%	4.0 [^]	<3	<3	2.2
> 20 to ≤ 25%	<3	<3 [†]	<3	1.5
> 25 to ≤ 50%	<3	<3	<3	<3
> 50%	<3	<3	<3	<3

Percentage Meeting/Below/Above Requirement/Specification	Percentage of Weekly Lunch Menus			
	Urban	Suburban	Rural	All Schools
Percentage of Calories from Saturated Fat				
Percentage Meeting Requirement	92.4	93.2	93.0	93.0
Percentage Above Requirement	7.6	6.8	7.0	7.0
> 0 to ≤ 5%	3.8 [^]	<3	3.4 [^]	3.1
> 5 to ≤ 10%	<3	<3	<3	1.9
> 10 to ≤ 15%	<3	<3 [†]	<3	<3
> 15 to ≤ 20%	<3	<3	<3	<3
> 20 to ≤ 25%	<3	<3	<3	<3
> 25 to ≤ 50%	<3	<3	<3	<3
> 50%	<3	<3	<3	<3
Sodium^b				
Percentage Meeting Requirement	83.5	78.4 ^{†††}	55.5 ^{###}	71.5
Percentage Above Requirement	16.5	21.6 ^{†††}	44.5 ^{###}	28.5
> 0 to ≤ 5%	4.8 [^]	5.6	9.3	6.7
> 5 to ≤ 10%	<3 ^{**}	5.2 [†]	11.0 ^{###}	6.2
> 10 to ≤ 15%	5.0 [^]	2.9 [†]	6.6	4.6
> 15 to ≤ 20%	<3	<3	5.4 [#]	3.1
> 20 to ≤ 25%	<3	<3	<3	2.2
> 25 to ≤ 50%	3.4 [^]	2.9	6.4	4.2
> 50%	<3	<3	3.0 [^]	1.3
Number of Weekly Menus	240	597	370	1,207

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

^aFor schools that have grades that span more than one of the established grade groups (K–5, 6–8, and 9–12), average weekly menus must meet the calorie minimum for the oldest grade group and the calorie maximum for the youngest grade group. In the NSLP dietary specifications, the calorie minimums and maximums for the oldest and youngest grade groups do not overlap for schools that span all three grade groups or schools that include both the 6–8 and 9–12 grade groups. For this reason, weekly menus in schools that spanned these grade groups (n=90) were excluded from this analysis.

^bBased on sodium targets for school year 2014-2015.

Difference between urban and suburban schools is significantly different from zero at the *** 0.001 level, ** 0.01 level, or * 0.05 level.

Difference between suburban and rural schools is significantly different from zero at the ††† 0.001 level, †† 0.01 level, or † 0.05 level.

Difference between urban and rural schools is significantly different from zero at the ### 0.001 level, ## 0.01 level, or # 0.05 level.

NSLP = National School Lunch Program.

[^] Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 0 and 3 percent are displayed as <3 and flagged percentages between 97 and 100 percent are displayed as >97.

Table C.17. Percentage of Weekly Lunch Menus Meeting NSLP Requirements/Dietary Specifications and Distribution of Weekly Lunch Menus Not Meeting NSLP Requirements/Dietary Specifications, by District Child Poverty Rate

Percentage Meeting/Below/Above Requirement/Specification	Percentage of Weekly Lunch Menus		
	Lower (less than 20 percent)	Higher (20 percent or more)	All Schools
Weekly Meal Pattern Requirements			
Fruits			
Percentage Meeting Requirement	93.9	90.0	92.1
Percentage Below Requirement	6.1	10.0	7.9
> 0 to ≤ 5%	<3	<3	<3
> 5 to ≤ 10%	<3	<3	2.0
> 10 to ≤ 15%	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3
> 20 to ≤ 25%	<3	<3	<3
> 25 to ≤ 50%	<3	3.6	2.8
> 50%	<3	<3	<3
Vegetables			
Percentage Meeting Requirement	79.7	78.6	79.2
Percentage Below Requirement	20.3	21.4	20.8
> 0 to ≤ 5%	<3	<3	1.9
> 5 to ≤ 10%	<3	<3	1.4
> 10 to ≤ 15%	2.7	3.0	2.8
> 15 to ≤ 20%	2.5	<3	2.1
> 20 to ≤ 25%	<3	<3	1.7
> 25 to ≤ 50%	7.4	9.1	8.2
> 50%	3.1	<3	2.8
Dark Green Vegetables			
Percentage Meeting Requirement	96.1	94.4	95.4
Percentage Below Requirement	3.9	5.6	4.6
> 0 to ≤ 5%	<3	<3	<3
> 5 to ≤ 10%	<3	<3	<3
> 10 to ≤ 15%	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3
> 20 to ≤ 25%	<3	<3	<3
> 25 to ≤ 50%	<3	3.4	2.3
> 50%	<3	<3	1.3
Red/Orange Vegetables			
Percentage Meeting Requirement	94.3	92.7	93.6
Percentage Below Requirement	5.7	7.3	6.4
> 0 to ≤ 5%	<3	<3	<3
> 5 to ≤ 10%	<3	<3	<3
> 10 to ≤ 15%	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3
> 20 to ≤ 25%	<3	<3	<3
> 25 to ≤ 50%	<3	3.5	2.8
> 50%	<3	<3	1.8

Percentage Meeting/Below/Above Requirement/Specification	Percentage of Weekly Lunch Menus		
	Lower (less than 20 percent)	Higher (20 percent or more)	All Schools
Legumes			
Percentage Meeting Requirement	82.2	75.9	79.3
Percentage Below Requirement	17.8	24.1	20.7
> 0 to ≤ 5%	<3	<3	<3
> 5 to ≤ 10%	<3	<3	<3
> 10 to ≤ 15%	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3
> 20 to ≤ 25%	<3	<3	<3
> 25 to ≤ 50%	3.6	3.6	3.6
> 50%	13.7	19.5	16.4
Starchy Vegetables			
Percentage Meeting Requirement	93.9	95.6	94.7
Percentage Below Requirement	6.1	4.4	5.3
> 0 to ≤ 5%	<3	<3	<3
> 5 to ≤ 10%	<3	<3	<3
> 10 to ≤ 15%	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3
> 20 to ≤ 25%	<3	<3	<3
> 25 to ≤ 50%	<3	<3	<3
> 50%	4.5	3.0	3.8
Other Vegetables			
Percentage Meeting Requirement	90.9	93.6	92.1
Percentage Below Requirement	9.1	6.4	7.9
> 0 to ≤ 5%	<3	<3	<3
> 5 to ≤ 10%	<3	<3	<3
> 10 to ≤ 15%	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3
> 20 to ≤ 25%	<3	<3	<3
> 25 to ≤ 50%	2.5	<3	2.1
> 50%	5.7	3.7	4.8
Grains			
Percentage Meeting Requirement	50.1	47.8	49.0
Percentage Below Requirement	49.9	52.2	51.0
> 0 to ≤ 5%	4.3	5.0	4.6
> 5 to ≤ 10%	5.6	7.2	6.3
> 10 to ≤ 15%	6.5	5.9	6.3
> 15 to ≤ 20%	4.7	6.2	5.4
> 20 to ≤ 25%	4.5	5.7	5.0
> 25 to ≤ 50%	13.7	12.6	13.2
> 50%	10.6	9.5	10.1
At Least Half of Grains Are Whole Grain-Rich			
Percentage Meeting Requirement	88.3	85.8	87.1
Percentage Below Requirement	11.7	14.2	12.9
> 0 to ≤ 5%	<3	<3	<3
> 5 to ≤ 10%	<3	<3	<3
> 10 to ≤ 15%	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3
> 20 to ≤ 25%	<3	<3	<3
> 25 to ≤ 50%	<3	4.9	3.4
> 50%	5.7	5.6	5.7

Percentage Meeting/Below/Above Requirement/Specification	Percentage of Weekly Lunch Menus		
	Lower (less than 20 percent)	Higher (20 percent or more)	All Schools
All Grains Are Whole Grain-Rich			
Percentage Meeting Requirement	25.4	29.2	27.1
Percentage Below Requirement	74.6	70.8	72.9
> 0 to ≤ 5%	18.7**	11.2	15.3
> 5 to ≤ 10%	10.7	10.2	10.4
> 10 to ≤ 15%	10.1	7.9	9.1
> 15 to ≤ 20%	8.9	4.9	7.0
> 20 to ≤ 25%	4.2	3.1	3.7
> 25 to ≤ 50%	10.3*	19.5	14.5
> 50%	11.7	14.2	12.9
Meats/Meat Alternates			
Percentage Meeting Requirement	54.7	61.7	57.9
Percentage Below Requirement	45.3	38.3	42.1
> 0 to ≤ 5%	4.5	3.0	3.8
> 5 to ≤ 10%	8.2	9.5	8.8
> 10 to ≤ 15%	6.0	6.4	6.2
> 15 to ≤ 20%	4.5*	<3	3.4
> 20 to ≤ 25%	3.6	4.6	4.0
> 25 to ≤ 50%	17.5*	10.3	14.2
> 50%	<3	<3	1.6
Milk			
Percentage Meeting Requirement	>97	>97	>97
Percentage Below Requirement	<3	<3	<3
> 0 to ≤ 5%	<3	<3	<3
> 5 to ≤ 10%	<3	<3	<3
> 10 to ≤ 15%	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3
> 20 to ≤ 25%	<3	<3	<3
> 25 to ≤ 50%	<3	<3	<3
> 50%	<3	<3	<3
Dietary Specifications			
Calorie Minimum and Maximum^a			
Percentage Meeting Both Calorie Minimum and Maximum	40.7	42.2	41.4
Percentage Above Calorie Maximum	37.9*	29.0	33.9
> 0 to ≤ 5%	13.2	8.7	11.2
> 5 to ≤ 10%	8.2	8.0	8.1
> 10 to ≤ 15%	9.0*	4.0	6.8
> 15 to ≤ 20%	2.4	4.6	3.4
> 20 to ≤ 25%	<3	<3	1.5
> 25 to ≤ 50%	<3	<3	2.5
> 50%	<3	<3	<3
Percentage Below Calorie Minimum	21.4*	28.9	24.7
> 0 to ≤ 5%	8.2	8.3	8.3
> 5 to ≤ 10%	5.8	8.1	6.8
> 10 to ≤ 15%	3.9	5.8	4.8
> 15 to ≤ 20%	<3*	3.6	2.2
> 20 to ≤ 25%	<3	<3	1.5
> 25 to ≤ 50%	<3	<3	<3
> 50%	<3	<3	<3

Percentage Meeting/Below/Above Requirement/Specification	Percentage of Weekly Lunch Menu		
	Lower (less than 20 percent)	Higher (20 percent or more)	All Schools
Percentage of Calories from Saturated Fat			
Percentage Meeting Requirement	93.8	92.0	93.0
Percentage Above Requirement	6.2	8.0	7.0
> 0 to ≤ 5%	2.8	3.4	3.1
> 5 to ≤ 10%	<3	<3	1.9
> 10 to ≤ 15%	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3
> 20 to ≤ 25%	<3	<3	<3
> 25 to ≤ 50%	<3	<3	<3
> 50%	<3	<3	<3
Sodium^b			
Percentage Meeting Requirement	70.0	73.4	71.5
Percentage Above Requirement	30.0	26.6	28.5
> 0 to ≤ 5%	7.6	5.6	6.7
> 5 to ≤ 10%	5.4	7.2	6.2
> 10 to ≤ 15%	5.2	4.0	4.6
> 15 to ≤ 20%	3.7	<3	3.1
> 20 to ≤ 25%	2.9	<3	2.2
> 25 to ≤ 50%	3.2	5.5	4.2
> 50%	<3	<3	1.3
Number of Weekly Menus	673	534	1,207

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Note: Data on child poverty rates were from the 2011 U.S. Census Bureau's Small Area Income and Poverty Estimates school district file.

^aFor schools that have grades that span more than one of the established grade groups (K–5, 6–8, and 9–12), average weekly menus must meet the calorie minimum for the oldest grade group and the calorie maximum for the youngest grade group. In the NSLP dietary specifications, the calorie minimums and maximums for the oldest and youngest grade groups do not overlap for schools that span all three grade groups or schools that include both the 6–8 and 9–12 grade groups. For this reason, weekly menus in schools that spanned these grade groups (n=90) were excluded from this analysis.

^bBased on sodium targets for school year 2014-2015.

Difference between lower and higher poverty schools is significantly different from zero at the ** 0.01 level or * 0.05 level.

NSLP = National School Lunch Program.

[^] Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 0 and 3 percent are displayed as <3 and flagged percentages between 97 and 100 percent are displayed as >97.

Table C.18. Percentage of Average Weekly Lunch Menus That Were Consistent with Each and All of the DRI-Based Targets for Nutrient Content for NSLP Lunches *Prepared*

	Elementary Schools	Middle Schools	High Schools	All Schools
DRI-Based Targets for Nutrient Content^a				
Percentage of Calories from Total Fat ^b	57.0*	67.8	62.5	60.2
Linoleic Acid	88.2	85.2 ^{††}	72.7 ^{###}	84.2
Alpha-Linolenic Acid	95.1	91.9	88.4 [#]	93.0
Protein	>97 ^{***}	30.6 ^{†††}	46.7 ^{###}	75.6
Vitamin A	>97 ^{***}	82.9 ^{†††}	68.3 ^{###}	89.5
Vitamin C	74.2 ^{***}	49.8	45.5 ^{###}	63.4
Vitamin E	13.7 ^{***}	<3	<3 ^{###}	8.8
Thiamin	94.9 ^{***}	67.0 ^{†††}	37.8 ^{###}	77.2
Riboflavin	>97	>97	>97 [#]	>97
Niacin	96.6 ^{***}	72.9 ^{†††}	44.8 ^{###}	80.8
Vitamin B ₆	>97 ^{***}	81.2 ^{††}	68.3 ^{###}	88.2
Folate	20.8 ^{***}	6.4	4.0 ^{###}	14.4
Vitamin B ₁₂	>97	>97 ^{†††}	86.4 ^{###}	96.3
Iron	92.0 ^{***}	8.1	6.8 ^{###}	57.9
Magnesium	>97 ^{**}	96.9 ^{†††}	28.7 ^{###}	83.6
Zinc	>97 ^{***}	90.2 ^{†††}	70.5 ^{###}	91.2
Calcium	>97 ^{**}	95.9 [†]	90.5 ^{###}	97.0
Phosphorus	>97 ^{***}	95.4	94.6 [#]	98.0
Potassium	12.9 ^{**}	6.0	4.2 ^{###}	9.7
Dietary Fiber	62.3 ^{***}	45.5	38.3 ^{###}	53.9
Cholesterol	>97	96.0	95.6	97.5
All DRI-Based Targets	<3	<3	<3 [#]	1.6
Number of Weekly Menus	451	384	372	1,207

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: The DRI-based targets for nutrient content were developed by the Institute of Medicine (IOM 2010). Average weekly menus were not expected to meet these nutrient targets. However, it is expected that if school lunches were planned to meet the NSLP nutrition standards, they would be consistent with most of these nutrient targets. Exceptions are vitamin E and potassium and iron for middle and high schools.

^aThe targets for lunch are based on 32 percent of the daily school meal-target median intake for the age-grade group.

^bMean falls between specified minimums and maximums for grade group (school type).

Difference between elementary and middle schools is significantly different from zero at the *** 0.001 level, ** 0.01 level, or * 0.05 level.

Difference between middle and high schools is significantly different from zero at the ††† 0.001 level, †† 0.01 level, or † 0.05 level.

Difference between elementary and high schools is significantly different from zero at the ### 0.001 level, # 0.01 level, or # 0.05 level.

DRI = Dietary Reference Intakes; IOM = Institute of Medicine; NSLP = National School Lunch Program.

<3 and >97 = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 0 and 3 percent are displayed as <3 and flagged percentages between 97 and 100 percent are displayed as >97.

Table C.19. Percentage of Average Weekly Lunch Menus That Were Consistent with Each and All of the DRI-Based Targets for Nutrient Content for NSLP Lunches Prepared, by School Size

	Small (Fewer than 500 students)	Medium (500 to 999 students)	Large (1,000 or more students)	All Schools
DRI-Based Targets for Nutrient Content^a				
Percentage of Calories from Total Fat ^b	52.8**	66.0	71.1###	60.2
Linoleic Acid	84.9	84.4	80.7	84.2
Alpha-Linolenic Acid	93.1	93.5	91.3	93.0
Protein	82.5*	75.6†††	47.1###	75.6
Vitamin A	93.5	90.1†††	71.6###	89.5
Vitamin C	65.9	65.5†††	46.4###	63.4
Vitamin E	12.4*	6.3†	<3###	8.8
Thiamin	81.4	80.7†††	48.5###	77.2
Riboflavin	>97	>97	>97	>97
Niacin	84.8	82.8†††	57.7###	80.8
Vitamin B ₆	89.7	91.3†††	71.8###	88.2
Folate	18.2	12.5†	5.5###^	14.4
Vitamin B ₁₂	96.8 ^	>97††	91.2#	96.3
Iron	67.0*	58.7†††	18.1###	57.9
Magnesium	87.8	89.0†††	49.1###	83.6
Zinc	96.8***	92.2†††	64.6###	91.2
Calcium	96.9 ^	>97††	92.7#	97.0
Phosphorus	>97	>97†	94.7#^	98.0
Potassium	14.6**	5.4	3.9###^	9.7
Dietary Fiber	64.2***	46.5†	36.6###	53.9
Cholesterol	>97	>97	96.0 ^	97.5
All DRI-Based Targets	<3	<3	<3	1.6
Number of Weekly Menus	435	495	277	1,207

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: The DRI-based targets for nutrient content were developed by the Institute of Medicine (IOM 2010). Average weekly menus were not expected to meet these nutrient targets. However, it is expected that if school lunches were planned to meet the NSLP nutrition standards, they would be consistent with most of these nutrient targets. Exceptions are vitamin E and potassium and iron for middle and high schools.

^aThe targets for lunch are based on 32 percent of the daily school meal-target median intake for the age-grade group.

^bMean falls between specified minimums and maximums for grade group (school type).

Difference between small and medium-sized schools is significantly different from zero at the *** 0.001 level, ** 0.01 level or * 0.05 level.

Difference between medium-sized and large schools is significantly different from zero at the ††† 0.001 level, †† 0.01 level or † 0.05 level.

Difference between large and small schools is significantly different from zero at the ### 0.001 level or # 0.05 level.

DRI = Dietary Reference Intakes; IOM = Institute of Medicine; NSLP = National School Lunch Program

^ Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 0 and 3 percent are displayed as <3 and flagged percentages between 97 and 100 percent are displayed as >97.

Table C.20. Percentage of Average Weekly Lunch Menus That Were Consistent with Each and All of the DRI-Based Targets for Nutrient Content for NSLP Lunches *Prepared*, by Urbanicity

	Urban	Suburban	Rural	All Schools
DRI-Based Targets for Nutrient Content^a				
Percentage of Calories from Total Fat ^b	58.4	62.6	58.4	60.2
Linoleic Acid	80.0	85.0	85.8	84.2
Alpha-Linolenic Acid	91.4	95.1	91.5	93.0
Protein	78.1	77.1	72.1	75.6
Vitamin A	90.7	90.0	88.2	89.5
Vitamin C	71.6	64.6	56.8 ^{##}	63.4
Vitamin E	9.8	6.9	10.5	8.8
Thiamin	73.2 [*]	80.4	75.7	77.2
Riboflavin	>97	>97	>97	>97
Niacin	80.4	82.3	79.1	80.8
Vitamin B ₆	92.9 [*]	87.5	86.1 [#]	88.2
Folate	17.2	13.4	14.0	14.4
Vitamin B ₁₂	>97	97.4 [†]	94.0 [#]	96.3
Iron	55.3	59.7	57.1	57.9
Magnesium	86.9	85.4 [†]	79.5 [#]	83.6
Zinc	89.9	90.6	92.6	91.2
Calcium	96.9 [^]	>97 [†]	95.3	97.0
Phosphorus	>97	>97	>97	98.0
Potassium	4.8 [^]	8.4	14.4 ^{##}	9.7
Dietary Fiber	49.1	49.4 ^{††}	62.5 [#]	53.9
Cholesterol	95.5 [^]	96.6 [†]	>97 [#]	97.5
All DRI-Based Targets	<3	<3	<3	1.6
Number of Weekly Menus	240	597	370	1,207

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: The DRI-based targets for nutrient content were developed by the Institute of Medicine (IOM 2010). Average weekly menus were not expected to meet these nutrient targets. However, it is expected that if school lunches were planned to meet the NSLP nutrition standards, they would be consistent with most of these nutrient targets. Exceptions are vitamin E and potassium and iron for middle and high schools.

^aThe targets for lunch are based on 32 percent of the daily school meal-target median intake for the age-grade group.

^bMean falls between specified minimums and maximums for grade group (school type).

Difference between urban and suburban schools is significantly different from zero at the * 0.05 level.

Difference between suburban and rural schools is significantly different from zero at the †† 0.01 level or † 0.05 level.

Difference between urban and rural schools is significantly different from zero at the ## 0.01 level or # 0.05 level.

DRI = Dietary Reference Intakes; IOM = Institute of Medicine; NSLP = National School Lunch Program.

[^] Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 0 and 3 percent are displayed as <3 and flagged percentages between 97 and 100 percent are displayed as >97.

Table C.21. Percentage of Average Weekly Lunch Menus That Were Consistent with Each and All of the DRI-Based Targets for Nutrient Content for NSLP Lunches *Prepared*, by District Child Poverty Rate

	Lower (less than 20 percent)	Higher (20 percent or more)	All Schools
DRI-Based Targets for Nutrient Content^a			
Percentage of Calories from Total Fat ^b	60.9	59.3	60.2
Linoleic Acid	87.3*	80.5	84.2
Alpha-Linolenic Acid	95.6*	89.9	93.0
Protein	75.4	75.7	75.6
Vitamin A	89.6	89.5	89.5
Vitamin C	62.4	64.6	63.4
Vitamin E	7.8	10.0	8.8
Thiamin	81.6***	71.9	77.2
Riboflavin	>97	>97	>97
Niacin	80.8	80.8	80.8
Vitamin B ₆	89.1	87.2	88.2
Folate	16.6	11.9	14.4
Vitamin B ₁₂	96.7	95.9	96.3
Iron	58.7	56.8	57.9
Magnesium	84.5	82.6	83.6
Zinc	92.3	89.8	91.2
Calcium	97.4	96.6	97.0
Phosphorus	>97	>97	98.0
Potassium	9.5	10.0	9.7
Dietary Fiber	53.9	54.0	53.9
Cholesterol	>97	96.6	97.5
All DRI-Based Targets	<3	<3	1.6
Number of Weekly Menus	673	534	1,207

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: The DRI-based targets for nutrient content were developed by the Institute of Medicine (IOM 2010). Average weekly menus were not expected to meet these nutrient targets. However, it is expected that if school lunches were planned to meet the NSLP nutrition standards, they would be consistent with most of these nutrient targets. Exceptions are vitamin E and potassium and iron for middle and high schools. Data on child poverty rates were from the 2011 U.S. Census Bureau's Small Area Income and Poverty Estimates school district file.

^aThe targets for lunch are based on 32 percent of the daily school meal-target median intake for the age-grade group.

^bMean falls between specified minimums and maximums for grade group (school type).

Difference between lower and higher poverty schools is significantly different from zero at the *** 0.001 level or * 0.05 level.

DRI = Dietary Reference Intakes; IOM = Institute of Medicine; NSLP = National School Lunch Program.

>97 = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 97 and 100 percent are displayed as >97.

Table C.22. Average Calorie and Nutrient Content of NSLP Lunches *Prepared*, Relative to DRI-Based Targets for Nutrient Content

	Elementary Schools			Middle Schools			High Schools		
	Target	Mean	Percentage of Target	Target	Mean	Percentage of Target	Target	Mean	Percentage of Target
DRI-Based Targets for Nutrient Content^a									
Linoleic Acid (g)	3.3	4.7	143.3	3.6	5.3	147.6	4.5	5.8	128.6
Alpha-Linolenic Acid (g)	0.31	0.56	181.3	0.36	0.64	178.5	0.45	0.71	156.7
Protein (g)	15.2	29.8	196.1	32.2	30.9	95.7	32.5	32.6	100.4
Vitamin A (mcg RAE)	192	340	177.3	241	321	133.1	277	360	129.9
Vitamin C (mg)	24	32	135.3	30	34	112.4	39	41	104.7
Vitamin E (mg AT)	3.0	2.4	79.9	4.0	2.4	59.4	5.4	2.7	50.9
Thiamin (mg)	0.4	0.5	129.0	0.5	0.5	108.2	0.6	0.6	96.5
Riboflavin (mg)	0.46	0.84	182.1	0.61	0.85	139.1	0.67	0.89	132.6
Niacin (mg)	4.7	6.4	135.5	6.0	6.7	111.7	7.3	7.3	99.7
Vitamin B ₆ (mg)	0.4	0.6	158.3	0.5	0.6	128.6	0.6	0.7	116.5
Folate (mcg DFE)	136	118	86.8	169	120	70.9	205	131	64.1
Vitamin B ₁₂ (mcg)	1.2	1.9	160.8	1.3	2.0	154.1	1.6	2.1	133.8
Iron (mg)	3.4	4.1	122.1	5.2	4.3	82.4	5.9	4.7	79.3
Magnesium (mg)	72	127	176.9	98	130	132.2	147	140	95.3
Zinc (mg)	2.9	4.3	148.0	3.7	4.4	118.2	4.3	4.6	106.8
Calcium (mg)	332	537	161.8	440	536	121.9	481	559	116.2
Phosphorus (mg)	361	621	172.0	538	634	117.8	572	668	116.7
Potassium (mg)	1,353	1,203	88.9	1,523	1,220	80.1	1,740	1,330	76.5
Dietary Fiber (g)	8.5	9.3	109.7	9.4	9.3	99.3	10.7	10.5	98.4
Cholesterol (mg)	< 96	52	54.5	< 96	55	57.7	< 96	59	61.8
Number of Weekly Menus	451			384			372		

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: The DRI-based targets for nutrient content were developed by the Institute of Medicine (IOM 2010). Average weekly menus were not expected to meet these nutrient targets. However, it is expected that if school lunches were planned to meet the NSLP nutrition standards, they would be consistent with most of these nutrient targets. Exceptions are vitamin E and potassium and iron for middle and high schools.

^aThe targets for lunch are based on 32 percent of the daily school meal-target median intake for the age-grade group.

AT= alpha-tocopherol; DFE = dietary folate equivalents; DRI = Dietary Reference Intakes; IOM = Institute of Medicine; NSLP = National School Lunch Program; RAE = retinol activity equivalents.

Table C.23. Percentage of Weekly Menus That Were Consistent with Each and All of the DRI-Based Targets for Nutrient Content for NSLP Lunches Served

	Elementary Schools	Middle Schools	High Schools	All Schools
DRI-Based Targets for Nutrient Content^a				
Percentage of Calories from Total Fat ^b	64.0*	73.9	67.9	66.6
Linoleic Acid	85.1	79.8 ^{††}	65.2 ^{###}	79.7
Alpha-Linolenic Acid	94.0	90.2 [†]	82.3 ^{###}	90.7
Protein	>97 ^{***}	8.0 ^{†††}	20.9 ^{###}	65.7
Vitamin A	95.1 ^{***}	55.8	49.4 ^{###}	77.9
Vitamin C	65.9 ^{***}	39.1	35.2 ^{###}	54.2
Vitamin E	8.9 ^{***}	<3 [†]	<3 ^{###}	5.6
Thiamin	88.0 ^{***}	45.4 ^{†††}	19.2 ^{###}	65.0
Riboflavin	>97 ^{***}	85.8 ^{††}	74.8 ^{###}	91.8
Niacin	94.4 ^{***}	61.8 ^{†††}	30.3 ^{###}	74.3
Vitamin B ₆	95.4 ^{***}	70.3 ^{†††}	49.2 ^{###}	80.6
Folate	16.0 ^{***}	3.7	3.4 ^{###}	11.0
Vitamin B ₁₂	93.8 ^{**}	85.1 ^{†††}	61.0 ^{###}	85.0
Iron	81.8 ^{***}	3.1	4.0 ^{###}	50.2
Magnesium	>97 ^{***}	85.2 ^{†††}	13.4 ^{###}	77.9
Zinc	>97 ^{***}	65.4 ^{†††}	36.6 ^{###}	78.1
Calcium	>97 ^{***}	62.0 [†]	49.6 ^{###}	81.5
Phosphorus	>97 ^{***}	66.0	58.8 ^{###}	84.6
Potassium	7.6 ^{**}	<3	<3 ^{###}	5.4
Dietary Fiber	48.2 ^{***}	27.8	22.9 ^{###}	38.9
Cholesterol	>97	96.0	96.4	97.7
All DRI-Based Targets	<3	<3	<3 [#]	<3
Number of Weekly Menus	451	384	371	1,206

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: The DRI-based targets for nutrient content were developed by the Institute of Medicine (IOM 2010). Average weekly menus were not expected to meet these nutrient targets. However, it is expected that if school lunches were planned to meet the NSLP nutrition standards, they would be consistent with most of these nutrient targets. Exceptions are vitamin E and potassium and iron for middle and high schools.

^aThe targets for lunch are based on 32 percent of the daily school meal-target median intake for the age-grade group.

^bMean falls between specified minimums and maximums for grade group (school type).

Difference between elementary and middle schools is significantly different from zero at the *** 0.001 level, ** 0.01 level, or * 0.05 level.

Difference between middle and high schools is significantly different from zero at the ^{†††} 0.001 level, ^{††} 0.01 level, or [†] 0.05 level.

Difference between elementary and high schools is significantly different from zero at the ^{###} 0.001 level or [#] 0.05 level.

DRI = Dietary Reference Intakes; IOM = Institute of Medicine; NSLP = National School Lunch Program.

<3 and >97 = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 0 and 3 percent are displayed as <3 and flagged percentages between 97 and 100 percent are displayed as >97.

Table C.24. Percentage of Weekly Menus That Were Consistent with Each and All of the DRI-Based Targets for Nutrient Content for NSLP Lunches Served, by School Size

	Small (Fewer than 500 students)	Medium (500 to 999 students)	Large (1,000 or more students)	All Schools
DRI-Based Targets for Nutrient Content^a				
Percentage of Calories from Total Fat ^b	61.8	69.7	76.1 ^{##}	66.6
Linoleic Acid	79.9	80.7	75.8	79.7
Alpha-Linolenic Acid	90.4	91.5	89.2	90.7
Protein	74.1 [*]	68.0 ⁺⁺⁺	24.0 ^{###}	65.7
Vitamin A	86.9 ^{***}	76.4 ⁺⁺⁺	45.9 ^{###}	77.9
Vitamin C	55.9	57.0 ⁺⁺⁺	38.4 ^{##}	54.2
Vitamin E	7.7	4.6 [†]	<3 ^{###}	5.6
Thiamin	70.8	68.6 ⁺⁺⁺	29.8 ^{###}	65.0
Riboflavin	94.7	93.1 ⁺⁺⁺	75.5 ^{###}	91.8
Niacin	80.5	75.8 ⁺⁺⁺	44.0 ^{###}	74.3
Vitamin B ₆	82.9	84.4 ⁺⁺⁺	58.8 ^{###}	80.6
Folate	14.5	9.4 ⁺⁺⁺	<3 ^{###}	11.0
Vitamin B ₁₂	88.6	86.5 ⁺⁺⁺	65.1 ^{###}	85.0
Iron	58.1	51.3 ⁺⁺⁺	14.8 ^{###}	50.2
Magnesium	82.7	84.4 ⁺⁺⁺	37.5 ^{###}	77.9
Zinc	85.9	80.5 ⁺⁺⁺	38.3 ^{###}	78.1
Calcium	85.7	85.6 ⁺⁺⁺	50.6 ^{###}	81.5
Phosphorus	89.5	87.5 ⁺⁺⁺	55.3 ^{###}	84.6
Potassium	8.3 [*]	3.3 [†]	<3 ^{###}	5.4
Dietary Fiber	49.1 ^{***}	31.5 [†]	21.5 ^{###}	38.9
Cholesterol	>97	>97	>97	97.7
All DRI-Based Targets	<3	<3	<3	<3
Number of Weekly Menus	434	495	277	1,206

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: The DRI-based targets for nutrient content were developed by the Institute of Medicine (IOM 2010). Average weekly menus were not expected to meet these nutrient targets. However, it is expected that if school lunches were planned to meet the NSLP nutrition standards, they would be consistent with most of these nutrient targets. Exceptions are vitamin E and potassium and iron for middle and high schools.

^aThe targets for lunch are based on 32 percent of the daily school meal-target median intake for the age-grade group.

^bMean falls between specified minimums and maximums for grade group (school type).

Difference between small and medium-sized schools is significantly different from zero at the *** 0.001 level or * 0.05 level.

Difference between medium-sized and large schools is significantly different from zero at the +++ 0.001 level or † 0.05 level.

Difference between large and small schools is significantly different from zero at the ### 0.001 level or ## 0.01 level.

DRI = Dietary Reference Intakes; IOM = Institute of Medicine; NSLP = National School Lunch Program

<3 and >97 = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 0 and 3 percent are displayed as <3 and flagged percentages between 97 and 100 percent are displayed as >97.

Table C.25. Percentage of Weekly Menus That Were Consistent with Each and All of the DRI-Based Targets for Nutrient Content for NSLP Lunches Served, by Urbanicity

	Urban	Suburban	Rural	All Schools
DRI-Based Targets for Nutrient Content^a				
Percentage of Calories from Total Fat ^b	66.5	68.4	64.5	66.6
Linoleic Acid	74.6	82.3	79.7	79.7
Alpha-Linolenic Acid	89.6	92.0	89.8	90.7
Protein	68.1	66.2	63.6	65.7
Vitamin A	74.5	78.2	79.6	77.9
Vitamin C	64.9 [*]	55.0	46.6 ^{###}	54.2
Vitamin E	8.2	3.0 [†]	7.4	5.6
Thiamin	65.4	65.7	64.0	65.0
Riboflavin	90.3	90.8	93.8	91.8
Niacin	74.4	76.4	71.7	74.3
Vitamin B ₆	82.5	80.7	79.4	80.6
Folate	11.1	10.8	11.2	11.0
Vitamin B ₁₂	88.4	84.7	83.2	85.0
Iron	53.7	48.0	50.9	50.2
Magnesium	80.7	79.5	74.3	77.9
Zinc	76.2	77.6	79.8	78.1
Calcium	79.7	82.0	82.0	81.5
Phosphorus	85.0	84.7	84.2	84.6
Potassium	<3	4.2 [†]	8.9 ^{##}	5.4
Dietary Fiber	33.7	33.1 ^{†††}	49.3 ^{##}	38.9
Cholesterol	96.1 [^]	96.8 [†]	>97	97.7
All DRI-Based Targets	<3	<3	<3	<3
Number of Weekly Menus	240	597	369	1,206

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: The DRI-based targets for nutrient content were developed by the Institute of Medicine (IOM 2010). Average weekly menus were not expected to meet these nutrient targets. However, it is expected that if school lunches were planned to meet the NSLP nutrition standards, they would be consistent with most of these nutrient targets. Exceptions are vitamin E and potassium and iron for middle and high schools.

^aThe targets for lunch are based on 32 percent of the daily school meal-target median intake for the age-grade group.

^bMean falls between specified minimums and maximums for grade group (school type).

Difference between urban and suburban schools is significantly different from zero at the * 0.05 level.

Difference between suburban and rural schools is significantly different from zero at the ††† 0.001 level or † 0.05 level.

Difference between urban and rural schools is significantly different from zero at the ### 0.001 level or ## 0.01 level.

DRI = Dietary Reference Intakes; IOM = Institute of Medicine; NSLP = National School Lunch Program.

[^] Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 0 and 3 percent are displayed as <3 and flagged percentages between 97 and 100 percent are displayed as >97.

Table C.26. Percentage of Weekly Menus That Were Consistent with Each and All of the DRI-Based Targets for Nutrient Content for NSLP Lunches Served, by District Child Poverty Rate

	Lower (less than 20 percent)	Higher (20 percent or more)	All Schools
DRI-Based Targets for Nutrient Content^a			
Percentage of Calories from Total Fat ^b	68.0	65.1	66.6
Linoleic Acid	82.0	77.1	79.7
Alpha-Linolenic Acid	93.4	87.5	90.7
Protein	64.6	67.1	65.7
Vitamin A	77.4	78.4	77.9
Vitamin C	51.9	57.1	54.2
Vitamin E	3.7*	8.0	5.6
Thiamin	65.9	64.0	65.0
Riboflavin	91.8	91.7	91.8
Niacin	72.9	75.9	74.3
Vitamin B ₆	80.6	80.6	80.6
Folate	12.6	9.0	11.0
Vitamin B ₁₂	84.2	85.9	85.0
Iron	47.5	53.5	50.2
Magnesium	78.6	77.2	77.9
Zinc	77.7	78.5	78.1
Calcium	81.8	81.1	81.5
Phosphorus	84.4	84.9	84.6
Potassium	4.6	6.3	5.4
Dietary Fiber	34.5*	44.1	38.9
Cholesterol	>97	97.0	97.7
All DRI-Based Targets	<3	<3	<3
Number of Weekly Menus	672	534	1,206

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: The DRI-based targets for nutrient content were developed by the Institute of Medicine (IOM 2010). Average weekly menus were not expected to meet these nutrient targets. However, it is expected that if school lunches were planned to meet the NSLP nutrition standards, they would be consistent with most of these nutrient targets. Exceptions are vitamin E and potassium and iron for middle and high schools. Data on child poverty rates were from the 2011 U.S. Census Bureau's Small Area Income and Poverty Estimates school district file.

^aThe targets for lunch are based on 32 percent of the daily school meal-target median intake for the age-grade group.

^bMean falls between specified minimums and maximums for grade group (school type).

Difference between lower and higher poverty schools is significantly different from zero at the * 0.05 level.

DRI = Dietary Reference Intakes; IOM = Institute of Medicine; NSLP = National School Lunch Program.

>97 = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 97 and 100 percent are displayed as >97.

Table C.27. Average Calorie and Nutrient Content of NSLP Lunches *Served*, Relative to DRI-Based Targets for Nutrient Content

	Elementary Schools			Middle Schools			High Schools		
	Target	Mean	Percentage of Target	Target	Mean	Percentage of Target	Target	Mean	Percentage of Target
DRI-Based Targets for Nutrient Content^a									
Linoleic Acid (g)	3.3	4.5	135.0	3.6	5.0	137.6	4.5	5.4	120.4
Alpha-Linolenic Acid (g)	0.31	0.53	170.1	0.36	0.59	165.0	0.45	0.65	145.3
Protein (g)	15.2	28.1	184.7	32.2	28.1	86.9	32.5	29.5	90.9
Vitamin A (mcg RAE)	192	310	161.4	241	275	114.0	277	309	111.5
Vitamin C (mg)	24	30	123.8	30	30	99.2	39	36	92.4
Vitamin E (mg AT)	3.0	2.2	74.4	4.0	2.2	54.5	5.4	2.5	46.8
Thiamin (mg)	0.4	0.5	121.7	0.5	0.5	99.0	0.6	0.5	87.9
Riboflavin (mg)	0.46	0.77	167.7	0.61	0.73	120.2	0.67	0.76	114.2
Niacin (mg)	4.7	6.1	129.4	6.0	6.3	105.6	7.3	6.9	94.1
Vitamin B ₆ (mg)	0.4	0.6	148.6	0.5	0.6	117.9	0.6	0.6	106.4
Folate (mcg DFE)	136	111	81.6	169	110	65.0	205	120	58.4
Vitamin B ₁₂ (mcg)	1.2	1.8	147.8	1.3	1.7	132.4	1.6	1.8	115.2
Iron (mg)	3.4	3.9	115.4	5.2	4.0	76.2	5.9	4.3	73.3
Magnesium (mg)	72	119	164.8	98	116	118.1	147	125	85.2
Zinc (mg)	2.9	4.0	139.5	3.7	4.0	107.6	4.3	4.2	97.0
Calcium (mg)	332	495	149.2	440	462	104.9	481	479	99.5
Phosphorus (mg)	361	578	160.2	538	561	104.2	572	590	103.1
Potassium (mg)	1,353	1,110	82.0	1,523	1,071	70.3	1,740	1,168	67.1
Dietary Fiber (g)	8.5	8.7	102.4	9.4	8.5	90.5	10.7	9.6	89.8
Cholesterol (mg)	< 96	50	52.2	< 96	52	54.0	< 96	55	57.6
Number of Weekly Menus	451			384			371		

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: The DRI-based targets for nutrient content were developed by the Institute of Medicine (IOM 2010). Average weekly menus were not expected to meet these nutrient targets. However, it is expected that if school lunches were planned to meet the NSLP nutrition standards, they would be consistent with most of these nutrient targets. Exceptions are vitamin E and potassium and iron for middle and high schools.

^aThe targets for lunch are based on 32 percent of the daily school meal-target median intake for the age-grade group.

AT= alpha-tocopherol; DFE = dietary folate equivalents; DRI = Dietary Reference Intakes; IOM = Institute of Medicine; NSLP = National School Lunch Program; RAE = retinol activity equivalents.

Table C.28. Average Calorie and Nutrient Content of NSLP Lunches Prepared

	Elementary Schools	Middle Schools	High Schools	All Schools
Average Amount				
Calories	645**	668+++	730###	668
Macronutrients				
Total fat (g)	19**	20††	22###	20
Saturated fat (g)	6*	6††	7###	6
Monounsaturated fat (g)	6**	7††	7###	7
Polyunsaturated fat (g)	5***	6†	7###	6
Linoleic acid (g)	5***	5†	6###	5
Alpha-linolenic acid (g)	0.6***	0.6†	0.7###	0.6
Carbohydrate (g)	94	96†††	106###	97
Protein (g)	30***	31†††	33###	31
Vitamins				
Vitamin A (mcg RAE)	340*	321††	360	341
Vitamin C (mg)	32	34†††	41###	35
Vitamin D (mcg)	10.3**	12.4†	14.6###	11.6
Vitamin E (mg AT)	2.4	2.4†††	2.7###	2.5
Vitamin B ₆ (mg)	0.6	0.6††	0.7###	0.6
Vitamin B ₁₂ (mcg)	1.9	2.0†	2.1###	2.0
Folate (mcg DFE)	118	120††	131###	121
Niacin (mg)	6**	7†††	7###	7
Riboflavin (mg)	0.8	0.8††	0.9###	0.9
Thiamin (mg)	0.5**	0.5†††	0.6###	0.5
Minerals				
Calcium (mg)	537	536††	559##	542
Iron (mg)	4.1*	4.3†††	4.7###	4.3
Magnesium (mg)	127	130†††	140###	131
Phosphorus (mg)	621*	634†††	668###	634
Potassium (mg)	1,203	1,220†††	1,330###	1,234
Sodium (mg)	1,125**	1,200†††	1,345###	1,187
Zinc (mg)	4.3	4.4†††	4.6###	4.4
Other Dietary Components				
Cholesterol (mg)	52	55	59##	54
Dietary fiber (g)	9	9†††	11###	10
Dietary fiber (g/1,000 calories)	14*	14†	14	14
Average Percentage of Calories from:				
Total Fat	25.9**	26.7	26.5#	26.2
Saturated Fat	8.2	8.3	8.1	8.2
Monounsaturated Fat	8.8*	9.0	8.9	8.8
Polyunsaturated Fat	7.4**	7.9	8.0###	7.6
Linoleic Acid	6.5**	7.0	7.0##	6.7
Alpha-Linolenic Acid	0.8**	0.8	0.9###	0.8
Carbohydrate	58.6**	57.6†	58.4	58.4
Protein	18.7	18.8†††	18.2###	18.6
Number of Schools	451	384	372	1,207

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Difference between elementary and middle schools is significantly different from zero at the *** 0.001 level, ** 0.01 level, or * 0.05 level.

Difference between middle and high schools is significantly different from zero at the ††† 0.001 level, †† 0.01 level, or † 0.05 level.

Difference between elementary and high schools is significantly different from zero at the ### 0.001 level, ## 0.01 level, or # 0.05 level.

AT = alpha-tocopherol; DFE = dietary folate equivalents; NSLP = National School Lunch Program; RAE = retinol activity equivalents.

Table C.29. Average Calorie and Nutrient Content of NSLP Lunches Prepared, by School Size

	Small (Fewer than 500 students)	Medium (500 to 999 students)	Large (1,000 or more students)	All Schools
Average Amount				
Calories	683 ^{***}	645 ^{†††}	681	668
Macronutrients				
Total fat (g)	20 [*]	19 ^{††}	21	20
Saturated fat (g)	6 [*]	6 ^{††}	6	6
Monounsaturated fat (g)	7 ^{**}	6 ^{††}	7	7
Polyunsaturated fat (g)	6	6 ^{††}	6 [#]	6
Linoleic acid (g)	5	5 ^{††}	6 [#]	5
Alpha-linolenic acid (g)	0.6	0.6 ^{††}	0.7 [#]	0.6
Carbohydrate (g)	100 ^{***}	94 ^{††}	97	97
Protein (g)	31 ^{***}	30 ^{†††}	32	31
Vitamins				
Vitamin A (mcg RAE)	362 ^{***}	323	318 ^{###}	341
Vitamin C (mg)	35	34	36	35
Vitamin D (mcg)	10.5	11.7 ^{††}	15.9 ^{###}	11.6
Vitamin E (mg AT)	2.6 ^{**}	2.4	2.4 ^{##}	2.5
Vitamin B ₆ (mg)	0.7	0.6	0.6	0.6
Vitamin B ₁₂ (mcg)	2.0	2.0	2.1	2.0
Folate (mcg DFE)	125 ^{**}	117	120	121
Niacin (mg)	7 ^{***}	6 ^{†††}	7	7
Riboflavin (mg)	0.9 [*]	0.8	0.9	0.9
Thiamin (mg)	0.5 ^{**}	0.5 ^{††}	0.5	0.5
Minerals				
Calcium (mg)	546	536	547	542
Iron (mg)	4.4 ^{***}	4.1 ^{††}	4.3 [#]	4.3
Magnesium (mg)	133 ^{***}	127 [†]	132	131
Phosphorus (mg)	640 ^{**}	622 ^{††}	645	634
Potassium (mg)	1,278 ^{***}	1,186	1,218 ^{##}	1,234
Sodium (mg)	1,245 ^{***}	1,113 ^{†††}	1,194	1,187
Zinc (mg)	4.5 ^{***}	4.2	4.3 ^{##}	4.4
Other Dietary Components				
Cholesterol (mg)	55	53 [†]	58	54
Dietary fiber (g)	10 ^{***}	9	9 ^{##}	10
Dietary fiber (g/1,000 calories)	15 [*]	14	14 ^{###}	14
Average Percentage of Calories from:				
Total Fat	25.9	26.3	26.9 ^{##}	26.2
Saturated Fat	8.1	8.3	8.3	8.2
Monounsaturated Fat	8.8	8.8	8.9	8.8
Polyunsaturated Fat	7.4	7.7 [†]	8.2 ^{###}	7.6
Linoleic Acid	6.5	6.8 [†]	7.2 ^{###}	6.7
Alpha-Linolenic Acid	0.8	0.8 [†]	0.9 ^{##}	0.8
Carbohydrate	58.8	58.2 [†]	57.3 ^{###}	58.4
Protein	18.5	18.8	18.8	18.6
Number of Schools	435	495	277	1,207

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Difference between small and medium-sized schools is significantly different from zero at the *** 0.001 level, ** 0.01 level, or * 0.05 level.

Difference between medium-sized and large schools is significantly different from zero at the ††† 0.001 level, †† 0.01 level, or † 0.05 level.

Difference between large and small schools is significantly different from zero at the ### 0.001 level, ## 0.01 level, or # 0.05 level.

AT = alpha-tocopherol; DFE = dietary folate equivalents; NSLP = National School Lunch Program; RAE = retinol activity equivalents.

Table C.30. Average Calorie and Nutrient Content of NSLP Lunches *Prepared, by Urbanicity*

	Urban	Suburban	Rural	All Schools
Average Amount				
Calories	633 ^{***}	665 ^{††}	693 ^{###}	668
Macronutrients				
Total fat (g)	18 ^{**}	20	20 ^{###}	20
Saturated fat (g)	6 [*]	6	6 ^{##}	6
Monounsaturated fat (g)	6 ^{**}	7 [†]	7 ^{###}	7
Polyunsaturated fat (g)	5 [*]	6	6 [#]	6
Linoleic acid (g)	5 [*]	5	5 [#]	5
Alpha-linolenic acid (g)	0.6	0.6	0.6	0.6
Carbohydrate (g)	92 [*]	96 ^{††}	101 ^{###}	97
Protein (g)	30 [*]	30 ^{††}	31 ^{###}	31
Vitamins				
Vitamin A (mcg RAE)	339	335	350	341
Vitamin C (mg)	36	34	34	35
Vitamin D (mcg)	13.0	12.4 ^{††}	9.8 ^{##}	11.6
Vitamin E (mg AT)	2.4	2.4 ^{††}	2.6 ^{##}	2.5
Vitamin B ₆ (mg)	0.7	0.6	0.7	0.6
Vitamin B ₁₂ (mcg)	2.0	2.0	2.0	2.0
Folate (mcg DFE)	118	121	124	121
Niacin (mg)	6	7 [†]	7 ^{###}	7
Riboflavin (mg)	0.8	0.9	0.9 [#]	0.9
Thiamin (mg)	0.5 [*]	0.5	0.5 ^{##}	0.5
Minerals				
Calcium (mg)	530	543	547	542
Iron (mg)	4.1	4.2 ^{†††}	4.5 ^{###}	4.3
Magnesium (mg)	127	129 ^{†††}	135 ^{###}	131
Phosphorus (mg)	616 [*]	631 [†]	648 ^{###}	634
Potassium (mg)	1,191	1,213 ^{†††}	1,288 ^{###}	1,234
Sodium (mg)	1,097 [*]	1,155 ^{†††}	1,283 ^{###}	1,187
Zinc (mg)	4.1 [*]	4.3 ^{†††}	4.6 ^{###}	4.4
Other Dietary Components				
Cholesterol (mg)	53	56	53	54
Dietary fiber (g)	9	9 ^{†††}	10 ^{###}	10
Dietary fiber (g/1,000 calories)	15	14 [†]	15	14
Average Percentage of Calories from:				
Total Fat	26.0	26.4	26.0	26.2
Saturated Fat	8.3	8.3	8.1	8.2
Monounsaturated Fat	8.7	8.9	8.9	8.8
Polyunsaturated Fat	7.5	7.8	7.5	7.6
Linoleic Acid	6.6	6.9	6.6	6.7
Alpha-Linolenic Acid	0.8	0.8	0.8	0.8
Carbohydrate	58.3	58.2	58.6	58.4
Protein	19.0 [*]	18.5	18.5 [#]	18.6
Number of Schools	240	597	370	1,207

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Difference between urban and suburban schools is significantly different from zero at the *** 0.001 level, ** 0.01 level, or * 0.05 level.

Difference between suburban and rural schools is significantly different from zero at the ††† 0.001 level, †† 0.01 level, or † 0.05 level.

Difference between urban and rural schools is significantly different from zero at the ### 0.001 level, ## 0.01 level, or # 0.05 level.

AT = alpha-tocopherol; DFE = dietary folate equivalents; NSLP = National School Lunch Program; RAE = retinol activity equivalents.

Table C.31. Average Calorie and Nutrient Content of NSLP Lunches Prepared, by District Child Poverty Rate

	Lower (less than 20 percent)	Higher (20 percent or more)	All Schools
Average Amount			
Calories	676*	658	668
Macronutrients			
Total fat (g)	20	19	20
Saturated fat (g)	6	6	6
Monounsaturated fat (g)	7	7	7
Polyunsaturated fat (g)	6*	6	6
Linoleic acid (g)	5*	5	5
Alpha-linolenic acid (g)	0.6*	0.6	0.6
Carbohydrate (g)	99*	96	97
Protein (g)	31	31	31
Vitamins			
Vitamin A (mcg RAE)	341	341	341
Vitamin C (mg)	35	34	35
Vitamin D (mcg)	11.4	11.8	11.6
Vitamin E (mg AT)	2.5	2.5	2.5
Vitamin B ₆ (mg)	0.6	0.7	0.6
Vitamin B ₁₂ (mcg)	2.0	2.0	2.0
Folate (mcg DFE)	124	119	121
Niacin (mg)	7	7	7
Riboflavin (mg)	0.9*	0.8	0.9
Thiamin (mg)	0.5	0.5	0.5
Minerals			
Calcium (mg)	552***	529	542
Iron (mg)	4.3	4.3	4.3
Magnesium (mg)	131	130	131
Phosphorus (mg)	638	628	634
Potassium (mg)	1,238	1,230	1,234
Sodium (mg)	1,196	1,176	1,187
Zinc (mg)	4.3	4.4	4.4
Other Dietary Components			
Cholesterol (mg)	54	55	54
Dietary fiber (g)	10	10	10
Dietary fiber (g/1,000 calories)	14*	15	14
Average Percentage of Calories from:			
Total Fat	26.3	26.1	26.2
Saturated Fat	8.2	8.2	8.2
Monounsaturated Fat	8.8	8.9	8.8
Polyunsaturated Fat	7.8	7.4	7.6
Linoleic Acid	6.8	6.5	6.7
Alpha-Linolenic Acid	0.8	0.8	0.8
Carbohydrate	58.5	58.2	58.4
Protein	18.4***	18.9	18.6
Number of Schools	673	534	1,207

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Note: Data on child poverty rates were from the 2011 U.S. Census Bureau's Small Area Income and Poverty Estimates school district file.

Difference between lower and higher poverty schools is significantly different from zero at the *** 0.001 level or * 0.05 level.

AT = alpha-tocopherol; DFE = dietary folate equivalents; NSLP = National School Lunch Program; RAE = retinol activity equivalents.

Table C.32. Average and Distribution of Calories and Nutrients in NSLP Lunches *Prepared* in Elementary Schools

	Average	SE	Percentiles						
			5th	10th	25th	50th	75th	90th	95th
Calories	645	4.3	543	561	593	635	690	747	774
Macronutrients									
Total fat (g)	19	0.2	13	15	16	18	21	23	25
Saturated fat (g)	6	0.1	4	5	5	6	7	7	8
Monounsaturated fat (g)	6	0.1	4	5	6	6	7	8	9
Polyunsaturated fat (g)	5	0.1	3	4	4	5	6	7	8
Linoleic acid (g)	5	0.1	3	3	4	4	5	6	7
Alpha-linolenic acid (g)	0.6	0.01	0.3	0.4	0.4	0.5	0.6	0.8	0.9
Carbohydrate (g)	94	0.7	77	80	86	92	102	110	116
Protein (g)	30	0.2	25	26	28	30	31	34	35
Vitamins									
Vitamin A (mcg RAE)	340	5.6	216	231	269	324	381	463	532
Vitamin C (mg)	32	0.8	14	17	24	30	40	51	57
Vitamin D (mcg)	10.3	0.53	3.0	3.1	4.1	7.6	12.3	22.0	27.5
Vitamin E (mg AT)	2.4	0.04	1.6	1.7	2.0	2.3	2.7	3.2	3.5
Vitamin B ₆ (mg)	0.6	0.01	0.4	0.5	0.5	0.6	0.7	0.8	0.9
Vitamin B ₁₂ (mcg)	1.9	0.03	1.4	1.5	1.6	1.8	2.0	2.3	2.8
Folate (mcg)	104	1.3	74	78	88	101	114	135	147
Folate (mcg DFE)	118	1.6	81	86	97	114	131	154	169
Niacin (mg)	6	0.1	5	5	6	6	7	8	8
Riboflavin (mg)	0.8	0.00	0.7	0.8	0.8	0.8	0.9	0.9	1.0
Thiamin (mg)	0.5	0.00	0.4	0.4	0.5	0.5	0.6	0.6	0.7
Minerals									
Calcium (mg)	537	4.1	431	458	489	534	576	624	665
Iron (mg)	4.1	0.03	3.2	3.5	3.8	4.1	4.5	5.0	5.2
Magnesium (mg)	127	0.9	103	109	118	126	137	147	154
Phosphorus (mg)	621	3.5	530	553	581	616	656	698	724
Potassium (mg)	1,203	7.9	1,005	1,046	1,100	1,189	1,282	1,393	1,472
Sodium (mg)	1,125	12.3	835	877	971	1,094	1,248	1,403	1,523
Zinc (mg)	4.3	0.04	3.3	3.6	3.9	4.2	4.6	5.1	5.6
Other Dietary Components									
Cholesterol (mg)	52	0.8	36	38	43	49	58	69	79
Dietary fiber (g)	9	0.1	7	7	8	9	10	12	13

	Average	SE	Percentiles						
			5th	10th	25th	50th	75th	90th	95th
Percentage of Calories From:									
Total fat	25.9	0.18	20.7	22.5	23.9	25.7	27.6	29.5	31.1
Saturated fat	8.2	0.07	6.4	6.7	7.3	8.2	9.0	9.7	10.4
Monounsaturated fat	8.8	0.07	6.8	7.2	7.9	8.7	9.5	10.5	11.1
Polyunsaturated fat	7.4	0.10	4.8	5.4	6.3	7.2	8.3	9.4	10.7
Linoleic acid	6.5	0.09	4.2	4.8	5.5	6.4	7.3	8.3	9.4
Alpha-linolenic acid	0.8	0.01	0.5	0.5	0.6	0.7	0.9	1.0	1.2
Carbohydrate	58.6	0.20	52.6	54.6	56.4	58.6	61.1	62.9	64.4
Protein	18.7	0.10	15.9	16.5	17.6	18.6	19.8	20.9	21.5
Number of Schools	451								

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

AT = alpha-tocopherol; DFE = dietary folate equivalents; NSLP = National School Lunch Program; RAE = retinol activity equivalents; SE = standard error.

Table C.33. Average and Distribution of Calories and Nutrients in NSLP Lunches *Prepared* in Middle Schools

	Average	SE	Percentiles						
			5th	10th	25th	50th	75th	90th	95th
Calories	668	7.3	528	565	603	661	725	790	843
Macronutrients									
Total fat (g)	20	0.3	13	15	17	19	23	26	29
Saturated fat (g)	6	0.1	4	5	5	6	7	8	9
Monounsaturated fat (g)	7	0.1	5	5	6	7	8	9	10
Polyunsaturated fat (g)	6	0.2	3	4	5	6	7	9	10
Linoleic acid (g)	5	0.1	3	3	4	5	6	8	9
Alpha-linolenic acid (g)	0.6	0.02	0.3	0.4	0.5	0.6	0.7	0.9	1.2
Carbohydrate (g)	96	1.1	75	78	87	95	104	114	125
Protein (g)	31	0.3	26	27	29	31	33	35	37
Vitamins									
Vitamin A (mcg RAE)	321	6.6	214	227	254	289	357	459	525
Vitamin C (mg)	34	1.1	15	16	23	30	40	53	64
Vitamin D (mcg)	12.4	0.59	3.1	3.4	5.7	10.2	16.1	23.5	29.0
Vitamin E (mg AT)	2.4	0.04	1.5	1.7	2.0	2.3	2.7	3.2	3.5
Vitamin B ₆ (mg)	0.6	0.01	0.4	0.5	0.5	0.6	0.7	0.8	1.0
Vitamin B ₁₂ (mcg)	2.0	0.03	1.4	1.5	1.7	1.9	2.2	2.6	2.9
Folate (mcg)	105	1.7	71	76	89	102	115	135	149
Folate (mcg DFE)	120	2.0	78	87	100	116	133	155	172
Niacin (mg)	7	0.1	5	5	6	7	7	8	9
Riboflavin (mg)	0.8	0.01	0.7	0.8	0.8	0.8	0.9	0.9	1.1
Thiamin (mg)	0.5	0.01	0.4	0.4	0.5	0.5	0.6	0.6	0.7
Minerals									
Calcium (mg)	536	4.8	443	458	492	529	567	623	659
Iron (mg)	4.3	0.05	3.2	3.5	3.8	4.2	4.7	5.0	5.7
Magnesium (mg)	130	1.3	101	108	117	129	140	150	160
Phosphorus (mg)	634	4.8	546	562	592	629	666	714	751
Potassium (mg)	1,220	11.6	989	1,022	1,111	1,201	1,301	1,422	1,549
Sodium (mg)	1,200	19.6	876	925	1,024	1,162	1,322	1,508	1,704
Zinc (mg)	4.4	0.04	3.5	3.7	4.0	4.3	4.7	5.3	5.4
Other Dietary Components									
Cholesterol (mg)	55	1.4	38	40	45	51	61	75	85
Dietary fiber (g)	9	0.1	7	7	8	9	10	12	12

	Average	SE	Percentiles						
			5th	10th	25th	50th	75th	90th	95th
Percentage of Calories From:									
Total fat	26.7	0.25	20.8	22.2	24.5	26.6	28.6	30.6	32.8
Saturated fat	8.3	0.08	6.5	6.8	7.5	8.3	9.0	9.6	10.1
Monounsaturated fat	9.0	0.08	7.1	7.5	8.2	9.0	9.7	10.4	10.9
Polyunsaturated fat	7.9	0.14	5.0	5.8	6.5	7.5	8.9	10.5	12.0
Linoleic acid	7.0	0.12	4.4	5.0	5.7	6.6	7.8	9.2	10.5
Alpha-linolenic acid	0.8	0.02	0.5	0.6	0.7	0.8	0.9	1.2	1.4
Carbohydrate	57.6	0.25	51.6	52.8	55.4	57.6	60.0	62.3	63.8
Protein	18.8	0.11	15.9	16.7	17.7	18.8	19.7	20.7	21.2
Number of Schools	384								

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

AT = alpha-tocopherol; DFE = dietary folate equivalents; NSLP = National School Lunch Program; RAE = retinol activity equivalents; SE = standard error.

Table C.34. Average and Distribution of Calories and Nutrients in NSLP Lunches *Prepared* in High Schools

	Average	SE	Percentiles						
			5th	10th	25th	50th	75th	90th	95th
Calories	730	8.9	581	604	651	711	783	876	947
Macronutrients									
Total fat (g)	22	0.4	16	16	18	21	24	28	32
Saturated fat (g)	7	0.1	5	5	6	6	7	8	9
Monounsaturated fat (g)	7	0.1	5	5	6	7	8	9	11
Polyunsaturated fat (g)	7	0.2	4	4	5	6	8	9	11
Linoleic acid (g)	6	0.1	3	4	4	5	7	8	10
Alpha-linolenic acid (g)	0.7	0.02	0.4	0.4	0.5	0.6	0.8	1.0	1.3
Carbohydrate (g)	106	1.5	83	86	93	103	116	131	146
Protein (g)	33	0.3	27	28	30	32	35	37	40
Vitamins									
Vitamin A (mcg RAE)	360	9.8	214	235	266	327	413	531	638
Vitamin C (mg)	41	1.4	16	21	29	38	49	63	72
Vitamin D (mcg)	14.6	0.76	3.1	3.3	5.7	11.2	19.5	28.1	37.7
Vitamin E (mg AT)	2.7	0.06	1.8	1.9	2.2	2.6	3.1	3.9	4.3
Vitamin B ₆ (mg)	0.7	0.01	0.5	0.5	0.6	0.7	0.8	0.9	1.1
Vitamin B ₁₂ (mcg)	2.1	0.05	1.4	1.6	1.7	1.9	2.2	2.9	3.6
Folate (mcg)	115	2.3	76	86	95	110	131	156	173
Folate (mcg DFE)	131	3.1	83	95	107	124	148	176	193
Niacin (mg)	7	0.1	5	6	7	7	8	9	10
Riboflavin (mg)	0.9	0.01	0.8	0.8	0.8	0.9	0.9	1.0	1.1
Thiamin (mg)	0.6	0.01	0.4	0.5	0.5	0.6	0.6	0.7	0.8
Minerals									
Calcium (mg)	559	6.2	463	482	508	545	592	652	698
Iron (mg)	4.7	0.07	3.6	3.8	4.1	4.6	5.1	5.6	6.3
Magnesium (mg)	140	1.4	113	117	126	140	151	166	177
Phosphorus (mg)	668	5.2	570	586	624	658	714	750	792
Potassium (mg)	1,330	14.9	1,067	1,112	1,185	1,291	1,449	1,601	1,659
Sodium (mg)	1,345	20.2	915	1,022	1,156	1,311	1,482	1,691	1,893
Zinc (mg)	4.6	0.04	3.7	3.8	4.2	4.6	4.9	5.4	5.6
Other Dietary Components									
Cholesterol (mg)	59	2.0	39	42	48	54	64	75	87
Dietary fiber (g)	11	0.2	7	8	9	10	12	14	15

	Average	SE	Percentiles						
			5th	10th	25th	50th	75th	90th	95th
Percentage of Calories From:									
Total fat	26.5	0.27	21.0	21.8	23.8	26.0	28.6	31.4	32.8
Saturated fat	8.1	0.09	6.2	6.5	7.3	8.0	8.8	9.7	10.1
Monounsaturated fat	8.9	0.09	7.0	7.2	7.9	8.8	9.7	10.5	11.3
Polyunsaturated fat	8.0	0.14	5.3	5.8	6.5	7.6	9.0	10.6	11.8
Linoleic acid	7.0	0.13	4.7	5.1	5.7	6.7	8.0	9.4	10.4
Alpha-linolenic acid	0.9	0.02	0.5	0.6	0.7	0.8	1.0	1.2	1.4
Carbohydrate	58.4	0.29	51.2	53.4	55.9	58.4	61.3	63.3	64.6
Protein	18.2	0.12	15.3	16.1	17.1	18.1	19.4	20.2	20.8
Number of Schools	372								

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

AT = alpha-tocopherol; DFE = dietary folate equivalents; NSLP = National School Lunch Program; RAE = retinol activity equivalents; SE = standard error.

Table C.35. Average and Distribution of Calories and Nutrients in NSLP Lunches *Prepared* in All Schools

	Average	SE	Percentiles						
			5th	10th	25th	50th	75th	90th	95th
Calories	668	4.5	546	566	603	652	717	782	842
Macronutrients									
Total fat (g)	20	0.2	14	15	17	19	22	25	28
Saturated fat (g)	6	0.1	4	5	5	6	7	8	9
Monounsaturated fat (g)	7	0.1	4	5	6	6	7	9	9
Polyunsaturated fat (g)	6	0.1	3	4	4	5	7	8	9
Linoleic acid (g)	5	0.1	3	3	4	5	6	7	8
Alpha-linolenic acid (g)	0.6	0.01	0.3	0.4	0.5	0.6	0.7	0.9	1.0
Carbohydrate (g)	97	0.7	77	81	87	95	105	116	125
Protein (g)	31	0.2	25	27	28	30	33	35	37
Vitamins									
Vitamin A (mcg RAE)	341	4.9	215	231	266	321	383	487	550
Vitamin C (mg)	35	0.7	15	17	24	32	42	54	64
Vitamin D (mcg)	11.6	0.44	3.1	3.2	4.5	8.7	14.9	24.5	29.0
Vitamin E (mg AT)	2.5	0.03	1.6	1.7	2.0	2.4	2.8	3.4	3.9
Vitamin B ₆ (mg)	0.6	0.01	0.4	0.5	0.5	0.6	0.7	0.9	1.0
Vitamin B ₁₂ (mcg)	2.0	0.03	1.4	1.5	1.7	1.8	2.1	2.6	3.1
Folate (mcg)	107	1.2	74	79	89	102	118	140	156
Folate (mcg DFE)	121	1.5	81	87	101	116	136	160	174
Niacin (mg)	7	0.1	5	5	6	7	7	8	9
Riboflavin (mg)	0.9	0.01	0.7	0.8	0.8	0.8	0.9	0.9	1.0
Thiamin (mg)	0.5	0.00	0.4	0.4	0.5	0.5	0.6	0.6	0.7
Minerals									
Calcium (mg)	542	3.6	443	462	496	535	579	630	674
Iron (mg)	4.3	0.03	3.3	3.5	3.8	4.2	4.7	5.1	5.5
Magnesium (mg)	131	0.8	104	111	120	129	142	152	160
Phosphorus (mg)	634	3.1	538	558	592	628	671	720	745
Potassium (mg)	1,234	7.6	1,014	1,052	1,120	1,213	1,316	1,460	1,559
Sodium (mg)	1,187	11.9	850	901	1,010	1,149	1,319	1,517	1,674
Zinc (mg)	4.4	0.03	3.4	3.7	4.0	4.3	4.7	5.2	5.6
Other Dietary Components									
Cholesterol (mg)	54	1.0	37	39	45	51	60	72	81
Dietary fiber (g)	10	0.1	7	7	8	9	11	12	13

	Average	SE	Percentiles						
			5th	10th	25th	50th	75th	90th	95th
Percentage of Calories From:									
Total fat	26.2	0.17	20.9	22.2	24.0	25.9	28.0	30.1	32.1
Saturated fat	8.2	0.06	6.4	6.7	7.4	8.2	8.9	9.7	10.3
Monounsaturated fat	8.8	0.06	6.9	7.3	8.0	8.8	9.6	10.5	11.1
Polyunsaturated fat	7.6	0.09	5.0	5.5	6.4	7.3	8.5	9.9	11.0
Linoleic acid	6.7	0.08	4.3	4.8	5.6	6.5	7.6	8.8	9.7
Alpha-linolenic acid	0.8	0.01	0.5	0.6	0.7	0.8	0.9	1.1	1.2
Carbohydrate	58.4	0.17	51.7	53.8	56.1	58.4	60.9	62.9	64.3
Protein	18.6	0.08	15.8	16.5	17.4	18.5	19.7	20.8	21.5
Number of Schools	1,207								

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

AT = alpha-tocopherol; DFE = dietary folate equivalents; NSLP = National School Lunch Program; RAE = retinol activity equivalents; SE = standard error.

Table C.36. Average and Distribution of Nutrients per 1,000 Calories in NSLP Lunches *Prepared in Elementary Schools*

	DRI-Based Target per 1,000 Calories	Average per 1,000 Calories	SE	Percentiles per 1,000 Calories						
				5th	10th	25th	50th	75th	90th	95th
Linoleic Acid (g)	5.5	7	0.1	5	5	6	7	8	9	11
Alpha-Linolenic Acid (g)	0.52	0.9	0.01	0.5	0.6	0.7	0.8	1.0	1.1	1.3
Protein (g)	25.3	47	0.3	39	41	43	46	49	52	53
Vitamin A (mcg RAE)	320	530	8.3	338	361	428	502	596	727	822
Vitamin C (mg)	40	51	1.2	23	26	37	47	61	82	89
Vitamin D (mcg)	n.a. ^a	16.2	0.84	4.4	4.7	6.5	11.3	20.2	35.6	45.5
Vitamin E (mg AT)	5.0	3.7	0.05	2.7	2.9	3.2	3.6	4.1	4.6	5.2
Thiamin (mg)	0.7	0.8	0.01	0.6	0.7	0.7	0.8	0.9	0.9	1.0
Riboflavin (mg)	0.8	1.3	0.01	1.1	1.2	1.2	1.3	1.4	1.5	1.5
Niacin (mg)	7.8	9.9	0.09	7.9	8.2	9.0	9.9	10.7	11.7	12.4
Vitamin B ₆ (mg)	0.7	1.0	0.02	0.7	0.7	0.8	0.9	1.1	1.2	1.4
Folate (mcg DFE)	227	184	2.1	134	140	156	178	206	237	252
Vitamin B ₁₂ (mcg)	2.0	3.0	0.05	2.2	2.3	2.5	2.9	3.2	3.7	4.4
Iron (mg)	5.7	6.5	0.04	5.5	5.7	6.0	6.4	6.8	7.2	7.5
Magnesium (mg)	120	199	1.1	167	172	186	199	210	224	230
Zinc (mg)	4.8	6.7	0.05	5.3	5.6	6.1	6.6	7.2	7.9	8.2
Calcium (mg)	553	840	6.8	659	705	763	821	906	1,002	1,039
Phosphorus (mg)	602	969	5.0	830	862	909	964	1,021	1,077	1,110
Potassium (mg)	2,255	1,874	9.1	1,637	1,692	1,757	1,867	1,969	2,074	2,163
Sodium (mg)	≤ 1,060	1,742	13.5	1,377	1,462	1,587	1,732	1,867	2,049	2,180
Dietary Fiber (g)	14.2	14	0.1	11	12	13	14	16	18	18
Cholesterol (mg)	< 160	82	1.5	56	59	67	77	91	107	119
Number of Schools		451								

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: The DRI-based targets for nutrient content were developed by the Institute of Medicine (IOM 2010). Schools were not expected to meet these nutrient targets. However, it is expected that if school lunches were planned to meet the NSLP nutrition standards, they would satisfy most of these nutrient targets. Exceptions are vitamin E and potassium and iron for middle and high schools. The DRI-based targets for nutrient content shown in this table are per 1,000 calories.

^aThe IOM did not include a DRI-based nutrient target for vitamin D.

AT = alpha-tocopherol; DFE = dietary folate equivalents; DRI = Dietary Reference Intakes; IOM = Institute of Medicine; n.a. = not applicable; NSLP = National School Lunch Program; RAE = retinol activity equivalents; SE = standard error.

Table C.37. Average and Distribution of Nutrients per 1,000 Calories in NSLP Lunches *Prepared* in Middle Schools

	DRI-Based Target per 1,000 Calories	Average per 1,000 Calories	SE	Percentiles per 1,000 Calories						
				5th	10th	25th	50th	75th	90th	95th
Linoleic Acid (g)	5.5	8	0.1	5	6	6	7	9	10	12
Alpha-Linolenic Acid (g)	0.55	0.9	0.02	0.6	0.6	0.8	0.9	1.0	1.3	1.5
Protein (g)	49.7	47	0.3	40	41	44	47	49	52	53
Vitamin A (mcg RAE)	371	485	9.7	320	337	377	443	540	710	755
Vitamin C (mg)	46	50	1.3	26	27	36	47	60	74	84
Vitamin D (mcg)	n.a. ^a	18.7	0.87	4.7	5.4	9.4	14.9	24.2	34.9	44.1
Vitamin E (mg AT)	6.2	3.5	0.04	2.6	2.8	3.0	3.5	3.9	4.4	4.8
Thiamin (mg)	0.8	0.8	0.01	0.7	0.7	0.7	0.8	0.9	1.0	1.0
Riboflavin (mg)	0.9	1.3	0.01	1.1	1.1	1.2	1.3	1.3	1.5	1.6
Niacin (mg)	9.2	10.1	0.10	8.0	8.6	9.2	10.0	10.8	11.5	12.2
Vitamin B ₆ (mg)	0.8	1.0	0.01	0.7	0.7	0.8	0.9	1.0	1.2	1.4
Folate (mcg DFE)	260	179	2.0	133	140	158	174	196	224	236
Vitamin B ₁₂ (mcg)	2.0	3.1	0.05	2.0	2.2	2.5	2.9	3.4	4.2	4.5
Iron (mg)	8.0	6.4	0.04	5.5	5.6	6.0	6.4	6.8	7.3	7.5
Magnesium (mg)	151	195	1.2	164	170	184	196	208	216	221
Zinc (mg)	5.7	6.6	0.06	5.4	5.8	6.1	6.5	7.1	7.7	8.0
Calcium (mg)	677	814	7.4	657	689	743	801	875	960	1,016
Phosphorus (mg)	828	958	5.4	830	856	898	953	1,010	1,074	1,114
Potassium (mg)	2,343	1,838	10.6	1,589	1,646	1,733	1,819	1,946	2,046	2,121
Sodium (mg)	≤ 1,083	1,788	17.1	1,456	1,515	1,652	1,764	1,890	2,048	2,167
Dietary Fiber (g)	14.5	14	0.1	11	11	12	14	15	16	18
Cholesterol (mg)	< 148	83	2.0	57	62	68	78	89	106	128
Number of Schools		384								

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: The DRI-based targets for nutrient content were developed by the Institute of Medicine (IOM 2010). Schools were not expected to meet these nutrient targets. However, it is expected that if school lunches were planned to meet the NSLP nutrition standards, they would satisfy most of these nutrient targets. Exceptions are vitamin E and potassium and iron for middle and high schools. The DRI-based targets for nutrient content shown in this table are per 1,000 calories.

^aThe IOM did not include a DRI-based nutrient target for vitamin D.

AT = alpha-tocopherol; DFE = dietary folate equivalents; DRI = Dietary Reference Intakes; IOM = Institute of Medicine; n.a. = not applicable; NSLP = National School Lunch Program; RAE = retinol activity equivalents; SE = standard error.

Table C.38. Average and Distribution of Nutrients per 1,000 Calories in NSLP Lunches *Prepared* in High Schools

	DRI-Based Target per 1,000 Calories	Average per 1,000 Calories	SE	Percentiles per 1,000 Calories						
				5th	10th	25th	50th	75th	90th	95th
Linoleic Acid (g)	5.6	8	0.1	5	6	6	7	9	10	12
Alpha-Linolenic Acid (g)	0.56	1.0	0.02	0.6	0.7	0.8	0.9	1.1	1.3	1.5
Protein (g)	40.6	45	0.3	37	40	43	45	48	51	52
Vitamin A (mcg RAE)	346	494	10.6	312	330	382	456	560	694	864
Vitamin C (mg)	49	56	1.7	24	30	40	53	69	82	95
Vitamin D (mcg)	n.a. ^a	18.7	0.87	4.7	5.4	9.4	14.9	24.2	34.9	44.1
Vitamin E (mg AT)	6.8	3.7	0.05	2.8	2.9	3.3	3.6	4.1	4.7	5.2
Thiamin (mg)	0.8	0.8	0.01	0.6	0.7	0.7	0.8	0.9	0.9	1.0
Riboflavin (mg)	0.8	1.2	0.01	1.0	1.1	1.1	1.2	1.3	1.4	1.5
Niacin (mg)	9.1	10.0	0.10	8.0	8.3	9.2	10.0	10.9	11.5	12.2
Vitamin B ₆ (mg)	0.8	1.0	0.01	0.7	0.7	0.8	0.9	1.0	1.2	1.3
Folate (mcg DFE)	256	179	2.6	129	137	155	175	198	225	243
Vitamin B ₁₂ (mcg)	2.0	3.0	0.07	1.9	2.1	2.4	2.7	3.2	4.0	4.9
Iron (mg)	7.4	6.4	0.05	5.5	5.7	6.0	6.4	6.8	7.3	7.5
Magnesium (mg)	184	193	1.5	155	167	180	195	208	216	223
Zinc (mg)	5.4	6.4	0.06	5.0	5.4	5.8	6.3	6.9	7.3	7.7
Calcium (mg)	601	775	6.5	633	655	710	754	830	912	975
Phosphorus (mg)	715	924	5.8	795	822	867	916	988	1,027	1,057
Potassium (mg)	2,175	1,833	13.2	1,558	1,621	1,689	1,819	1,972	2,028	2,141
Sodium (mg)	≤ 920	1,842	17.2	1,504	1,565	1,666	1,814	1,968	2,112	2,313
Dietary Fiber (g)	13.4	14	0.2	11	12	13	14	16	17	18
Cholesterol (mg)	< 120	82	2.2	56	60	68	76	86	105	126
Number of Schools		372								

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: The DRI-based targets for nutrient content were developed by the Institute of Medicine (IOM 2010). Schools were not expected to meet these nutrient targets. However, it is expected that if school lunches were planned to meet the NSLP nutrition standards, they would satisfy most of these nutrient targets. Exceptions are vitamin E and potassium and iron for middle and high schools. The DRI-based targets for nutrient content shown in this table are per 1,000 calories.

^aThe IOM did not include a DRI-based nutrient target for vitamin D.

AT = alpha-tocopherol; DFE = dietary folate equivalents; DRI = Dietary Reference Intakes; IOM = Institute of Medicine; n.a. = not applicable; NSLP = National School Lunch Program; RAE = retinol activity equivalents; SE = standard error.

Table C.39. Average and Distribution of Nutrients per 1,000 Calories in NSLP Lunches Prepared in All Schools

	DRI-Based Target per 1,000 Calories			Average per 1,000 Calories	SE	Percentiles per 1,000 Calories						
	Elementary Schools	Middle Schools	High Schools			5th	10th	25th	50th	75th	90th	95th
Linoleic Acid (g)	5.5	5.5	5.6	7	0.1	5	5	6	7	8	10	11
Alpha-Linolenic Acid (g)	0.52	0.55	0.56	0.9	0.01	0.6	0.6	0.7	0.8	1.0	1.2	1.4
Protein (g)	25.3	49.7	40.6	46	0.2	39	41	43	46	49	52	53
Vitamin A (mcg RAE)	320	371	346	514	6.8	325	351	407	487	581	719	810
Vitamin C (mg)	40	46	49	52	1.0	23	27	37	48	63	80	91
Vitamin D (mcg)	n.a. ^a	n.a. ^a	n.a. ^a	17.5	0.66	4.4	4.8	7.0	13.1	22.8	36.3	45.8
Vitamin E (mg AT)	5.0	6.2	6.8	3.7	0.04	2.7	2.9	3.2	3.6	4.1	4.6	5.1
Thiamin (mg)	0.7	0.8	0.8	0.8	0.01	0.6	0.7	0.7	0.8	0.9	0.9	1.0
Riboflavin (mg)	0.8	0.9	0.8	1.3	0.01	1.1	1.1	1.2	1.3	1.4	1.4	1.5
Niacin (mg)	7.8	9.2	9.1	10.0	0.07	8.0	8.2	9.2	9.9	10.8	11.6	12.3
Vitamin B ₆ (mg)	0.7	0.8	0.8	1.0	0.02	0.7	0.7	0.8	0.9	1.1	1.2	1.4
Folate (mcg DFE)	227	260	256	182	1.7	133	140	156	175	203	232	248
Vitamin B ₁₂ (mcg)	2.0	2.0	2.0	3.0	0.05	2.1	2.2	2.5	2.8	3.2	3.9	4.6
Iron (mg)	5.7	8.0	7.4	6.4	0.03	5.5	5.7	6.0	6.4	6.8	7.2	7.5
Magnesium (mg)	120	151	184	197	0.9	164	171	185	198	210	220	228
Zinc (mg)	4.8	5.7	5.4	6.6	0.04	5.3	5.6	6.0	6.6	7.1	7.7	8.1
Calcium (mg)	553	677	601	821	5.2	650	684	745	807	880	982	1,026
Phosphorus (mg)	602	828	715	957	3.9	819	850	897	953	1,013	1,071	1,107
Potassium (mg)	2,255	2,343	2,175	1,858	7.7	1,610	1,656	1,742	1,843	1,968	2,065	2,145
Sodium (mg)	≤ 1,060	≤ 1,083	≤ 920	1,772	11.6	1,430	1,493	1,619	1,754	1,900	2,065	2,191
Dietary Fiber (g)	14.2	14.5	13.4	14	0.1	11	12	13	14	16	17	18
Cholesterol (mg)	< 160	< 148	< 120	82	1.4	56	60	67	77	89	107	122
Number of Schools	1,207											

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: The DRI-based targets for nutrient content were developed by the Institute of Medicine (IOM 2010). Schools were not expected to meet these nutrient targets. However, it is expected that if school lunches were planned to meet the NSLP nutrition standards, they would satisfy most of these nutrient targets. Exceptions are vitamin E and potassium and iron for middle and high schools. The DRI-based targets for nutrient content shown in this table are per 1,000 calories.

^aThe IOM did not include a DRI-based nutrient target for vitamin D.

AT = alpha-tocopherol; DFE = dietary folate equivalents; DRI = Dietary Reference Intakes; IOM = Institute of Medicine; n.a. = not applicable; NSLP = National School Lunch Program; RAE = retinol activity equivalents; SE = standard error.

Table C.40. Average Calorie and Nutrient Content of NSLP Lunches Served

	Elementary Schools	Middle Schools	High Schools	All Schools
Average Amount				
Calories	603	607 ^{†††}	663 ^{###}	617
Macronutrients				
Total fat (g)	18*	19 ^{††}	20 ^{###}	19
Saturated fat (g)	6	6 ^{††}	6 ^{###}	6
Monounsaturated fat (g)	6*	6 ^{††}	7 ^{###}	6
Polyunsaturated fat (g)	5 ^{***}	6 [†]	6 ^{###}	5
Linoleic acid (g)	4 ^{***}	5 [†]	5 ^{###}	5
Alpha-linolenic acid (g)	0.5 ^{**}	0.6 [†]	0.7 ^{###}	0.6
Carbohydrate (g)	87	86 ^{†††}	95 ^{###}	89
Protein (g)	28	28 ^{†††}	30 ^{###}	28
Vitamins				
Vitamin A (mcg RAE)	310 ^{***}	275 ^{††}	309	303
Vitamin C (mg)	30	30 ^{†††}	36 ^{###}	31
Vitamin D (mcg)	9.6*	11.2 [†]	13.4 ^{###}	10.8
Vitamin E (mg AT)	2.2	2.2 ^{†††}	2.5 ^{###}	2.3
Vitamin B ₆ (mg)	0.6	0.6 ^{††}	0.6 [#]	0.6
Vitamin B ₁₂ (mcg)	1.8	1.7 [†]	1.8	1.8
Folate (mcg DFE)	111	110 ^{††}	120 ^{##}	113
Niacin (mg)	6*	6 ^{†††}	7 ^{###}	6
Riboflavin (mg)	0.8 ^{***}	0.7	0.8	0.8
Thiamin (mg)	0.5	0.5 ^{††}	0.5 ^{###}	0.5
Minerals				
Calcium (mg)	495 ^{***}	462	479	485
Iron (mg)	3.9	4.0 ^{†††}	4.3 ^{###}	4.0
Magnesium (mg)	119	116 ^{†††}	125 ^{###}	120
Phosphorus (mg)	578*	561 ^{†††}	590	578
Potassium (mg)	1,110*	1,071 ^{†††}	1,168 ^{##}	1,116
Sodium (mg)	1,057*	1,101 ^{†††}	1,236 ^{###}	1,105
Zinc (mg)	4.0	4.0 ^{††}	4.2 [#]	4.1
Other Dietary Components				
Cholesterol (mg)	50	52	55 ^{##}	52
Dietary fiber (g)	9	9 ^{†††}	10 ^{###}	9
Dietary fiber (g/1,000 calories)	14*	14 [†]	15	14
Average Percentage of Calories from:				
Total Fat	26.3 ^{***}	27.5	27.3 ^{###}	26.7
Saturated Fat	8.4	8.5	8.3	8.4
Monounsaturated Fat	8.9 ^{***}	9.3	9.2 [#]	9.1
Polyunsaturated Fat	7.4 ^{***}	8.1	8.2 ^{###}	7.7
Linoleic Acid	6.6 ^{***}	7.2	7.3 ^{###}	6.8
Alpha-Linolenic Acid	0.8 ^{***}	0.9	0.9 ^{###}	0.8
Carbohydrate	58.1 ^{***}	56.6 [†]	57.5	57.7
Protein	18.9	18.8 ^{†††}	18.2 ^{###}	18.7
Number of Schools	451	384	371	1,206

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program

Difference between elementary and middle schools is significantly different from zero at the *** 0.001 level, ** 0.01 level, or * 0.05 level.

Difference between middle and high schools is significantly different from zero at the ††† 0.001 level, †† 0.01 level, or † 0.05 level.

Difference between elementary and high schools is significantly different from zero at the ### 0.001 level, ## 0.01 level, or # 0.05 level.

AT = alpha-tocopherol; DFE = dietary folate equivalents; NSLP = National School Lunch Program; RAE = retinol activity equivalents.

Table C.41. Average Calorie and Nutrient Content of NSLP Lunches Served, by School Size

	Small (Fewer than 500 students)	Medium (500 to 999 students)	Large (1,000 or more students)	All Schools
Average Amount				
Calories	634 ^{***}	597 [†]	614	617
Macronutrients				
Total fat (g)	19 [*]	18 ^{††}	19	19
Saturated fat (g)	6 [*]	6 [†]	6	6
Monounsaturated fat (g)	6 ^{**}	6 [†]	6	6
Polyunsaturated fat (g)	5	5 ^{††}	6 [#]	5
Linoleic acid (g)	5	5 ^{††}	5 [#]	5
Alpha-linolenic acid (g)	0.6	0.6 ^{††}	0.6 [#]	0.6
Carbohydrate (g)	92 ^{***}	86	87 ^{###}	89
Protein (g)	29 ^{***}	28	28	28
Vitamins				
Vitamin A (mcg RAE)	323 ^{***}	289	270 ^{###}	303
Vitamin C (mg)	31	31	33	31
Vitamin D (mcg)	9.8	10.8 ^{††}	14.4 ^{###}	10.8
Vitamin E (mg AT)	2.4 ^{**}	2.2	2.2 [#]	2.3
Vitamin B ₆ (mg)	0.6	0.6	0.6	0.6
Vitamin B ₁₂ (mcg)	1.8	1.8	1.7	1.8
Folate (mcg DFE)	116 [*]	109	110 [#]	113
Niacin (mg)	6 ^{***}	6 ^{†††}	7	6
Riboflavin (mg)	0.8 ^{**}	0.8 ^{††}	0.7 ^{###}	0.8
Thiamin (mg)	0.5 ^{**}	0.5	0.5	0.5
Minerals				
Calcium (mg)	495	481 [†]	461 ^{###}	485
Iron (mg)	4.2 ^{***}	3.8	3.9 [#]	4.0
Magnesium (mg)	123 ^{***}	117	117 [#]	120
Phosphorus (mg)	589 ^{**}	568	562 ^{###}	578
Potassium (mg)	1,163 ^{***}	1,074	1,058 ^{###}	1,116
Sodium (mg)	1,162 ^{***}	1,038 ^{††}	1,092 [#]	1,105
Zinc (mg)	4.2 ^{***}	3.9	3.8 ^{###}	4.1
Other Dietary Components				
Cholesterol (mg)	52	50	53	52
Dietary fiber (g)	9 ^{***}	8	9 [#]	9
Dietary fiber (g/1,000 calories)	15 [*]	14	14 [#]	14
Average Percentage of Calories from:				
Total Fat	26.4	26.8 ^{††}	27.8 ^{###}	26.7
Saturated Fat	8.3	8.4	8.6 [#]	8.4
Monounsaturated Fat	9.0	9.0	9.3	9.1
Polyunsaturated Fat	7.5	7.8 ^{††}	8.5 ^{###}	7.7
Linoleic Acid	6.6	6.9 ^{††}	7.5 ^{###}	6.8
Alpha-Linolenic Acid	0.8	0.8 ^{††}	0.9 ^{###}	0.8
Carbohydrate	58.1	57.5 ^{††}	56.4 ^{###}	57.7
Protein	18.6	18.8	18.7	18.7
Number of Schools	434	495	277	1,206

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program

Difference between small and medium-sized schools is significantly different from zero at the *** 0.001 level, ** 0.01 level, or * 0.05 level.

Difference between medium-sized and large schools is significantly different from zero at the ⁺⁺⁺ 0.001 level, ⁺⁺ 0.01 level, or ⁺ 0.05 level.

Difference between large and small schools is significantly different from zero at the ^{###} 0.001 level, ^{##} 0.01 level, or [#] 0.05 level.

AT = alpha-tocopherol; DFE = dietary folate equivalents; NSLP = National School Lunch Program; RAE = retinol activity equivalents.

Table C.42. Average Calorie and Nutrient Content of NSLP Lunches Served, by Urbanicity

	Urban	Suburban	Rural	All Schools
Average Amount				
Calories	588*	609 ^{†††}	645 ^{###}	617
Macronutrients				
Total fat (g)	17*	18	19 ^{###}	19
Saturated fat (g)	5	6	6 ^{##}	6
Monounsaturated fat (g)	6*	6 [†]	7 ^{###}	6
Polyunsaturated fat (g)	5*	5	6 [#]	5
Linoleic acid (g)	4*	5	5 [#]	5
Alpha-linolenic acid (g)	0.5	0.6	0.6 [#]	0.6
Carbohydrate (g)	85	87 ^{†††}	93 ^{###}	89
Protein (g)	28	28 ^{†††}	29 ^{###}	28
Vitamins				
Vitamin A (mcg RAE)	303	294	315	303
Vitamin C (mg)	33*	31	31	31
Vitamin D (mcg)	12.2	11.3 [†]	9.2 [#]	10.8
Vitamin E (mg AT)	2.2	2.2 ^{†††}	2.5 ^{##}	2.3
Vitamin B ₆ (mg)	0.6	0.6 [†]	0.6	0.6
Vitamin B ₁₂ (mcg)	1.8	1.8	1.8	1.8
Folate (mcg DFE)	110	112	116	113
Niacin (mg)	6	6 ^{††}	7 ^{###}	6
Riboflavin (mg)	0.7	0.8	0.8 [#]	0.8
Thiamin (mg)	0.5	0.5	0.5 ^{##}	0.5
Minerals				
Calcium (mg)	474	482	497 [#]	485
Iron (mg)	3.9	3.9 ^{†††}	4.2 ^{###}	4.0
Magnesium (mg)	117	117 ^{†††}	125 ^{##}	120
Phosphorus (mg)	563	569 ^{†††}	597 ^{###}	578
Potassium (mg)	1,080	1,083 ^{†††}	1,178 ^{###}	1,116
Sodium (mg)	1,027	1,065 ^{†††}	1,202 ^{###}	1,105
Zinc (mg)	3.9	3.9 ^{†††}	4.3 ^{###}	4.1
Other Dietary Components				
Cholesterol (mg)	51	53	51	52
Dietary fiber (g)	9	9 ^{†††}	9 ^{###}	9
Dietary fiber (g/1,000 calories)	15	14 [†]	15	14
Average Percentage of Calories from:				
Total Fat	26.4	27.1	26.5	26.7
Saturated Fat	8.4	8.5	8.3	8.4
Monounsaturated Fat	8.9	9.1	9.1	9.1
Polyunsaturated Fat	7.6	8.0	7.6	7.7
Linoleic Acid	6.7	7.0 [†]	6.7	6.8
Alpha-Linolenic Acid	0.8	0.8	0.8	0.8
Carbohydrate	57.7	57.4	58.0	57.7
Protein	19.0	18.6	18.6	18.7
Number of Schools	240	597	369	1,206

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program

Difference between urban and suburban schools is significantly different from zero at the * 0.05 level.

Difference between suburban and rural schools is significantly different from zero at the ^{†††} 0.001 level, ^{††} 0.01 level, or [†] 0.05 level.

Difference between urban and rural schools is significantly different from zero at the ^{###} 0.001 level, ^{##} 0.01 level, or [#] 0.05 level.

AT = alpha-tocopherol; DFE = dietary folate equivalents; NSLP = National School Lunch Program; RAE = retinol activity equivalents.

Table C.43. Average Calorie and Nutrient Content of NSLP Lunches Served, by District Child Poverty Rate

	Lower (less than 20 percent)	Higher (20 percent or more)	All Schools
Average Amount			
Calories	620	613	617
Macronutrients			
Total fat (g)	19	18	19
Saturated fat (g)	6	6	6
Monounsaturated fat (g)	6	6	6
Polyunsaturated fat (g)	6	5	5
Linoleic acid (g)	5	5	5
Alpha-linolenic acid (g)	0.6	0.5	0.6
Carbohydrate (g)	89	88	89
Protein (g)	28	29	28
Vitamins			
Vitamin A (mcg RAE)	302	305	303
Vitamin C (mg)	31	31	31
Vitamin D (mcg)	10.5	11.1	10.8
Vitamin E (mg AT)	2.3	2.3	2.3
Vitamin B ₆ (mg)	0.6	0.6	0.6
Vitamin B ₁₂ (mcg)	1.8	1.8	1.8
Folate (mcg DFE)	114	111	113
Niacin (mg)	6	6	6
Riboflavin (mg)	0.8	0.8	0.8
Thiamin (mg)	0.5	0.5	0.5
Minerals			
Calcium (mg)	495*	475	485
Iron (mg)	4.0	4.1	4.0
Magnesium (mg)	119	121	120
Phosphorus (mg)	579	576	578
Potassium (mg)	1,110	1,122	1,116
Sodium (mg)	1,100	1,110	1,105
Zinc (mg)	4.0*	4.1	4.1
Other Dietary Components			
Cholesterol (mg)	51	53	52
Dietary fiber (g)	9	9	9
Dietary fiber (g/1,000 calories)	14**	15	14
Average Percentage of Calories from:			
Total Fat	26.8	26.6	26.7
Saturated Fat	8.4	8.4	8.4
Monounsaturated Fat	9.0	9.1	9.1
Polyunsaturated Fat	7.9	7.6	7.7
Linoleic Acid	7.0	6.7	6.8
Alpha-Linolenic Acid	0.8	0.8	0.8
Carbohydrate	57.8	57.6	57.7
Protein	18.5**	19.0	18.7
Number of Schools	672	534	1,206

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Note: Data on child poverty rates were from the 2011 U.S. Census Bureau's Small Area Income and Poverty Estimates school district file.

Difference between lower and higher poverty schools is significantly different from zero at the ** 0.01 level or * 0.05 level.

AT = alpha-tocopherol; DFE = dietary folate equivalents; NSLP = National School Lunch Program; RAE = retinol activity equivalents.

Table C.44. Average and Distribution of Calories and Nutrients in NSLP Lunches *Served* in Elementary Schools

	Average	SE	Percentiles						
			5th	10th	25th	50th	75th	90th	95th
Calories	603	4.4	495	518	551	595	643	703	731
Macronutrients									
Total fat (g)	18	0.2	13	14	15	17	20	22	24
Saturated fat (g)	6	0.1	4	4	5	5	6	7	8
Monounsaturated fat (g)	6	0.1	4	5	5	6	7	8	8
Polyunsaturated fat (g)	5	0.1	3	3	4	5	6	7	8
Linoleic acid (g)	4	0.1	3	3	4	4	5	6	7
Alpha-linolenic acid (g)	0.5	0.01	0.3	0.4	0.4	0.5	0.6	0.7	0.8
Carbohydrate (g)	87	0.7	69	73	79	87	94	104	111
Protein (g)	28	0.2	23	24	26	28	30	32	34
Vitamins									
Vitamin A (mcg RAE)	310	5.5	192	204	236	294	356	443	501
Vitamin C (mg)	30	0.7	13	15	21	28	36	46	52
Vitamin D (mcg)	9.6	0.50	2.7	2.9	3.6	6.7	11.8	20.9	25.8
Vitamin E (mg AT)	2.2	0.03	1.5	1.6	1.8	2.1	2.5	2.9	3.4
Vitamin B ₆ (mg)	0.6	0.01	0.4	0.4	0.5	0.5	0.6	0.8	0.9
Vitamin B ₁₂ (mcg)	1.8	0.03	1.2	1.3	1.5	1.7	1.9	2.3	2.6
Folate (mcg)	98	1.3	67	72	82	95	109	129	139
Folate (mcg DFE)	111	1.5	75	80	92	107	124	151	164
Niacin (mg)	6	0.1	5	5	5	6	7	7	8
Riboflavin (mg)	0.8	0.01	0.6	0.7	0.7	0.8	0.8	0.9	0.9
Thiamin (mg)	0.5	0.00	0.4	0.4	0.4	0.5	0.5	0.6	0.6
Minerals									
Calcium (mg)	495	4.6	379	401	446	488	540	586	638
Iron (mg)	3.9	0.04	3.1	3.2	3.5	3.9	4.3	4.8	5.1
Magnesium (mg)	119	0.9	93	98	108	117	127	140	149
Phosphorus (mg)	578	4.0	470	498	533	571	623	661	688
Potassium (mg)	1,110	9.0	886	941	1,000	1,094	1,198	1,307	1,417
Sodium (mg)	1,057	12.1	765	808	914	1,023	1,171	1,325	1,462
Zinc (mg)	4.0	0.04	3.1	3.3	3.6	4.0	4.4	4.9	5.4
Other Dietary Components									
Cholesterol (mg)	50	0.8	34	37	41	47	56	67	76
Dietary fiber (g)	9	0.1	6	7	7	8	10	11	12

	Average	SE	Percentiles						
			5th	10th	25th	50th	75th	90th	95th
Percentage of Calories From:									
Total fat	26.3	0.19	20.9	22.6	24.4	25.9	28.0	29.9	31.0
Saturated fat	8.4	0.07	6.4	6.7	7.5	8.3	9.1	9.8	10.5
Monounsaturated fat	8.9	0.07	6.9	7.3	8.1	8.8	9.7	10.7	11.2
Polyunsaturated fat	7.4	0.10	4.9	5.5	6.4	7.3	8.3	9.3	10.5
Linoleic acid	6.6	0.09	4.2	4.7	5.6	6.4	7.4	8.2	9.3
Alpha-linolenic acid	0.8	0.01	0.5	0.5	0.6	0.8	0.9	1.0	1.1
Carbohydrate	58.1	0.21	52.4	53.4	55.8	58.2	60.3	62.6	63.4
Protein	18.9	0.10	16.1	16.8	17.7	18.8	20.0	21.0	21.8
Number of Schools	451								

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

AT = alpha-tocopherol; DFE = dietary folate equivalents; NSLP = National School Lunch Program; RAE = retinol activity equivalents; SE = standard error.

Table C.45. Average and Distribution of Calories and Nutrients in NSLP Lunches Served in Middle Schools

	Average	SE	Percentiles						
			5th	10th	25th	50th	75th	90th	95th
Calories	607	7.0	464	501	552	596	649	720	771
Macronutrients									
Total fat (g)	19	0.3	12	14	16	18	21	24	26
Saturated fat (g)	6	0.1	4	4	5	6	6	7	8
Monounsaturated fat (g)	6	0.1	4	5	5	6	7	8	9
Polyunsaturated fat (g)	6	0.1	3	3	4	5	6	8	9
Linoleic acid (g)	5	0.1	3	3	4	5	6	7	8
Alpha-linolenic acid (g)	0.6	0.02	0.3	0.4	0.4	0.5	0.7	0.9	1.1
Carbohydrate (g)	86	1.0	66	70	77	84	92	102	114
Protein (g)	28	0.3	22	24	26	28	30	32	33
Vitamins									
Vitamin A (mcg RAE)	275	6.5	160	178	205	251	314	414	487
Vitamin C (mg)	30	0.9	14	15	21	26	35	49	54
Vitamin D (mcg)	11.2	0.55	2.6	3.1	5.2	8.9	14.2	20.9	27.7
Vitamin E (mg AT)	2.2	0.04	1.4	1.5	1.8	2.1	2.5	2.9	3.3
Vitamin B ₆ (mg)	0.6	0.01	0.4	0.4	0.5	0.6	0.6	0.7	1.0
Vitamin B ₁₂ (mcg)	1.7	0.03	1.1	1.2	1.4	1.6	1.9	2.2	2.6
Folate (mcg)	96	1.7	63	69	80	93	104	122	139
Folate (mcg DFE)	110	1.9	71	81	91	107	122	145	159
Niacin (mg)	6	0.1	5	5	6	6	7	8	8
Riboflavin (mg)	0.7	0.01	0.5	0.6	0.7	0.7	0.8	0.9	0.9
Thiamin (mg)	0.5	0.01	0.4	0.4	0.4	0.5	0.5	0.6	0.6
Minerals									
Calcium (mg)	462	5.8	339	373	408	464	506	551	609
Iron (mg)	4.0	0.05	2.9	3.2	3.6	3.9	4.3	4.8	5.1
Magnesium (mg)	116	1.3	85	94	104	115	126	139	148
Phosphorus (mg)	561	5.6	437	464	516	558	603	650	680
Potassium (mg)	1,071	12.3	816	860	949	1,059	1,154	1,273	1,388
Sodium (mg)	1,101	18.4	781	859	931	1,058	1,221	1,369	1,617
Zinc (mg)	4.0	0.04	3.0	3.2	3.5	3.9	4.4	4.9	5.1
Other Dietary Components									
Cholesterol (mg)	52	1.3	34	38	42	48	55	69	85
Dietary fiber (g)	9	0.1	6	6	7	8	10	11	12

	Average	SE	Percentiles						
			5th	10th	25th	50th	75th	90th	95th
Percentage of Calories From:									
Total fat	27.5	0.24	22.5	23.0	25.2	27.1	29.5	31.9	33.5
Saturated fat	8.5	0.08	6.6	7.0	7.7	8.6	9.2	9.9	10.5
Monounsaturated fat	9.3	0.08	7.5	7.9	8.5	9.3	10.1	10.9	11.4
Polyunsaturated fat	8.1	0.14	5.6	5.9	6.7	7.7	9.1	10.7	11.8
Linoleic acid	7.2	0.12	4.9	5.2	5.9	6.8	8.1	9.4	10.3
Alpha-linolenic acid	0.9	0.02	0.5	0.6	0.7	0.8	1.0	1.2	1.4
Carbohydrate	56.6	0.24	50.2	52.1	54.1	56.7	59.0	61.0	62.2
Protein	18.8	0.11	16.0	16.6	17.6	18.8	19.7	20.7	21.4
Number of Schools	384								

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

AT = alpha-tocopherol; DFE = dietary folate equivalents; NSLP = National School Lunch Program; RAE = retinol activity equivalents; SE = standard error.

Table C.46. Average and Distribution of Calories and Nutrients in NSLP Lunches Served in High Schools

	Average	SE	Percentiles						
			5th	10th	25th	50th	75th	90th	95th
Calories	663	8.4	500	537	582	645	728	820	859
Macronutrients									
Total fat (g)	20	0.4	14	15	17	20	23	27	28
Saturated fat (g)	6	0.1	4	5	5	6	7	8	9
Monounsaturated fat (g)	7	0.1	5	5	6	7	8	9	10
Polyunsaturated fat (g)	6	0.1	4	4	5	6	7	8	10
Linoleic acid (g)	5	0.1	3	3	4	5	6	7	9
Alpha-linolenic acid (g)	0.7	0.02	0.4	0.4	0.5	0.6	0.7	0.9	1.1
Carbohydrate (g)	95	1.4	71	75	82	93	106	118	131
Protein (g)	30	0.3	24	25	27	29	32	34	36
Vitamins									
Vitamin A (mcg RAE)	309	10.6	148	176	212	275	381	479	605
Vitamin C (mg)	36	1.0	14	19	25	34	44	54	65
Vitamin D (mcg)	13.4	0.73	2.5	3.0	4.9	10.7	17.3	26.1	36.3
Vitamin E (mg AT)	2.5	0.05	1.6	1.7	2.0	2.4	2.9	3.6	3.9
Vitamin B ₆ (mg)	0.6	0.01	0.4	0.5	0.5	0.6	0.7	0.8	0.9
Vitamin B ₁₂ (mcg)	1.8	0.05	1.0	1.2	1.4	1.7	2.0	2.6	3.0
Folate (mcg)	104	2.0	70	75	86	100	120	141	155
Folate (mcg DFE)	120	2.6	78	84	96	114	135	157	182
Niacin (mg)	7	0.1	5	5	6	7	8	8	9
Riboflavin (mg)	0.8	0.01	0.5	0.6	0.7	0.8	0.8	0.9	1.0
Thiamin (mg)	0.5	0.01	0.4	0.4	0.5	0.5	0.6	0.7	0.7
Minerals									
Calcium (mg)	479	7.5	310	358	414	478	533	605	642
Iron (mg)	4.3	0.06	3.2	3.4	3.8	4.2	4.7	5.3	5.8
Magnesium (mg)	125	1.4	95	101	113	122	138	151	165
Phosphorus (mg)	590	6.3	436	473	527	589	652	702	733
Potassium (mg)	1,168	15.3	855	926	1,011	1,143	1,260	1,454	1,556
Sodium (mg)	1,236	19.0	864	935	1,038	1,211	1,385	1,566	1,665
Zinc (mg)	4.2	0.05	3.1	3.3	3.7	4.2	4.4	5.0	5.4
Other Dietary Components									
Cholesterol (mg)	55	1.6	37	39	45	51	60	69	80
Dietary fiber (g)	10	0.2	7	7	8	9	11	12	14

	Average	SE	Percentiles						
			5th	10th	25th	50th	75th	90th	95th
Percentage of Calories From:									
Total fat	27.3	0.26	21.7	22.4	24.3	27.0	29.6	32.4	33.7
Saturated fat	8.3	0.09	6.4	6.7	7.4	8.3	9.2	9.9	10.2
Monounsaturated fat	9.2	0.09	7.0	7.4	8.3	9.1	10.0	11.0	11.5
Polyunsaturated fat	8.2	0.14	5.5	6.1	6.9	7.8	9.3	11.0	12.0
Linoleic acid	7.3	0.13	4.7	5.4	6.1	6.8	8.3	9.7	10.6
Alpha-linolenic acid	0.9	0.02	0.6	0.6	0.7	0.8	1.0	1.2	1.4
Carbohydrate	57.5	0.28	50.6	51.9	54.6	57.5	60.5	62.6	63.6
Protein	18.2	0.14	15.0	16.0	16.9	18.2	19.4	20.4	21.2
Number of Schools	371								

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

AT = alpha-tocopherol; DFE = dietary folate equivalents; NSLP = National School Lunch Program; RAE = retinol activity equivalents; SE = standard error.

Table C.47. Average and Distribution of Calories and Nutrients in NSLP Lunches Served in All Schools

	Average	SE	Percentiles						
			5th	10th	25th	50th	75th	90th	95th
Calories	617	4.4	494	517	557	604	662	730	790
Macronutrients									
Total fat (g)	19	0.2	13	14	16	18	20	23	26
Saturated fat (g)	6	0.1	4	4	5	6	6	7	8
Monounsaturated fat (g)	6	0.1	4	5	5	6	7	8	9
Polyunsaturated fat (g)	5	0.1	3	4	4	5	6	8	9
Linoleic acid (g)	5	0.1	3	3	4	4	5	7	8
Alpha-linolenic acid (g)	0.6	0.01	0.3	0.4	0.4	0.5	0.6	0.8	1.0
Carbohydrate (g)	89	0.7	68	73	79	87	96	108	117
Protein (g)	28	0.2	23	24	26	28	31	33	34
Vitamins									
Vitamin A (mcg RAE)	303	4.9	172	192	224	280	350	443	527
Vitamin C (mg)	31	0.6	14	16	22	29	38	49	56
Vitamin D (mcg)	10.8	0.42	2.7	3.0	4.2	7.9	13.8	22.8	27.3
Vitamin E (mg AT)	2.3	0.03	1.5	1.6	1.9	2.2	2.6	3.2	3.5
Vitamin B ₆ (mg)	0.6	0.01	0.4	0.4	0.5	0.6	0.7	0.8	0.9
Vitamin B ₁₂ (mcg)	1.8	0.03	1.1	1.2	1.5	1.7	1.9	2.3	2.8
Folate (mcg)	99	1.2	66	72	83	95	110	130	144
Folate (mcg DFE)	113	1.4	74	81	93	109	127	152	166
Niacin (mg)	6	0.1	5	5	6	6	7	8	8
Riboflavin (mg)	0.8	0.01	0.6	0.6	0.7	0.8	0.8	0.9	0.9
Thiamin (mg)	0.5	0.00	0.4	0.4	0.4	0.5	0.5	0.6	0.7
Minerals									
Calcium (mg)	485	4.1	357	388	430	481	532	586	636
Iron (mg)	4.0	0.03	3.1	3.2	3.6	3.9	4.4	4.9	5.2
Magnesium (mg)	120	0.8	93	98	108	118	129	142	154
Phosphorus (mg)	578	3.6	453	483	530	573	626	673	701
Potassium (mg)	1,116	8.3	852	921	996	1,096	1,209	1,343	1,457
Sodium (mg)	1,105	11.5	778	838	939	1,065	1,234	1,407	1,552
Zinc (mg)	4.1	0.03	3.1	3.3	3.6	4.0	4.4	4.9	5.3
Other Dietary Components									
Cholesterol (mg)	52	0.9	35	37	42	48	56	68	77
Dietary fiber (g)	9	0.1	6	7	8	9	10	11	13

	Average	SE	Percentiles						
			5th	10th	25th	50th	75th	90th	95th
Percentage of Calories From:									
Total fat	26.7	0.16	21.6	22.7	24.5	26.4	28.6	30.9	32.8
Saturated fat	8.4	0.06	6.4	6.7	7.5	8.4	9.2	9.9	10.5
Monounsaturated fat	9.1	0.06	7.1	7.5	8.2	9.0	9.9	10.8	11.3
Polyunsaturated fat	7.7	0.09	5.2	5.6	6.5	7.5	8.7	10.1	11.3
Linoleic acid	6.8	0.08	4.5	4.9	5.8	6.6	7.6	8.9	10.0
Alpha-linolenic acid	0.8	0.01	0.5	0.6	0.7	0.8	0.9	1.1	1.2
Carbohydrate	57.7	0.17	51.2	52.7	55.3	57.8	60.2	62.5	63.3
Protein	18.7	0.08	15.8	16.6	17.5	18.6	19.8	20.9	21.6
Number of Schools	1,206								

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

AT = alpha-tocopherol; DFE = dietary folate equivalents; NSLP = National School Lunch Program; RAE = retinol activity equivalents; SE = standard error.

Table C.48. Average and Distribution of Nutrients per 1,000 Calories in NSLP Lunches Served in Elementary Schools

	DRI-Based Target per 1,000 Calories	Average per 1,000 Calories	SE	Percentiles per 1,000 Calories						
				5th	10th	25th	50th	75th	90th	95th
Linoleic Acid (g)	5.5	7	0.1	5	5	6	7	8	9	10
Alpha-Linolenic Acid (g)	0.52	0.9	0.01	0.5	0.6	0.7	0.8	1.0	1.1	1.3
Protein (g)	25.3	47	0.3	40	42	44	47	49	52	54
Vitamin A (mcg RAE)	320	514	8.3	322	344	408	487	590	695	807
Vitamin C (mg)	40	50	1.1	23	25	36	46	59	80	86
Vitamin D (mcg)	n.a. ^a	16.3	0.85	4.3	4.7	6.2	11.2	19.4	34.5	43.9
Vitamin E (mg AT)	5.0	3.7	0.04	2.7	2.9	3.2	3.6	4.1	4.5	5.0
Thiamin (mg)	0.7	0.8	0.01	0.6	0.7	0.7	0.8	0.9	0.9	1.0
Riboflavin (mg)	0.8	1.3	0.01	1.1	1.1	1.2	1.3	1.4	1.4	1.5
Niacin (mg)	7.8	10.1	0.09	8.0	8.3	9.2	10.1	10.9	11.8	13.1
Vitamin B ₆ (mg)	0.7	1.0	0.02	0.7	0.7	0.8	0.9	1.1	1.2	1.5
Folate (mcg DFE)	227	184	2.2	130	140	156	178	206	238	253
Vitamin B ₁₂ (mcg)	2.0	3.0	0.06	2.1	2.2	2.5	2.8	3.2	3.7	4.3
Iron (mg)	5.7	6.5	0.04	5.5	5.7	6.0	6.5	6.9	7.3	7.5
Magnesium (mg)	120	197	1.2	165	171	185	198	209	224	230
Zinc (mg)	4.8	6.7	0.05	5.5	5.7	6.1	6.6	7.2	7.9	8.2
Calcium (mg)	553	826	7.1	645	674	746	814	895	982	1,029
Phosphorus (mg)	602	963	5.1	819	849	899	965	1,028	1,072	1,106
Potassium (mg)	2,255	1,843	9.6	1,592	1,641	1,736	1,832	1,942	2,065	2,123
Sodium (mg)	≤ 1,060	1,748	13.9	1,372	1,459	1,590	1,740	1,889	2,046	2,155
Dietary Fiber (g)	14.2	14	0.1	11	12	13	14	16	17	18
Cholesterol (mg)	< 160	84	1.6	58	60	68	79	92	108	122
Number of Schools		451								

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: The DRI-based targets for nutrient content were developed by the Institute of Medicine (IOM 2010). Schools were not expected to meet these nutrient targets. However, it is expected that if school lunches were planned to meet the NSLP nutrition standards, they would satisfy most of these nutrient targets. Exceptions are vitamin E and potassium and iron for middle and high schools. The DRI-based targets for nutrient content shown in this table are per 1,000 calories.

^aThe IOM did not include a DRI-based nutrient target for vitamin D.

AT = alpha-tocopherol; DFE = dietary folate equivalents; DRI = Dietary Reference Intakes; IOM = Institute of Medicine; n.a. = not applicable; NSLP = National School Lunch Program; RAE = retinol activity equivalents; SE = standard error.

Table C.49. Average and Distribution of Nutrients per 1,000 Calories in NSLP Lunches Served in Middle Schools

	DRI-Based Target per 1,000 Calories	Average per 1,000 Calories	SE	Percentiles per 1,000 Calories						
				5th	10th	25th	50th	75th	90th	95th
Linoleic Acid (g)	5.5	8	0.1	5	6	7	8	9	11	12
Alpha-Linolenic Acid (g)	0.55	1.0	0.02	0.6	0.6	0.8	0.9	1.1	1.3	1.5
Protein (g)	49.7	47	0.3	40	41	44	47	49	52	53
Vitamin A (mcg RAE)	371	454	10.2	277	300	347	419	521	688	747
Vitamin C (mg)	46	49	1.3	24	28	35	46	59	70	84
Vitamin D (mcg)	n.a. ^a	18.8	0.91	4.2	5.0	9.2	14.4	24.6	34.8	45.3
Vitamin E (mg AT)	6.2	3.6	0.04	2.6	2.8	3.1	3.5	3.9	4.4	4.8
Thiamin (mg)	0.8	0.8	0.01	0.6	0.7	0.7	0.8	0.9	1.0	1.0
Riboflavin (mg)	0.9	1.2	0.01	1.0	1.0	1.1	1.2	1.3	1.4	1.5
Niacin (mg)	9.2	10.5	0.12	8.2	8.9	9.5	10.3	11.3	12.2	12.8
Vitamin B ₆ (mg)	0.8	1.0	0.02	0.7	0.7	0.8	0.9	1.0	1.2	1.5
Folate (mcg DFE)	260	181	2.1	131	140	158	177	200	226	243
Vitamin B ₁₂ (mcg)	2.0	2.9	0.05	1.8	2.0	2.3	2.7	3.2	3.9	4.3
Iron (mg)	8.0	6.5	0.05	5.5	5.8	6.2	6.4	6.9	7.4	7.7
Magnesium (mg)	151	192	1.3	160	165	180	193	205	213	220
Zinc (mg)	5.7	6.6	0.06	5.3	5.7	6.1	6.5	7.1	7.8	8.1
Calcium (mg)	677	769	8.9	594	633	678	764	836	930	999
Phosphorus (mg)	828	931	6.0	795	821	873	929	989	1,052	1,078
Potassium (mg)	2,343	1,772	11.1	1,510	1,555	1,644	1,765	1,882	1,987	2,065
Sodium (mg)	≤ 1,083	1,808	17.3	1,497	1,541	1,662	1,785	1,913	2,095	2,193
Dietary Fiber (g)	14.5	14	0.1	11	12	13	14	15	16	18
Cholesterol (mg)	< 148	86	2.1	59	63	71	80	92	112	126
Number of Schools		384								

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: The DRI-based targets for nutrient content were developed by the Institute of Medicine (IOM 2010). Schools were not expected to meet these nutrient targets. However, it is expected that if school lunches were planned to meet the NSLP nutrition standards, they would satisfy most of these nutrient targets. Exceptions are vitamin E and potassium and iron for middle and high schools. The DRI-based targets for nutrient content shown in this table are per 1,000 calories.

^aThe IOM did not include a DRI-based nutrient target for vitamin D.

AT = alpha-tocopherol; DFE = dietary folate equivalents; DRI = Dietary Reference Intakes; IOM = Institute of Medicine; n.a. = not applicable; NSLP = National School Lunch Program; RAE = retinol activity equivalents; SE = standard error.

Table C.50. Average and Distribution of Nutrients per 1,000 Calories in NSLP Lunches Served in High Schools

	DRI-Based Target per 1,000 Calories	Average per 1,000 Calories	SE	Percentiles per 1,000 Calories						
				5th	10th	25th	50th	75th	90th	95th
Linoleic Acid (g)	5.6	8	0.1	5	6	7	8	9	11	12
Alpha-Linolenic Acid (g)	0.56	1.0	0.02	0.6	0.7	0.8	0.9	1.1	1.3	1.6
Protein (g)	40.6	45	0.3	37	39	42	45	48	51	52
Vitamin A (mcg RAE)	346	461	12.0	262	287	344	414	534	706	836
Vitamin C (mg)	49	55	1.5	20	29	40	53	67	77	94
Vitamin D (mcg)	n.a. ^a	20.6	1.07	3.8	4.4	7.9	16.4	27.7	39.7	52.2
Vitamin E (mg AT)	6.8	3.8	0.06	2.8	3.0	3.3	3.6	4.2	4.8	5.1
Thiamin (mg)	0.8	0.8	0.01	0.6	0.7	0.7	0.8	0.9	0.9	1.0
Riboflavin (mg)	0.8	1.2	0.01	0.9	1.0	1.0	1.2	1.2	1.3	1.4
Niacin (mg)	9.1	10.5	0.13	8.1	8.5	9.5	10.5	11.4	12.2	12.8
Vitamin B ₆ (mg)	0.8	1.0	0.02	0.7	0.7	0.8	0.9	1.1	1.2	1.3
Folate (mcg DFE)	256	180	2.7	127	138	154	175	197	233	251
Vitamin B ₁₂ (mcg)	2.0	2.8	0.08	1.7	1.9	2.2	2.5	3.0	3.8	5.0
Iron (mg)	7.4	6.5	0.05	5.6	5.8	6.1	6.5	6.9	7.4	7.7
Magnesium (mg)	184	190	1.4	154	162	178	191	205	213	221
Zinc (mg)	5.4	6.3	0.06	5.0	5.3	5.7	6.3	6.9	7.3	7.7
Calcium (mg)	601	727	8.2	504	572	645	724	794	868	943
Phosphorus (mg)	715	897	6.1	754	779	827	898	959	1,007	1,048
Potassium (mg)	2,175	1,768	13.0	1,446	1,529	1,644	1,747	1,885	1,979	2,084
Sodium (mg)	≤ 920	1,864	16.8	1,547	1,620	1,701	1,850	2,001	2,123	2,287
Dietary Fiber (g)	13.4	15	0.2	11	12	13	14	16	17	19
Cholesterol (mg)	< 120	84	2.2	56	62	70	79	90	111	124
Number of Schools		371								

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: The DRI-based targets for nutrient content were developed by the Institute of Medicine (IOM 2010). Schools were not expected to meet these nutrient targets. However, it is expected that if school lunches were planned to meet the NSLP nutrition standards, they would satisfy most of these nutrient targets. Exceptions are vitamin E and potassium and iron for middle and high schools. The DRI-based targets for nutrient content shown in this table are per 1,000 calories.

^aThe IOM did not include a DRI-based nutrient target for vitamin D.

AT = alpha-tocopherol; DFE = dietary folate equivalents; DRI = Dietary Reference Intakes; IOM = Institute of Medicine; n.a. = not applicable; NSLP = National School Lunch Program; RAE = retinol activity equivalents; SE = standard error.

Table C.51. Average and Distribution of Nutrients per 1,000 Calories in NSLP Lunches Served in All Schools

	DRI-Based Target per 1,000 Calories			Average per 1,000 Calories	SE	Percentiles per 1,000 Calories						
	Elementary Schools	Middle Schools	High Schools			5th	10th	25th	50th	75th	90th	95th
Linoleic Acid (g)	5.5	5.5	5.6	8	0.1	5	6	6	7	9	10	11
Alpha-Linolenic Acid (g)	0.52	0.55	0.56	0.9	0.01	0.6	0.6	0.7	0.9	1.0	1.2	1.4
Protein (g)	25.3	49.7	40.6	46	0.2	39	41	43	46	49	52	54
Vitamin A (mcg RAE)	320	371	346	492	6.8	289	320	380	463	570	695	799
Vitamin C (mg)	40	46	49	51	0.9	23	26	37	48	62	78	86
Vitamin D (mcg)	n.a. ^a	n.a. ^a	n.a. ^a	17.7	0.69	4.2	4.6	6.8	12.9	22.8	36.8	46.2
Vitamin E (mg AT)	5.0	6.2	6.8	3.7	0.04	2.7	2.9	3.2	3.6	4.1	4.5	5.0
Thiamin (mg)	0.7	0.8	0.8	0.8	0.01	0.6	0.7	0.7	0.8	0.9	1.0	1.0
Riboflavin (mg)	0.8	0.9	0.8	1.2	0.01	1.0	1.0	1.1	1.2	1.3	1.4	1.5
Niacin (mg)	7.8	9.2	9.1	10.3	0.08	8.1	8.4	9.3	10.2	11.1	12.0	13.0
Vitamin B ₆ (mg)	0.7	0.8	0.8	1.0	0.02	0.7	0.7	0.8	0.9	1.1	1.2	1.4
Folate (mcg DFE)	227	260	256	183	1.8	130	140	156	178	204	235	253
Vitamin B ₁₂ (mcg)	2.0	2.0	2.0	2.9	0.05	1.9	2.1	2.4	2.7	3.1	3.8	4.4
Iron (mg)	5.7	8.0	7.4	6.5	0.03	5.5	5.7	6.1	6.5	6.9	7.4	7.7
Magnesium (mg)	120	151	184	195	1.0	161	168	183	196	207	219	228
Zinc (mg)	4.8	5.7	5.4	6.6	0.04	5.3	5.6	6.0	6.5	7.2	7.8	8.1
Calcium (mg)	553	677	601	794	5.8	600	642	711	784	868	968	1,018
Phosphorus (mg)	602	828	715	943	4.1	790	820	882	944	998	1,063	1,091
Potassium (mg)	2,255	2,343	2,175	1,813	7.9	1,532	1,604	1,691	1,812	1,925	2,031	2,112
Sodium (mg)	≤ 1,060	≤ 1,083	≤ 920	1,785	11.8	1,426	1,496	1,629	1,777	1,911	2,069	2,193
Dietary Fiber (g)	14.2	14.5	13.4	14	0.1	11	12	13	14	16	17	18
Cholesterol (mg)	< 160	< 148	< 120	85	1.4	58	61	69	79	92	110	123
Number of Schools	1,206											

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: The DRI-based targets for nutrient content were developed by the Institute of Medicine (IOM 2010). Schools were not expected to meet these nutrient targets. However, it is expected that if school lunches were planned to meet the NSLP nutrition standards, they would satisfy most of these nutrient targets. Exceptions are vitamin E and potassium and iron for middle and high schools. The DRI-based targets for nutrient content shown in this table are per 1,000 calories.

^aThe IOM did not include a DRI-based nutrient target for vitamin D.

AT = alpha-tocopherol; DFE = dietary folate equivalents; DRI = Dietary Reference Intakes; IOM = Institute of Medicine; n.a. = not applicable; NSLP = National School Lunch Program; RAE = retinol activity equivalents; SE = standard error.

APPENDIX D

METHODS USED TO ASSESS COMPLIANCE WITH NUTRITION STANDARDS AND TO ESTIMATE THE NUTRIENT CONTENT AND FOOD GROUP CONTENT OF SCHOOL MEALS AND AFTERSCHOOL SNACKS

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This appendix describes the methods used to assess compliance with the updated nutrition standards and to estimate the calorie, nutrient, and USDA Food Pattern food group content of NSLP lunches, SBP breakfasts, and afterschool snacks. Section A describes the methods used to assess compliance with the updated nutrition standards, that is, the extent to which daily and weekly menus met meal pattern requirements and dietary specifications for NSLP lunches and SBP breakfasts. Section B describes the methods used to assess the percentage of weekly menus with average nutrient content that was consistent with DRI-based targets used by the IOM in developing recommendations for the updated nutrition standards. Section C describes the methods used to estimate the average nutrient and USDA Food Pattern food group content of NSLP and SBP menus prepared and served and afterschool snacks offered to students.

The study team used the data from the Menu Survey to assess compliance with the updated nutrition standards and to estimate the nutrient and USDA Food Pattern food group content of reimbursable meals and afterschool snacks. The Menu Survey collected detailed information for one school week about the foods and beverages prepared for and served in reimbursable meals and offered in afterschool snacks.¹ For each menu item available to students, SNMs provided (1) a description of the food, including details needed for accurate nutrient coding, (2) a portion size, (3) contributions to the various meal pattern requirements, and (4) the total number of portions prepared for and served in reimbursable meals. SNMs also provided information on the number of reimbursable meals that were planned and served each day.

The study team linked foods and beverages reported in the Menu Survey to the Food and Nutrient Database for Dietary Studies (version 2011–2012) to obtain data on calorie and nutrient content, and the Food Patterns Equivalents Database and Food Patterns Equivalents Ingredients Database (FPED and FPID; versions 2011–2012) to obtain data on food group content (based on USDA Food Pattern food groups). USDA's Agricultural Research Service (ARS) provided data on the nutrient and food group content of commonly reported commercial products that are manufactured specifically for school foodservice (for example, to include more whole grains, less fat or sodium, added protein, or more vitamins and minerals).

Additional details about the collection and processing of the Menu Survey data are provided in the SNMCS methodology report (Zeidman et al. 2019).

¹ Most schools provided five days of menu data. However, due to school holidays and closures or poor quality data, some schools provided only three or four days of data. For lunch, 184 schools provided four days of data and 75 schools provided three days of data. For breakfast, 166 schools provided four days of data and 62 provided three days of data.

Analyses of NSLP and SBP Menus Offered, Prepared, and Served

All analyses reflect the menu items that were available to students as part of reimbursable meals (NSLP lunches and SBP breakfasts).

- *Menus offered reflect the menu items prepared and offered to students as part of reimbursable meals. Used for analyses that examined the types of foods offered in daily menus and compliance with daily and weekly meal pattern requirements.*
- *Menus prepared reflect the menu items prepared and offered to students as part of reimbursable meals, but these analyses take into account the amount of food prepared (number of servings of each menu item prepared for reimbursable meals). This approach gives greater weight to menu items that were prepared in larger quantities. Most of the findings presented in this report focus on findings for menus prepared, including analyses that examined the nutrient and USDA Food Pattern food group content and nutritional quality of meals and compliance with dietary specifications.*
- *Menus served reflect the menu items that were actually served to or selected by students as part of reimbursable meals. In schools that use the offer-versus-serve option, students may not be required to take all menu items offered. This approach gives greater weight to menu items that were more frequently selected by or served to students. Estimates for menus served were used in analyses that examined changes over time in the nutrient content and nutritional quality of meals. Supplementary tabulations of the nutrient and USDA Food Pattern food group content and nutritional quality of menus served are provided in appendices.*

A. Assessing the Percentage of Daily and Weekly Menus That Met Nutrition Standards for NSLP and SBP Meals

As described in Chapter 1, the updated nutrition standards for NSLP lunches and SBP breakfasts were phased in over several years, beginning in SY 2012–2013 (USDA, FNS 2012). SY 2014–2015 (when data for this study were collected) was the first year school meals were required to meet all of the requirements for both NSLP lunches and SBP breakfasts (Tables 1.3 and 1.4). The updated nutrition standards include four different types of requirements: (1) daily meal pattern requirements, (2) weekly meal pattern requirements, (3) dietary specifications, and (4) restrictions on specific forms of some foods:

- The daily and weekly meal pattern requirements specify minimum amounts of foods to be offered each day and over the course of a week. Requirements for NSLP lunches include five meal components (fruits, vegetables, grains, meats/meat alternates, and milk), and requirements for SBP breakfasts include three meal components (fruits, grains, and milk).
- The weekly meal pattern requirements for NSLP lunches also specify weekly minimum amounts for five vegetable subgroups (dark green, red and orange, legumes, starchy, and other).

- The dietary specifications set average weekly minimum and maximum calorie levels, limits on saturated fat and sodium content, and require foods to contain zero grams (less than 0.5 grams) of synthetic *trans* fat per serving (that is, *trans* fat that is not naturally occurring in foods).² The standard for sodium was designed to be phased in over several years. In SY 2014–2015, schools were expected to not exceed Target 1 levels for sodium.
- In addition, the meal patterns include the following restrictions on the types of foods included in school meals:
 - Fluid milk must be fat-free (flavored or unflavored) or low-fat (1% or less) unflavored, and at least two choices must be offered daily³
 - No more than 50 percent of fruit and vegetable offerings over the course of a week can be in the form of juice
 - All grains must be whole grain-rich⁴; however in SY 2014–2015, SFAs that demonstrated a hardship in meeting this requirement could seek an exemption that allowed for meeting a relaxed requirement that at least 50 percent of all grains must be whole grain-rich
 - For NSLP lunches, no more than 2 ounce equivalents of grains can be provided by grain-based desserts over the course of a week.

Separate nutrition standards are defined for three grade groups—kindergarten to grade 5, grades 6 to 8, and grades 9 to 12—the most common grade spans for elementary, middle, and high schools, respectively (IOM 2010).⁵ The standards apply to schools that include grades within each of these ranges. For schools that have grades that span more than one of the established grade groups, FNS guidance specifies that schools must meet the minimum quantity requirements for the oldest grade group and the maximum quantity requirements for the youngest grade group (that is, the highest minimums and the lowest maximums) (USDA, FNS 2015a). In some cases, the meal pattern requirements are the same for multiple grade groups. For example, for a school that includes kindergarten to grade 8, the meal pattern requirements for NSLP lunches are the same for the K–5 and 6–8 groups, except for the weekly quantity requirement for meats/meat alternates. A K–8 school must provide 9 ounce equivalents of meats/meat alternates per week, which is the highest weekly minimum for this meal component across grades K–5 and 6–8. In addition, a school with grades K–8 must meet the lowest sodium limit (the limit of 1,230 mg for grades K–5 rather than the limit of 1,360 mg for grades 6–8). For calories, a school with grades K–8 must meet the calorie minimum for the oldest grade group

² Compliance with the *trans* fat requirement could not be assessed in the analysis of Menu Survey data because the nutrient database used for the study—the Food and Nutrient Database for Dietary Studies (FNDDS, version 2011–2012)—does not provide data on *trans* fat. Instead the study collected information on food purchasing practices used to eliminate *trans* fat. These data are summarized in Volume 1 of the SNMCS final report (Forrestal et al. 2019).

³ In November 2017, USDA published an interim final rule that provides flexibility in meeting the milk requirement by allowing schools to offer low-fat flavored milk in reimbursable meals.

⁴ To be whole grain-rich, a food item must contain at least 50 percent whole grains. Any non-whole grain portion must be enriched meal and/or flour (USDA, FNS 2014c).

⁵ Data on meals provided to pre-kindergarten students were not collected.

and the calorie maximum for the youngest grade group (600 to 650 calories, based on the requirements of 550 to 650 calories for grades K–5 and 600 to 700 calories for grades 6–8). For schools that span all three grade groups or include both the 6–8 and 9–12 grade groups, the calorie minimums and maximums at lunch for the oldest and youngest grade groups do not overlap. FNS guidance specifies that these schools should adjust menus to accommodate all relevant calorie requirements for the grade groups included in the school (USDA, FNS 2015a).

For NSLP lunches and SBP breakfasts, the study team estimated the percentage of daily and weekly menus that met the meal pattern requirements and dietary specifications included in the updated nutrition standards (see Chapters 3 and 4). The general approach used to assess compliance with meal pattern requirements and dietary specifications was based on the approach FNS uses in determining whether an SFA is eligible to receive an additional 6-cents reimbursement per lunch.⁶ Under HHFKA, schools that provide meals that comply with the nutrition standards for both lunch and breakfast (if offered) are eligible to receive an additional reimbursement of 6 cents per lunch. To receive the additional reimbursement, SFAs must submit the 6-Cents Tool to their State agency to be certified as compliant with the updated nutrition standards. SFAs enter into the tool one week of menus for each grade group in the SFA. For each reimbursable meal combination, SFAs enter the meal pattern contributions (or creditable amounts). The worksheets in the tool then assess whether the planned menus meet the daily and weekly meal pattern requirements.⁷ Details of the approach used for this study are described below, including limitations relative to the 6-Cents Tool.

1. Daily Meal Pattern Requirements

The Menu Survey was designed to collect a number of data elements needed to assess whether daily and weekly menus satisfied the daily and weekly meal pattern requirements included in the updated nutrition standards. SNMs were asked to provide, for each menu item included in a daily menu, the contribution of the item to the meal pattern requirements—that is, cups of fruits, vegetables, and vegetable subgroups, and ounce equivalents of meats/meat alternates and grains.⁸ For items containing grains, respondents indicated whether the item was whole grain-rich. Respondents were also asked to report the maximum number of fruit and vegetable servings students were allowed to select. Lastly, respondents identified foods that were offered only with specific foods on the daily menu—for example, crackers that were offered only with the chef’s salad or a cheese stick that was offered only with a peanut butter sandwich.

To assess compliance with daily meal pattern requirements, the study team compared each school’s daily menus to daily meal pattern requirements consistent with its grade group. The analysis considered a daily menu to be compliant if the minimum amount of a given meal component was equal to or greater than the daily requirement. The analysis took into account all

⁶ Additional information on the certification process and the 6-Cents Tool is available at <http://www.fns.usda.gov/school-meals/certification-compliance>.

⁷ SFAs can use the 6-Cents Tool to conduct a nutrient assessment of calories, saturated fat, and sodium, or can conduct their own nutrient assessment outside of the tool.

⁸ For fluid milk, the Menu Survey did not collect data on cup equivalents. The study team computed these cup equivalents based on the reported portion size. Additional information on the meal pattern contribution data are provided in the SNMCS methodology report (Zeidman et al. 2019).

menu items that contributed to the meal component, and the menu item that contributed the smallest amount for a given meal component determined the minimum amount. For example, if a daily lunch menu included a choice of 1.5 ounce equivalents of meats/meat alternates from an entrée salad or 2 ounce equivalents of meats/meat alternates from a turkey sandwich, the daily minimum for meats/meat alternates was 1.5 ounce equivalents. When computing daily minimum amount for fruits and vegetables, the analysis also took into account the maximum number of servings students were allowed to select. For example, if a school indicated that students could select up to two servings of fruits at lunch, the daily minimum amount of fruits was computed by summing the meal pattern contributions of the two fruit offerings with the smallest contributions.

For grains and meats/meat alternates, the analysis took into account information about foods that were offered only with specific foods on a daily menu (referred to as “linked foods”) when computing daily minimum amounts. The analysis involved summing amounts for foods that were linked, and then used this sum in ranking menu items to determine the item with the smallest amount of grains and/or meats/meat alternates. For example, if a daily menu offered two entrée choices—(1) a pizza with 2.5 ounce equivalents of meats/meat alternates, or (2) a peanut butter and jelly sandwich (1 ounce equivalent) served with a cheese stick (1 ounce equivalent) for a total of 2 ounce equivalents—the peanut butter and jelly sandwich/cheese stick choice would be considered the menu item with the smallest amount of meats/meat alternates. For lunch menus that included a separate bread/grain that was available to all students regardless of the entrée choice (referred to as an “unlinked grain”), the analysis assumed that each entrée choice included a serving of the unlinked grain. Thus, the grain contribution for each entrée was equivalent to the contribution of the unlinked grain plus the contribution of the entrée. If the menu day included multiple unlinked grains, the analysis used the unlinked grain with the largest amount of grains to compute the grain contribution of each entrée item. This assumption reflects a middle-of-the-road approach between including only one unlinked grain with the smallest amount of grains and including all unlinked grains.

2. Weekly Meal Pattern Requirements

To assess compliance with weekly meal pattern requirements, the study team compared each school’s weekly menu to weekly meal pattern requirements consistent with its grade group.⁹ For each meal component, the study team computed weekly minimums by summing the daily minimums across all daily menus. For each of the vegetable subgroups included in the nutrition standards for NSLP lunches, the analysis identified the menu item with the largest amount on each daily menu and then summed these amounts across the week.¹⁰ To assess whether weekly menus complied with the requirement that no more than half of the fruits offered be in the form of juice, the analysis involved computing the total weekly amounts of fruit and fruit juice by summing across all daily menus. The total weekly amount of fruit juice was then divided by the total weekly amount of fruit. The analysis used the same approach to assess whether weekly menus were compliant with requirements for vegetable juice (no more than half of all

⁹ For schools that provided data for three or four days, the study team adjusted weekly meal pattern requirements according to FNS guidance on shorter school weeks (USDA, FNS 2015a).

¹⁰ This is consistent with the approach used in the 6-Cents Tool, which requires vegetable subgroup information to be entered each day and uses the largest amount of each vegetable subgroup offered each day to indicate the greatest combination of vegetables available for students to select.

vegetables) and whole grain-rich grains. For whole grain-rich grains, the analysis assessed compliance with the requirement that all grains must be whole grain-rich as well as the relaxed requirement that at least half of all grains must be whole grain-rich. For weekly menus that did not meet a weekly meal pattern requirement, the study team also estimated the percentage of the shortfall (for example, within 5 percent of the requirement or between 5 and 10 percent of the requirement).

3. Dietary Specifications

To assess compliance with the dietary specifications, the study team compared average weekly amounts of calories, saturated fat (as a percentage of total calories), and sodium in menus prepared to the relevant specification (methods used to produce estimates for menus prepared are described in Section C below).¹¹ The analysis compared the sodium content of average weekly menus to the Target 1 levels of sodium because this was the target in place in SY 2014–2015. For average weekly menus that did not meet a dietary specification, the study team examined how close the weekly averages came to meeting the specification (for example, within 5 percent of the specification or between 5 and 10 percent of the specification).

4. Limitations

As noted above, the general approach used to assess compliance with meal pattern requirements and dietary specifications was based on the approach used by FNS in the 6-Cents Tool. However, because the data collected in the Menu Survey were used to address multiple research questions not related to compliance, there were some differences in how the data were collected and analyzed in the Menu Survey and the 6-Cents Tool. The Menu Survey was designed to collect detailed information on all menu items prepared and served in school meals so that all study research questions related to the nutritional characteristics of school meals could be addressed. In the 6-Cents Tool, SFAs report information for each planned reimbursable meal combination. Because of these differences in approach, the Menu Survey may not have fully captured all of the information reported in the 6-Cents Tool. For example:

- SNMs were the main respondent for the Menu Survey. Some SNMs had difficulty providing information on how foods contributed to the meal patterns. Prior to the analysis, the study team cleaned these data and imputed data for missing or invalid entries (procedures are described in Zeidman et al. 2019).
- SNMs were asked to identify foods that were offered only with specific foods on a daily menu so the foods could be “linked” for the analysis. Some SNMs may not have provided this information. In the 6-Cents Tool, all foods offered together are automatically linked because the SFA enters specific combinations of foods available in reimbursable meals as a single unit.
- SNMs were not asked about the maximum number of separate grain items or meat/meat alternate items students could select. As described in Section A.1 above, the study team made assumptions regarding the number of unlinked grain items students could take. Unlinked meats/meat alternates were treated as separate entrée choices (with a few

¹¹ Estimates of menus prepared take into account the amounts of food prepared (number of servings) and give greater weight to menu items that were prepared in larger quantities.

exceptions—for example, if the item was likely offered as a topping and not a separate choice).

- The Menu Survey was designed to collect information so that compliance could be assessed with the nutrition standards that were in place during SY 2014–2015. Thus, it did not collect information on whether an SFA (and the schools in that SFA) had been granted an exemption from meeting the requirement that all grains be whole grain-rich. To address this, the analysis examined the percentage of weekly menus that met the requirement that was in place during SY 2014–2015 (all grains must be whole grain-rich), as well as the requirement applicable to SFAs/schools that had been granted an exemption—that at least 50 percent of grains must be whole grain-rich.

Given these limitations, the results presented in this report (Chapters 3 and 4) are not entirely comparable to findings based on the 6-Cents Tool.

B. Assessing the Percentage of Average Weekly Menus That Were Consistent with the DRI-Based Targets for Nutrient Content

The analysis included an assessment of the percentage of average weekly menus that met other nutrient targets for school meals. As described in Chapters 3 and 4, the IOM committee that developed the recommendations that led to the updated nutrition standards set targets for the nutrient content of NSLP lunches and SBP breakfasts (IOM 2010). These targets provided the scientific underpinnings for the updated standards but were not intended to be used by SFAs or schools for planning or monitoring purposes. Instead, it was expected that meals planned to meet the meal pattern requirements would be consistent with most of the nutrient targets.¹²

The nutrient targets were based on the Dietary Reference Intakes (DRIs). Most targets were calculated using a target median intake (TMI) approach, which estimates the amounts of daily nutrient intake likely to result in a 5 percent or less prevalence of inadequacy (based on the estimated average requirements (EAR). Others were based on the adequate intake (AI), the 2005 *Dietary Guidelines for Americans* recommendations (relevant targets were the same as those in the 2010 version), and for sodium, the tolerable upper intake level (UL). Because school meals provide only a portion of the day's intake, the DRI-based nutrient targets were computed separately for breakfast and lunch, based on the mean percentage of total calories consumed by school-age children at each meal (using data from SNDA-III)—32 percent for lunch and 21.5 percent for breakfast. The final nutrient targets, which represent averages for a five-day school week, provide a single set of benchmarks that combine DRI values for males and females and the DRI age/gender groups corresponding to elementary, middle, and high schools. These targets are shown in Tables 3.1 and 4.1 for lunch and breakfast, respectively.

The study team conducted two analyses to examine how average weekly menus compared to the DRI-based nutrient targets. For nutrients that had targets, the study team compared the nutrient content of average weekly menus prepared and served to the nutrient targets to estimate the percentage contribution of average weekly menus to these targets. To assess the extent to which average weekly menus were consistent with the DRI-based nutrient targets, the study team

¹² Exceptions are vitamin E and potassium; iron for middle and high schools at lunch; and linoleic acid and linolenic acid at breakfast.

compared the average nutrient content of weekly menus prepared to these targets. The analysis considered average weekly menus to be consistent with the DRI-based targets if the average nutrient content met or exceeded the target.

C. Estimating Average Nutrient and USDA Food Pattern Food Group Content

This section describes the methods used to estimate the average nutrient and USDA Food Pattern food group content of NSLP and SBP menus prepared and served and afterschool snacks offered to students.

1. Breakfast and Lunch

The study team estimated the average calorie, nutrient, and USDA Food Pattern food group content of NSLP and SBP menus using two methods. For the first method, the study team estimated the average nutrient and USDA Food Pattern food group content of the menus prepared and made available to students. These estimates take into account the amounts of food prepared (number of portions) for reimbursable meals and give greater weight to menu items that were prepared in larger quantities. For the second method, the study team estimated the nutrient and USDA Food Pattern food group content of menus served to students. These estimates take into account student selection patterns and the ability of students to decline specific meal components (under offer-versus-serve). The estimates for menus served give greater weight to menu items that were most frequently selected by (or served to) students as part of reimbursable meals. Estimates for “menus prepared” and “menus served” are similar. Findings presented in Chapters 3 through 7 are based on estimates of menus prepared. Estimates of menus served are presented in Chapter 9 and Appendices C, E, G, I, and K.

The Menu Survey data included, for each menu item, information on the number of portions prepared for and served in reimbursable meals, and the number of reimbursable meals that were planned and served each day. The data also included information on the nutrient and USDA Food Pattern food group content of one portion of each menu item. Estimating the nutrient and USDA Food Pattern food group content of NSLP/SBP menus prepared involved four steps:

1. For each menu item offered on a daily menu, the number of portions prepared was multiplied by the amount of calories, nutrients, and food group equivalents in one portion.
2. The resulting values were then summed across all items included in the daily menu. For example, the total amount of calories in lunches prepared for a given daily menu was computed as the sum of the calories included in 100 cartons of skim chocolate milk, 50 cartons of 1% milk, 150 slices of cheese pizza, 200 cups of raw carrots, 200 apples, and so on.
3. The resulting sum for each daily menu was then divided by the total number of reimbursable meals planned for that day to determine the average nutrient and USDA Food Pattern food group content of menus prepared on that day.
4. For each school, these daily averages were averaged across the week to estimate the average nutrient and USDA Food Pattern food group content of NSLP/SBP menus prepared.

The study team used a similar four-step process to estimate the nutrient and USDA Food Pattern food group content of NSLP/SBP menus served, using the number of portions served in reimbursable meals as the multiplier in step 1 and the total number of reimbursable meals served as the divisor in step 3.¹³

2. Afterschool Snacks

The study team estimated of the average calorie, nutrient, and USDA Food Pattern food group content of afterschool snacks to reflect the snacks offered to students.¹⁴ The analysis assumed that every student took one average serving of each meal component offered. If choices were offered within a meal component group (for example, 1% unflavored milk and chocolate skim milk), the analysis gave equal weight to each option. Nutrient and USDA Food Pattern food group values were then totaled within each daily menu. To obtain the overall nutrient and USDA Food Pattern food group content of the average afterschool snack offered, the analysis average daily totals across the week.

¹³ There was one small school at breakfast and one at lunch that prepared menu items for reimbursable breakfasts and lunches each day but no students took a reimbursable meal. Each of these schools was excluded from the relevant analyses of NSLP/SBP menus served.

¹⁴ Because there are no dietary specifications for afterschool snacks, these analyses focused on providing a picture of the average snacks offered to students.

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APPENDIX E

CHAPTER 4 SUPPLEMENTAL TABLES

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Table E.1. Percentage of Daily Breakfast Menus That Met Each and All of the Daily SBP Meal Pattern Requirements

	Percentage of Daily Breakfast Menus			
	Elementary Schools	Middle Schools	High Schools	All Schools
Fruits	83.4	82.4	82.9	83.1
Grains	88.9	85.5	81.0 ^{##}	86.6
Milk	>97	>97	>97	99.6
Allowed milk types ^a	87.6	90.1	90.2	88.6
All Daily Meal Pattern Requirements	64.9	65.0	60.1	63.9
Number of Daily Menus	1,971	1,671	1,623	5,265

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: Meal pattern requirements are minimum required amounts, unless otherwise noted. None of the differences between elementary and middle schools or middle and high schools were statistically significant

^aCompliance with the allowed milk types requirement requires that a menu day includes at least two allowed milk types and no unallowed milk types.

Difference between elementary and high schools is significantly different from zero at the ^{##} 0.01 level.

SBP = School Breakfast Program.

>97 = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 97 and 100 percent are displayed as >97.

Table E.2. Percentage of Daily Breakfast Menus That Met Each and All of the Daily SBP Meal Pattern Requirements, by School Size

	Percentage of Daily Breakfast Menus			
	Small (Fewer than 500 students)	Medium (500 to 999 students)	Large (1,000 or more students)	All Schools
Fruits	81.8	85.4	80.5	83.1
Grains	85.5	89.6 ^{††}	81.2	86.6
Milk	>97	>97	>97	99.6
Allowed milk types ^a	88.6	88.6	88.8	88.6
All Daily Meal Pattern Requirements	62.3	67.5 [†]	58.5	63.9
Number of Daily Menus	1,841	2,167	1,257	5,265

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: Meal pattern requirements are minimum required amounts, unless otherwise noted. None of the differences between small and medium-sized or large schools were statistically significant.

^aCompliance with the allowed milk types requirement requires that a menu day includes at least two allowed milk types and no unallowed milk types.

Difference between medium-sized and large schools is significantly different from zero at the ^{††} 0.01 level or [†] 0.05 level.

SBP = School Breakfast Program.

>97 = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 97 and 100 percent are displayed as >97.

Table E.3. Percentage of Daily Breakfast Menus That Met Each and All of the Daily SBP Meal Pattern Requirements, by Urbanicity

	Percentage of Daily Breakfast Menus			
	Urban	Suburban	Rural	All Schools
Fruits	89.2*	82.1	80.3 [#]	83.1
Grains	87.8	85.7	86.9	86.6
Milk	>97	>97	>97	99.6
Allowed milk types ^a	90.2	88.7	87.5	88.6
All Daily Meal Pattern Requirements	68.7	62.9	61.9	63.9
Number of Daily Menus	1,114	2,553	1,598	5,265

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: Meal pattern requirements are minimum required amounts, unless otherwise noted. None of the differences between suburban and rural schools were statistically significant.

^aCompliance with the allowed milk types requirement requires that a menu day includes at least two allowed milk types and no unallowed milk types.

Difference between urban and suburban schools is significantly different from zero at the * 0.05 level.

Difference between urban and rural schools is significantly different from zero at the [#]0.05 level.

SBP = School Breakfast Program.

>97 = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 97 and 100 percent are displayed as >97.

Table E.4. Percentage of Daily Breakfast Menus That Met Each and All of the Daily SBP Meal Pattern Requirements, by District Child Poverty Rate

	Percentage of Daily Breakfast Menus		
	Lower (less than 20 percent)	Higher (20 percent or more)	All Schools
Fruits	87.4**	78.4	83.1
Grains	85.3	88.0	86.6
Milk	>97	99.2	99.6
Allowed milk types ^a	90.2	87.0	88.6
All Daily Meal Pattern Requirements	67.4	60.1	63.9
Number of Daily Menus	2,787	2,478	5,265

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: Meal pattern requirements are minimum required amounts, unless otherwise noted. Data on child poverty rates were from the 2011 U.S. Census Bureau's Small Area Income and Poverty Estimates school district file.

^aCompliance with the allowed milk types requirement requires that a menu day includes at least two allowed milk types and no unallowed milk types.

Difference between lower and higher poverty schools is significantly different from zero at the ** 0.01 level.

SBP = School Breakfast Program.

>97 = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 97 and 100 percent are displayed as >97.

Table E.5. Percentage of Schools That Met Each and All of the Daily SBP Meal Pattern Requirements

	Percentage of Schools			
	Elementary Schools	Middle Schools	High Schools	All Schools
Fruits	74.2	77.5	74.4	74.8
Grains	74.2	68.7	66.4	71.5
Milk	>97	>97	>97	>97
Allowed milk types ^a	81.3	83.1	82.8	81.9
All Daily Meal Pattern Requirements	43.0	45.6	43.1	43.5
Number of Schools	415	352	344	1,111

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: Meal pattern requirements are minimum required amounts, unless otherwise noted. Compliance at the school level requires that all menu days within a school met the requirement. None of the differences between school types were statistically significant.

^aCompliance with the allowed milk types requirement requires that a menu day includes at least two allowed milk types and no unallowed milk types.

SBP = School Breakfast Program.

>97 = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 97 and 100 percent are displayed as >97.

Table E.6. Percentage of Weekly Breakfast Menus That Met Each and All of the Weekly SBP Meal Pattern Requirements

	Percentage of Weekly Breakfast Menus			
	Elementary Schools	Middle Schools	High Schools	All Schools
Fruits	78.4	79.8	78.2	78.6
Fruit juice limit	66.7	72.5	72.5	69.0
Grains	82.0	81.5 ^{†††}	67.6 ^{###}	78.8
At least half of grains are whole grain-rich	93.5	96.2 [^]	96.2 [^]	94.6
All grains are whole grain-rich	45.8	51.3	47.7	47.2
Milk	>97	>97	>97	>97
All Weekly Meal Pattern Requirements	22.1	28.5	21.6	23.2
All Weekly Meal Pattern Requirements, using the 50% Whole Grain-Rich Target	42.0	48.1	38.7	42.4
Number of Weekly Menus	415	352	344	1,111

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: Meal pattern requirements are minimum required amounts, unless otherwise noted. None of the differences between elementary and middle schools were significant.

Difference between middle and high schools is significantly different from zero at the ^{†††} 0.001 level.

Difference between elementary and high schools is significantly different from zero at the ^{###} 0.001 level.

SBP = School Breakfast Program.

[^] = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 97 and 100 percent are displayed as >97.

Table E.7. Percentage of Weekly Breakfast Menus That Met Each and All of the Weekly SBP Meal Pattern Requirements, by School Size

	Percentage of Weekly Breakfast Menus			
	Small (Fewer than 500 students)	Medium (500 to 999 students)	Large (1,000 or more students)	All Schools
Fruits	77.3	80.3	78.2	78.6
Fruit juice limit	61.3**	74.2†	82.6###	69.0
Grains	77.5	82.3†	72.4	78.8
At least half of grains are whole grain-rich	93.7	95.4	95.3 ^	94.6
All grains are whole grain-rich	45.6	48.9	48.6	47.2
Milk	>97	>97	>97	>97
All Weekly Meal Pattern Requirements	19.9	26.8	24.0	23.2
All Weekly Meal Pattern Requirements, using the 50% Whole Grain-Rich Target	37.0*	47.7	46.1	42.4
Number of Weekly Menus	394	455	262	1,111

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Note: Meal pattern requirements are minimum required amounts, unless otherwise noted.

Difference between small and medium-sized schools is significantly different from zero at the ** 0.01 level or * 0.05 level.

Difference between medium-sized and large schools is significantly different from zero at the † 0.05 level.

Difference between large and small schools is significantly different from zero at the ### 0.001 level.

SBP = School Breakfast Program.

^ = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 97 and 100 percent are displayed as >97.

Table E.8. Percentage of Weekly Breakfast Menus That Met Each and All of the Weekly SBP Meal Pattern Requirements, by Urbanicity

	Percentage of Weekly Breakfast Menus			
	Urban	Suburban	Rural	All Schools
Fruits	84.8	77.4	76.0	78.6
Fruit juice limit	81.6 [*]	71.3 ^{††}	58.1 ^{###}	69.0
Grains	82.0	76.5	79.4	78.8
At least half of grains are whole grain-rich	91.3	94.7	96.6 [^]	94.6
All grains are whole grain-rich	50.6	50.6	41.0	47.2
Milk	>97	>97	>97	>97
All Weekly Meal Pattern Requirements	28.4	26.9 ^{††}	15.2 [#]	23.2
All Weekly Meal Pattern Requirements, using the 50% Whole Grain-Rich Target	52.9	42.7	35.2 ^{##}	42.4
Number of Weekly Menus	232	539	340	1,111

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Note: Meal pattern requirements are minimum required amounts, unless otherwise noted.

Difference between urban and suburban schools is significantly different from zero at the * 0.05 level.

Difference between suburban and rural schools is significantly different from zero at the ^{††} 0.01 level.

Difference between urban and rural schools is significantly different from zero at the ^{###} 0.001 level, ^{##} 0.01 level, or [#] 0.05 level.

SBP = School Breakfast Program.

[^] = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 97 and 100 percent are displayed as >97.

Table E.9. Percentage of Weekly Breakfast Menus That Met Each and All of the Weekly SBP Meal Pattern Requirements, by District Child Poverty Rate

	Percentage of Weekly Breakfast Menus		
	Lower (less than 20 percent)	Higher (20 percent or more)	All Schools
Fruits	82.9*	74.0	78.6
Fruit juice limit	73.5*	64.2	69.0
Grains	79.0	78.6	78.8
At least half of grains are whole grain-rich	96.6*	92.4	94.6
All grains are whole grain-rich	49.1	45.2	47.2
Milk	>97	>97	>97
All Weekly Meal Pattern Requirements	27.2*	18.8	23.2
All Weekly Meal Pattern Requirements, using the 50% Whole Grain-Rich Target	47.6*	36.8	42.4
Number of Weekly Menus	588	523	1,111

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: Meal pattern requirements are minimum required amounts, unless otherwise noted. Data on child poverty rates were from the 2011 U.S. Census Bureau's Small Area Income and Poverty Estimates school district file.

Difference between lower and higher poverty schools is significantly different from zero at the * 0.05 level.

SBP = School Breakfast Program.

>97 = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 97 and 100 percent are displayed as >97.

Table E.10. Percentage of Weekly Breakfast Menus That Met Each and All of the SBP Dietary Specifications

	Percentage of Weekly Breakfast Menus			
	Elementary Schools	Middle Schools	High Schools	All Schools
Calorie Minimum and Maximum	56.0	57.5	53.6	55.8
Calorie minimum	94.9	94.5 ^{†††}	81.9 ^{###}	92.0
Calorie maximum	61.1	63.0	71.8 [#]	63.8
Percentage of Calories from Saturated Fat	>97	95.8 [^]	95.4	96.7
Sodium	67.4	64.9	66.0	66.6
All Dietary Specifications	49.2	49.1	40.5	47.3
Number of Weekly Menus	415	352	344	1,111

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: Compliance with the dietary specifications is based on estimates of SBP menus prepared, which take into account the amounts of food prepared (number of servings) and give greater weight to menu items that were prepared in larger quantities. None of the differences between elementary and middle schools were statistically significant.

Difference between middle and high schools is significantly different from zero at the ^{†††} 0.001 level.

Difference between elementary and high schools is significantly different from zero at the ^{###} 0.001 level or [#] 0.05 level.

SBP = School Breakfast Program.

[^] = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 97 and 100 percent are displayed as >97.

Table E.11. Percentage of Weekly Breakfast Menus That Met Each and All of the SBP Dietary Specifications, by School Size

	Percentage of Weekly Breakfast Menus			
	Small (Fewer than 500 students)	Medium (500 to 999 students)	Large (1,000 or more students)	All Schools
Calorie Minimum and Maximum	48.4***	64.3	57.2	55.8
Calorie minimum	92.3	93.4 [†]	86.1	92.0
Calorie maximum	56.1**	70.8	71.1 ^{##}	63.8
Percentage of Calories from Saturated Fat	96.2 [^]	>97	>97	96.7
Sodium	61.5*	72.5	67.6	66.6
All Dietary Specifications	39.5***	57.1 [†]	45.7	47.3
Number of Weekly Menus	394	455	262	1,111

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Note: Compliance with the dietary specifications is based on estimates of SBP menus prepared, which take into account the amounts of food prepared (number of servings) and give greater weight to menu items that were prepared in larger quantities.

Difference between small and medium-sized schools is significantly different from zero at the *** 0.001 level, ** 0.01 level, or * 0.05 level.

Difference between medium-sized and large schools is significantly different from zero at the [†] 0.05 level.

Difference between large and small schools is significantly different from zero at the ^{##} 0.01 level.

SBP = School Breakfast Program.

[^] = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 97 and 100 percent are displayed as >97.

Table E.12. Percentage of Weekly Breakfast Menus That Met Each and All of the SBP Dietary Specifications, by Urbanicity

	Percentage of Weekly Breakfast Menus			
	Urban	Suburban	Rural	All Schools
Calorie Minimum and Maximum	66.8*	55.0	49.5 ^{##}	55.8
Calorie minimum	88.8*	95.4 [†]	89.9	92.0
Calorie maximum	78.0 ^{***}	59.6	59.6 ^{##}	63.8
Percentage of Calories from Saturated Fat	>97	>97	94.5	96.7
Sodium	77.3	68.9 [†]	56.9 ^{###}	66.6
All Dietary Specifications	56.9	50.4 ^{††}	37.1 ^{###}	47.3
Number of Weekly Menus	232	539	340	1,111

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Note: Compliance with the dietary specifications is based on estimates of SBP menus prepared, which take into account the amounts of food prepared (number of servings) and give greater weight to menu items that were prepared in larger quantities.

Difference between urban and suburban schools is significantly different from zero at the *** 0.001 level or * 0.05 level.

Difference between suburban and rural schools is significantly different from zero at the †† 0.01 level or † 0.05 level.

Difference between urban and rural schools is significantly different from zero at the ### 0.001 level or ## 0.01 level.

SBP = School Breakfast Program.

>97 = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 97 and 100 percent are displayed as >97.

Table E.13. Percentage of Weekly Breakfast Menus That Met Each and All of the SBP Dietary Specifications, by District Child Poverty Rate

	Percentage of Weekly Breakfast Menus		
	Lower (less than 20 percent)	Higher (20 percent or more)	All Schools
Calorie Minimum and Maximum	52.1	59.7	55.8
Calorie minimum	95.6**	88.1	92.0
Calorie maximum	56.5***	71.6	63.8
Percentage of Calories from Saturated Fat	97.3	96.0	96.7
Sodium	64.5	68.9	66.6
All Dietary Specifications	45.6	49.0	47.3
Number of Weekly Menus	588	523	1,111

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: Compliance with the dietary specifications is based on estimates of SBP menus prepared, which take into account the amounts of food prepared (number of servings) and give greater weight to menu items that were prepared in larger quantities. Data on child poverty rates were from the 2011 U.S. Census Bureau's Small Area Income and Poverty Estimates school district file.

Difference between lower and higher poverty schools is significantly different from zero at the *** 0.001 level or ** 0.01 level.

SBP = School Breakfast Program.

Table E.14. Percentage of Weekly Breakfast Menus Meeting SBP Requirements/Dietary Specifications and Distribution of Weekly Breakfasts Menus Not Meeting SBP Requirements/Dietary Specifications

Percentage Meeting/Below/Above Requirement/Specification	Percentage of Weekly Breakfast Menus			
	Elementary Schools	Middle Schools	High Schools	All Schools
Weekly Meal Pattern Requirements				
Fruits				
Percentage Meeting Requirement	78.4	79.8	78.2	78.6
Percentage Below Requirement	21.6	20.2	21.8	21.4
> 0 to ≤ 5%	3.3 [^]	<3	<3	2.7
> 5 to ≤ 10%	<3	<3	<3	1.4
> 10 to ≤ 15%	<3	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3	1.5
> 20 to ≤ 25%	<3	<3	<3	<3
> 25 to ≤ 50%	13.1	16.1	13.2	13.6
> 50%	<3	<3	<3	<3
Grains				
Percentage Meeting Requirement	82.0	81.5 ^{†††}	67.6 ^{###}	78.8
Percentage Below Requirement	18.0	18.5 ^{†††}	32.4 ^{###}	21.2
> 0 to ≤ 5%	<3	<3	<3	1.9
> 5 to ≤ 10%	<3	3.6 [^]	3.9 [^]	3.2
> 10 to ≤ 15%	<3	<3	3.6 [^]	1.9
> 15 to ≤ 20%	<3	<3	<3	1.4
> 20 to ≤ 25%	3.0 [^]	<3	<3	2.2
> 25 to ≤ 50%	6.1	3.8 [^]	8.3	6.2
> 50%	<3 ^{***}	6.7	11.0 ^{###}	4.4
At Least Half of Grains Are Whole Grain-Rich				
Percentage Meeting Requirement	93.5	96.2 [^]	96.2 [^]	94.6
Percentage Below Requirement	6.5	3.8 [^]	3.8 [^]	5.4
> 0 to ≤ 5%	<3	<3	<3	<3
> 5 to ≤ 10%	<3	<3	<3	<3
> 10 to ≤ 15%	<3	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3	<3
> 20 to ≤ 25%	<3	<3	<3	<3
> 25 to ≤ 50%	<3	<3	<3	<3
> 50%	<3	<3	<3	<3
All Grains Are Whole Grain-Rich				
Percentage Meeting Requirement	45.8	51.3	47.7	47.2
Percentage Below Requirement	54.2	48.7	52.3	52.8
> 0 to ≤ 5%	7.2	8.0	11.9	8.4
> 5 to ≤ 10%	12.5	10.4	7.9	11.1
> 10 to ≤ 15%	6.4 [*]	<3	6.3	5.7
> 15 to ≤ 20%	6.4	5.9	4.5	5.9
> 20 to ≤ 25%	3.5 [^]	3.7 [^]	4.4 [^]	3.7
> 25 to ≤ 50%	11.7	14.3	13.5	12.5
> 50%	6.5	3.8 [^]	3.8 [^]	5.4

Percentage Meeting/Below/Above Requirement/Specification	Percentage of Weekly Breakfast Menus			
	Elementary Schools	Middle Schools	High Schools	All Schools
Milk				
Percentage Meeting Requirement	>97	>97	>97	>97
Percentage Below Requirement	<3	<3	<3	<3
> 0 to ≤ 5%	<3	<3	<3	<3
> 5 to ≤ 10%	<3	<3	<3	<3
> 10 to ≤ 15%	<3	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3	<3
> 20 to ≤ 25%	<3	<3	<3	<3
> 25 to ≤ 50%	<3	<3	<3	<3
> 50%	<3	<3	<3	<3
Dietary Specifications				
Calorie Minimum and Maximum				
Percentage Meeting Both Calorie Minimum and Maximum	56.0	57.5	53.6	55.8
Percentage Above Calorie Maximum	38.9	37.0	28.2 [#]	36.2
> 0 to ≤ 5%	10.7	9.3	7.0	9.6
> 5 to ≤ 10%	7.6	6.3	5.3	6.9
> 10 to ≤ 15%	5.5	3.3 [^]	<3	4.5
> 15 to ≤ 20%	4.5	<3	5.8	4.5
> 20 to ≤ 25%	4.3	6.3 [†]	<3	4.1
> 25 to ≤ 50%	4.9	7.2	5.5	5.5
> 50%	<3	<3	<3	<3
Percentage Below Calorie Minimum	5.1	5.5 ^{†††}	18.1 ^{###}	8.0
> 0 to ≤ 5%	3.1 [^]	<3	4.7	3.3
> 5 to ≤ 10%	<3	<3 ^{††}	7.2 ^{##}	2.5
> 10 to ≤ 15%	<3	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3	<3
> 20 to ≤ 25%	<3	<3	<3	<3
> 25 to ≤ 50%	<3	<3	<3	<3
> 50%	<3	<3	<3	<3
Percentage of Calories from Saturated Fat				
Percentage Meeting Requirement	>97	95.8 [^]	95.4	96.7
Percentage Above Requirement	<3	4.2 [^]	4.6	3.3
> 0 to ≤ 5%	<3	<3	<3	<3
> 5 to ≤ 10%	<3	<3	<3	<3
> 10 to ≤ 15%	<3	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3	<3
> 20 to ≤ 25%	<3	<3	<3	<3
> 25 to ≤ 50%	<3	<3	<3	<3
> 50%	<3	<3	<3	<3
Sodium^a				
Percentage Meeting Requirement	67.4	64.9	66.0	66.6
Percentage Above Requirement	32.6	35.1	34.0	33.4
> 0 to ≤ 5%	6.9	7.1	6.7	6.9
> 5 to ≤ 10%	3.2 [^]	4.1 [^]	3.1 [^]	3.3
> 10 to ≤ 15%	3.6 [^]	<3	3.9 [^]	3.5
> 15 to ≤ 20%	5.1	4.7	3.7 [^]	4.7
> 20 to ≤ 25%	3.4 [^]	<3	3.8 [^]	3.3
> 25 to ≤ 50%	8.6	10.8	7.8	8.8
> 50%	<3	3.8 [^]	5.0	2.9
Number of Weekly Menus	415	352	344	1,111

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

^aBased on sodium targets for school year 2014-2015.

Difference between elementary and middle schools is significantly different from zero at the *** 0.001 level or * 0.05 level.

Difference between middle and high schools is significantly different from zero at the ^{†††} 0.001 level, ^{††} 0.01 level, or [†] 0.05 level.

Difference between elementary and high schools is significantly different from zero at the ^{####} 0.001 level, ^{##} 0.01 level, or [#] 0.05 level.

SBP = School Breakfast Program.

[^] Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 0 and 3 percent are displayed as <3 and flagged percentages between 97 and 100 percent are displayed as >97.

Table E.15. Percentage of Weekly Breakfast Menus Meeting SBP Requirements/Dietary Specifications and Distribution of Weekly Breakfasts Menus Not Meeting SBP Requirements/Dietary Specifications, by School Size

Percentage Meeting/Below/Above Requirement/Specification	Percentage of Weekly Breakfast Menus			
	Small (Fewer than 500 students)	Medium (500 to 999 students)	Large (1,000 or more students)	All Schools
Weekly Meal Pattern Requirements				
Fruits				
Percentage Meeting Requirement	77.3	80.3	78.2	78.6
Percentage Below Requirement	22.7	19.7	21.8	21.4
> 0 to ≤ 5%	<3	4.1	<3	2.7
> 5 to ≤ 10%	<3	<3	<3	1.4
> 10 to ≤ 15%	<3	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3	1.5
> 20 to ≤ 25%	<3	<3	<3	<3
> 25 to ≤ 50%	16.5	10.0	14.0	13.6
> 50%	<3	<3	<3	<3
Grains				
Percentage Meeting Requirement	77.5	82.3 [†]	72.4	78.8
Percentage Below Requirement	22.5	17.7 [†]	27.6	21.2
> 0 to ≤ 5%	<3	<3	<3	1.9
> 5 to ≤ 10%	<3	4.3	<3	3.2
> 10 to ≤ 15%	<3	<3	<3	1.9
> 15 to ≤ 20%	<3	<3	3.0 [^]	1.4
> 20 to ≤ 25%	3.0 [^]	<3	<3 [#]	2.2
> 25 to ≤ 50%	8.2	4.2	4.6 [^]	6.2
> 50%	3.4 [^]	3.0 ^{†††^}	13.0 ^{###}	4.4
At Least Half of Grains Are Whole Grain-Rich				
Percentage Meeting Requirement	93.7	95.4	95.3 [^]	94.6
Percentage Below Requirement	6.3	4.6	4.7 [^]	5.4
> 0 to ≤ 5%	<3	<3	<3	<3
> 5 to ≤ 10%	<3	<3	<3	<3
> 10 to ≤ 15%	<3	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3	<3
> 20 to ≤ 25%	<3	<3	<3	<3
> 25 to ≤ 50%	<3	<3	<3	<3
> 50%	<3	<3	<3	<3
All Grains Are Whole Grain-Rich				
Percentage Meeting Requirement	45.6	48.9	48.6	47.2
Percentage Below Requirement	54.4	51.1	51.4	52.8
> 0 to ≤ 5%	6.8	9.0	12.4	8.4
> 5 to ≤ 10%	8.2 [*]	15.1	9.5	11.1
> 10 to ≤ 15%	6.3	5.8	<3	5.7
> 15 to ≤ 20%	5.5	6.6	5.2 [^]	5.9
> 20 to ≤ 25%	4.8	<3	3.1 [^]	3.7
> 25 to ≤ 50%	16.6 ^{**}	7.4	13.5	12.5
> 50%	6.3	4.6	4.7 [^]	5.4

Percentage Meeting/Below/Above Requirement/Specification	Percentage of Weekly Breakfast Menus			
	Small (Fewer than 500 students)	Medium (500 to 999 students)	Large (1,000 or more students)	All Schools
Milk				
Percentage Meeting Requirement	>97	>97	>97	>97
Percentage Below Requirement	<3	<3	<3	<3
> 0 to ≤ 5%	<3	<3	<3	<3
> 5 to ≤ 10%	<3	<3	<3	<3
> 10 to ≤ 15%	<3	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3	<3
> 20 to ≤ 25%	<3	<3	<3	<3
> 25 to ≤ 50%	<3	<3	<3	<3
> 50%	<3	<3	<3	<3
Dietary Specifications				
Calorie Minimum and Maximum				
Percentage Meeting Both Calorie Minimum and Maximum	48.4***	64.3	57.2	55.8
Percentage Above Calorie Maximum	43.9**	29.2	28.9##	36.2
> 0 to ≤ 5%	10.7	8.9	7.4	9.6
> 5 to ≤ 10%	7.5	6.4	5.8 ^	6.9
> 10 to ≤ 15%	5.0	4.4	<3	4.5
> 15 to ≤ 20%	5.4	3.6	3.8 ^	4.5
> 20 to ≤ 25%	5.1	<3	3.6 ^	4.1
> 25 to ≤ 50%	8.2**	<3	4.9 ^	5.5
> 50%	<3	<3	<3	<3
Percentage Below Calorie Minimum	7.7	6.6†	13.9	8.0
> 0 to ≤ 5%	3.1 ^	3.4	4.0 ^	3.3
> 5 to ≤ 10%	<3	<3†	4.7 ^	2.5
> 10 to ≤ 15%	<3	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3	<3
> 20 to ≤ 25%	<3	<3	<3	<3
> 25 to ≤ 50%	<3	<3	<3	<3
> 50%	<3	<3	<3	<3
Percentage of Calories from Saturated Fat				
Percentage Meeting Requirement	96.2 ^	>97	>97	96.7
Percentage Above Requirement	3.8 ^	<3	<3	3.3
> 0 to ≤ 5%	<3†	<3†	<3	<3
> 5 to ≤ 10%	<3	<3	<3	<3
> 10 to ≤ 15%	<3	<3	<3	<3
> 15 to ≤ 20%	<3†	<3	<3	<3
> 20 to ≤ 25%	<3	<3	<3	<3
> 25 to ≤ 50%	<3	<3	<3	<3
> 50%	<3	<3	<3	<3
Sodium^a				
Percentage Meeting Requirement	61.5*	72.5	67.6	66.6
Percentage Above Requirement	38.5*	27.5	32.4	33.4
> 0 to ≤ 5%	8.2	4.8	8.2	6.9
> 5 to ≤ 10%	3.2 ^	<3	5.7 ^	3.3
> 10 to ≤ 15%	3.2 ^	4.6††	<3	3.5
> 15 to ≤ 20%	5.9	3.4	4.5 ^	4.7
> 20 to ≤ 25%	4.6	<3	<3	3.3
> 25 to ≤ 50%	8.4	9.6	7.8	8.8
> 50%	5.0*	<3	<3	2.9

Percentage Meeting/Below/Above Requirement/Specification	Percentage of Weekly Breakfast Menus			
	Small (Fewer than 500 students)	Medium (500 to 999 students)	Large (1,000 or more students)	All Schools
Number of Weekly Menus	394	455	262	1,111

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

^aBased on sodium targets for school year 2014-2015.

Difference between small and medium-sized schools is significantly different from zero at the *** 0.001 level, ** 0.01 level, or * 0.05 level.

Difference between medium-sized and large schools is significantly different from zero at the +++ 0.001 level, ++ 0.01 level, or + 0.05 level.

Difference between large and small schools is significantly different from zero at the ### 0.001 level, ## 0.01 level, or # 0.05 level.

SBP = School Breakfast Program.

[^] Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 0 and 3 percent are displayed as <3 and flagged percentages between 97 and 100 percent are displayed as >97.

Table E.16. Percentage of Weekly Breakfast Menus Meeting SBP Requirements/Dietary Specifications and Distribution of Weekly Breakfasts Menus Not Meeting SBP Requirements/Dietary Specifications, by Urbanicity

Percentage Meeting/Below/Above Requirement/Specification	Percentage of Weekly Breakfast Menus			
	Urban	Suburban	Rural	All Schools
Weekly Meal Pattern Requirements				
Fruits				
Percentage Meeting Requirement	84.8	77.4	76.0	78.6
Percentage Below Requirement	15.2	22.6	24.0	21.4
> 0 to ≤ 5%	3.6 ^	<3	3.1 ^	2.7
> 5 to ≤ 10%	<3	<3	<3	1.4
> 10 to ≤ 15%	<3	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3	1.5
> 20 to ≤ 25%	<3	<3	<3	<3
> 25 to ≤ 50%	6.4 ^*	14.5	17.3 ^{##}	13.6
> 50%	<3	<3	<3	<3
Grains				
Percentage Meeting Requirement	82.0	76.5	79.4	78.8
Percentage Below Requirement	18.0	23.5	20.6	21.2
> 0 to ≤ 5%	4.3 ^	<3	<3	1.9
> 5 to ≤ 10%	<3	3.2	3.5 ^	3.2
> 10 to ≤ 15%	<3	<3	<3	1.9
> 15 to ≤ 20%	<3	<3	<3	1.4
> 20 to ≤ 25%	<3	3.0	<3	2.2
> 25 to ≤ 50%	6.3 ^	7.5	4.6	6.2
> 50%	3.0 ^	5.2	4.3 ^	4.4
At Least Half of Grains Are Whole Grain-Rich				
Percentage Meeting Requirement	91.3	94.7	96.6 ^	94.6
Percentage Below Requirement	8.7	5.3	3.4 ^	5.4
> 0 to ≤ 5%	<3	<3	<3	<3
> 5 to ≤ 10%	<3	<3	<3	<3
> 10 to ≤ 15%	<3	<3	<3	<3
> 15 to ≤ 20%	3.3 ^	<3	<3	<3
> 20 to ≤ 25%	<3	<3	<3	<3
> 25 to ≤ 50%	<3	<3	<3	<3
> 50%	<3	<3	<3	<3
All Grains Are Whole Grain-Rich				
Percentage Meeting Requirement	50.6	50.6	41.0	47.2
Percentage Below Requirement	49.4	49.4	59.0	52.8
> 0 to ≤ 5%	6.4 ^	8.2	9.8	8.4
> 5 to ≤ 10%	10.2	9.8	13.4	11.1
> 10 to ≤ 15%	4.2 ^	5.6	6.8	5.7
> 15 to ≤ 20%	11.0	4.9	3.8 ^	5.9
> 20 to ≤ 25%	<3	<3 [†]	7.1 ^{##}	3.7
> 25 to ≤ 50%	7.7	13.5	14.6	12.5
> 50%	8.7	5.3	3.4 ^	5.4

Percentage Meeting/Below/Above Requirement/Specification	Percentage of Weekly Breakfast Menus			
	Urban	Suburban	Rural	All Schools
Milk				
Percentage Meeting Requirement	>97	>97	>97	>97
Percentage Below Requirement	<3	<3	<3	<3
> 0 to ≤ 5%	<3	<3	<3	<3
> 5 to ≤ 10%	<3	<3	<3	<3
> 10 to ≤ 15%	<3	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3	<3
> 20 to ≤ 25%	<3	<3	<3	<3
> 25 to ≤ 50%	<3	<3	<3	<3
> 50%	<3	<3	<3	<3
Dietary Specifications				
Calorie Minimum and Maximum				
Percentage Meeting Both Calorie Minimum and Maximum	66.8 [*]	55.0	49.5 ^{##}	55.8
Percentage Above Calorie Maximum	22.0 ^{***}	40.4	40.4 ^{##}	36.2
> 0 to ≤ 5%	6.9	10.9	9.8	9.6
> 5 to ≤ 10%	4.0 [^]	7.8	7.6	6.9
> 10 to ≤ 15%	3.3 [^]	4.7	5.1	4.5
> 15 to ≤ 20%	4.2 [^]	3.3	6.1	4.5
> 20 to ≤ 25%	<3	5.2	4.3 [^]	4.1
> 25 to ≤ 50%	<3 ⁺	7.0	5.7	5.5
> 50%	<3 ⁺	<3	<3 [#]	<3
Percentage Below Calorie Minimum	11.2 ⁺	4.6 [†]	10.1	8.0
> 0 to ≤ 5%	6.1 [^]	<3	3.8 [^]	3.3
> 5 to ≤ 10%	<3	<3	4.0 [^]	2.5
> 10 to ≤ 15%	<3	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3	<3
> 20 to ≤ 25%	<3	<3	<3	<3
> 25 to ≤ 50%	<3	<3	<3	<3
> 50%	<3	<3	<3	<3
Percentage of Calories from Saturated Fat				
Percentage Meeting Requirement	>97	>97	94.5	96.7
Percentage Above Requirement	<3	<3	5.5	3.3
> 0 to ≤ 5%	<3 ⁺	<3	<3 [#]	<3
> 5 to ≤ 10%	<3	<3	<3	<3
> 10 to ≤ 15%	<3	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3	<3
> 20 to ≤ 25%	<3	<3	<3	<3
> 25 to ≤ 50%	<3	<3	<3	<3
> 50%	<3	<3	<3	<3
Sodium^a				
Percentage Meeting Requirement	77.3	68.9 [†]	56.9 ^{###}	66.6
Percentage Above Requirement	22.7	31.1 [†]	43.1 ^{###}	33.4
> 0 to ≤ 5%	10.0	4.8	7.4	6.9
> 5 to ≤ 10%	<3 [†]	4.0	4.1 ^{###}	3.3
> 10 to ≤ 15%	<3	3.6	4.4 [^]	3.5
> 15 to ≤ 20%	3.7 [^]	3.7	6.6	4.7
> 20 to ≤ 25%	<3	3.1	4.7	3.3
> 25 to ≤ 50%	4.5 [^]	9.4	10.9	8.8
> 50%	<3	<3	5.0	2.9
Number of Weekly Menus	232	539	340	1,111

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

^aBased on sodium targets for school year 2014-2015.

Difference between urban and suburban schools is significantly different from zero at the *** 0.001 level or * 0.05 level.

Difference between suburban and rural schools is significantly different from zero at the [†] 0.05 level.

Difference between urban and rural schools is significantly different from zero at the ### 0.001 level, ## 0.01 level, or # 0.05 level.

SBP = School Breakfast Program.

[^] Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 0 and 3 percent are displayed as <3 and flagged percentages between 97 and 100 percent are displayed as >97.

Table E.17. Percentage of Weekly Breakfast Menus Meeting SBP Requirements/Dietary Specifications and Distribution of Weekly Breakfasts Menus Not Meeting SBP Requirements/Dietary Specifications, by District Child Poverty Rate

Percentage Meeting/Below/Above Requirement/Specification	Percentage of Weekly Breakfast Menus		
	Lower (less than 20 percent)	Higher (20 percent or more)	All Schools
Weekly Meal Pattern Requirements			
Fruits			
Percentage Meeting Requirement	82.9*	74.0	78.6
Percentage Below Requirement	17.1*	26.0	21.4
> 0 to ≤ 5%	3.1	<3	2.7
> 5 to ≤ 10%	<3	<3	1.4
> 10 to ≤ 15%	<3	<3	<3
> 15 to ≤ 20%	<3	<3	1.5
> 20 to ≤ 25%	<3	<3	<3
> 25 to ≤ 50%	9.8*	17.8	13.6
> 50%	<3	<3	<3
Grains			
Percentage Meeting Requirement	79.0	78.6	78.8
Percentage Below Requirement	21.0	21.4	21.2
> 0 to ≤ 5%	<3	<3	1.9
> 5 to ≤ 10%	3.2	3.2	3.2
> 10 to ≤ 15%	<3	<3	1.9
> 15 to ≤ 20%	<3	<3	1.4
> 20 to ≤ 25%	<3	<3	2.2
> 25 to ≤ 50%	6.1	6.3	6.2
> 50%	5.1	3.6	4.4
At Least Half of Grains Are Whole Grain-Rich			
Percentage Meeting Requirement	96.6*	92.4	94.6
Percentage Below Requirement	3.4*	7.6	5.4
> 0 to ≤ 5%	<3	<3	<3
> 5 to ≤ 10%	<3	<3	<3
> 10 to ≤ 15%	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3
> 20 to ≤ 25%	<3	<3	<3
> 25 to ≤ 50%	<3	<3	<3
> 50%	<3	<3	<3
All Grains Are Whole Grain-Rich			
Percentage Meeting Requirement	49.1	45.2	47.2
Percentage Below Requirement	50.9	54.8	52.8
> 0 to ≤ 5%	9.9	6.6	8.4
> 5 to ≤ 10%	13.6	8.5	11.1
> 10 to ≤ 15%	6.3	5.1	5.7
> 15 to ≤ 20%	3.3*	8.7	5.9
> 20 to ≤ 25%	3.0	4.5	3.7
> 25 to ≤ 50%	11.4	13.8	12.5
> 50%	3.4*	7.6	5.4

Percentage Meeting/Below/Above Requirement/Specification	Percentage of Weekly Breakfast Menus		
	Lower (less than 20 percent)	Higher (20 percent or more)	All Schools
Milk			
Percentage Meeting Requirement	>97	>97	>97
Percentage Below Requirement	<3	<3	<3
> 0 to ≤ 5%	<3	<3	<3
> 5 to ≤ 10%	<3	<3	<3
> 10 to ≤ 15%	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3
> 20 to ≤ 25%	<3	<3	<3
> 25 to ≤ 50%	<3	<3	<3
> 50%	<3	<3	<3
Dietary Specifications			
Calorie Minimum and Maximum			
Percentage Meeting Both Calorie Minimum and Maximum	52.1	59.7	55.8
Percentage Above Calorie Maximum	43.5***	28.4	36.2
> 0 to ≤ 5%	10.9	8.2	9.6
> 5 to ≤ 10%	8.0	5.7	6.9
> 10 to ≤ 15%	5.6	3.3	4.5
> 15 to ≤ 20%	4.0	5.0	4.5
> 20 to ≤ 25%	5.3	<3	4.1
> 25 to ≤ 50%	7.9**	<3	5.5
> 50%	<3	<3	<3
Percentage Below Calorie Minimum	4.4**	11.9	8.0
> 0 to ≤ 5%	<3*	4.8	3.3
> 5 to ≤ 10%	<3	3.6	2.5
> 10 to ≤ 15%	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3
> 20 to ≤ 25%	<3	<3	<3
> 25 to ≤ 50%	<3	<3	<3
> 50%	<3	<3	<3
Percentage of Calories from Saturated Fat			
Percentage Meeting Requirement	97.3	96.0	96.7
Percentage Above Requirement	2.7	4.0	3.3
> 0 to ≤ 5%	<3	<3	<3
> 5 to ≤ 10%	<3	<3	<3
> 10 to ≤ 15%	<3	<3	<3
> 15 to ≤ 20%	<3	<3	<3
> 20 to ≤ 25%	<3	<3	<3
> 25 to ≤ 50%	<3	<3	<3
> 50%	<3	<3	<3
Sodium^a			
Percentage Meeting Requirement	64.5	68.9	66.6
Percentage Above Requirement	35.5	31.1	33.4
> 0 to ≤ 5%	6.6	7.1	6.9
> 5 to ≤ 10%	4.6*	<3	3.3
> 10 to ≤ 15%	3.4	3.5	3.5
> 15 to ≤ 20%	6.3	3.0	4.7
> 20 to ≤ 25%	3.3	3.3	3.3
> 25 to ≤ 50%	8.5	9.1	8.8
> 50%	2.8	3.0	2.9
Number of Weekly Menus	588	523	1,111

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Note: Data on child poverty rates were from the 2011 U.S. Census Bureau's Small Area Income and Poverty Estimates school district file.

^aBased on sodium targets for school year 2014-2015.

Difference between lower and higher poverty schools is significantly different from zero at the *** 0.001 level, ** 0.01 level, or * 0.05 level.

SBP = School Breakfast Program.

<3 and >97 = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 0 and 3 percent are displayed as <3 and flagged percentages between 97 and 100 percent are displayed as >97.

Table E.18. Percentage of Average Weekly Breakfast Menus That Were Consistent with Each and All of the DRI-Based Targets for Nutrient Content for SBP Breakfasts Prepared

	Elementary Schools	Middle Schools	High Schools	All Schools
DRI-Based Targets for Nutrient Content^a				
Percentage of Calories from Total Fat ^b	3.5	8.6	8.6	5.6
Linoleic Acid	50.8	54.7 ^{†††}	35.7 ^{###}	48.2
Alpha-Linolenic Acid	74.1	69.5 ^{†††}	43.7 ^{###}	66.6
Protein	>97 ^{***}	11.7	16.3 ^{###}	65.8
Vitamin A	>97 ^{**}	>97 ^{†††}	84.0 ^{###}	96.1
Vitamin C	95.5	93.9 ^{††}	85.1 ^{###}	92.9
Vitamin E	5.5	3.6 [†]	<3 ^{###}	3.9
Thiamin	>97 [*]	>97 ^{†††}	84.5 ^{###}	96.3
Riboflavin	>97	>97	>97	>97
Niacin	93.8 ^{***}	69.9 ^{†††}	42.4 ^{###}	78.3
Vitamin B ₆	>97 ^{***}	82.3	79.3 ^{###}	90.9
Folate	92.2 ^{***}	72.6 ^{†††}	45.2 ^{###}	78.4
Vitamin B ₁₂	>97	>97	>97	>97
Iron	>97 ^{***}	65.5 ^{†††}	46.4 ^{###}	81.5
Magnesium	>97 [*]	>97 ^{†††}	33.5 ^{###}	85.0
Zinc	>97 ^{***}	86.9 ^{†††}	65.3 ^{###}	89.5
Calcium	>97	>97	>97	>97
Phosphorus	>97 [*]	>97	95.5 [#]	>97
Potassium	29.8 ^{**}	17.5 [†]	8.7 ^{###}	23.0
Dietary Fiber	32.4	26.5	22.9 [#]	29.3
Cholesterol	90.3	85.9	79.0 [#]	87.0
All DRI-Based Targets	<3	<3	<3	<3
Number of Weekly Menus	415	352	344	1,111

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: The DRI-based targets for nutrient content were developed by the Institute of Medicine (IOM 2010). Average weekly menus were not expected to meet these nutrient targets. However, it is expected that if school breakfasts were planned to meet the SBP nutrition standards, they would be consistent with most of these nutrient targets. Exceptions are vitamin E, potassium, linoleic acid, and alpha-linolenic acid.

^aThe standards (or targets) for breakfast are based on 21.5 percent of the daily school meal-target median intake for the age-grade group.

^bMean falls between specified minimums and maximums for grade group (school type).

Difference between elementary and middle schools is significantly different from zero at the *** 0.001 level, ** 0.01 level, or * 0.05 level.

Difference between middle and high schools is significantly different from zero at the ††† 0.001 level, †† 0.01 level, or † 0.05 level.

Difference between elementary and high schools is significantly different from zero at the ### 0.001 level, ## 0.01 level, or # 0.05 level.

DRI = Dietary Reference Intakes; IOM = Institute of Medicine; SBP = School Breakfast Program.

<3 and >97 = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 0 and 3 percent are displayed as <3 and flagged percentages between 97 and 100 percent are displayed as >97.

Table E.19. Percentage of Average Weekly Breakfast Menus That Were Consistent with Each and All of the DRI-Based Targets for Nutrient Content for SBP Breakfasts *Prepared*, by School Size

	Small (Fewer than 500 students)	Medium (500 to 999 students)	Large (1,000 or more students)	All Schools
DRI-Based Targets for Nutrient Content^a				
Percentage of Calories from Total Fat ^b	5.9	4.6	7.3	5.6
Linoleic Acid	49.8	47.3	45.2	48.2
Alpha-Linolenic Acid	65.9	69.8 [†]	59.2	66.6
Protein	73.2	69.1 ^{†††}	25.8 ^{###}	65.8
Vitamin A	>97	>97 ^{†††}	86.3 ^{###}	96.1
Vitamin C	93.0	93.6	90.2	92.9
Vitamin E	5.5	3.1 [^]	<3 ^{##}	3.9
Thiamin	>97	>97 ^{†††}	88.5 ^{###}	96.3
Riboflavin	>97	>97	>97	>97
Niacin	81.3	82.1 ^{†††}	54.0 ^{###}	78.3
Vitamin B ₆	92.1	91.5 [†]	84.4 [#]	90.9
Folate	80.5	82.1 ^{†††}	58.4 ^{###}	78.4
Vitamin B ₁₂	>97	>97	>97	>97
Iron	86.4	83.8 ^{†††}	54.3 ^{###}	81.5
Magnesium	88.2	89.6 ^{†††}	57.1 ^{###}	85.0
Zinc	92.3	91.1 ^{†††}	72.9 ^{###}	89.5
Calcium	>97	>97	>97	>97
Phosphorus	>97	>97	>97	>97
Potassium	29.6 [*]	18.8 [†]	10.7 ^{###}	23.0
Dietary Fiber	33.4	25.9	24.1	29.3
Cholesterol	83.9 [*]	91.7 [†]	84.2	87.0
All DRI-Based Targets	<3	<3	<3	<3
Number of Weekly Menus	394	455	262	1,111

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: The DRI-based targets for nutrient content were developed by the Institute of Medicine (IOM 2010). Average weekly menus were not expected to meet these nutrient targets. However, it is expected that if school breakfasts were planned to meet the SBP nutrition standards, they would be consistent with most of these nutrient targets. Exceptions are vitamin E, potassium, linoleic acid, and alpha-linolenic acid.

^aThe standards (or targets) for breakfast are based on 21.5 percent of the daily school meal-target median intake for the age-grade group.

^bMean falls between specified minimums and maximums for grade group (school type).

Difference between small and medium-sized schools is significantly different from zero at the * 0.05 level.

Difference between medium-sized and large schools is significantly different from zero at the ^{†††} 0.001 level or [†] 0.05 level.

Difference between large and small schools is significantly different from zero at the ^{###} 0.001 level, ^{##} 0.01 level, or [#] 0.05 level.

DRI = Dietary Reference Intakes; IOM = Institute of Medicine; SBP = School Breakfast Program.

[^] Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 0 and 3 percent are displayed as <3 and flagged percentages between 97 and 100 percent are displayed as >97.

Table E.20. Percentage of Average Weekly Breakfast Menus That Were Consistent with Each and All of the DRI-Based Targets for Nutrient Content for SBP Breakfasts Prepared, by Urbanicity

	Urban	Suburban	Rural	All Schools
DRI-Based Targets for Nutrient Content^a				
Percentage of Calories from Total Fat ^b	4.9 [^]	4.5	7.3	5.6
Linoleic Acid	38.7 [*]	52.6	49.2	48.2
Alpha-Linolenic Acid	62.6	68.4	67.2	66.6
Protein	66.6	66.7	64.2	65.8
Vitamin A	>97 ^{**}	95.0	95.9 [^]	96.1
Vitamin C	95.5 [^]	93.4	90.6	92.9
Vitamin E	5.9 [^]	3.9	<3	3.9
Thiamin	95.2 [^]	97.0	96.0 [^]	96.3
Riboflavin	>97	>97	>97	>97
Niacin	82.3	78.0	76.0	78.3
Vitamin B ₆	91.9	91.1	90.1	90.9
Folate	84.5 [*]	77.4	75.7 [#]	78.4
Vitamin B ₁₂	>97	>97	>97	>97
Iron	84.5	82.9	77.8 [#]	81.5
Magnesium	88.1	87.2 ^{††}	80.4 ^{##}	85.0
Zinc	91.9	88.4	89.2	89.5
Calcium	>97	>97	>97	>97
Phosphorus	>97	>97	>97	>97
Potassium	15.2 [*]	27.0	23.1	23.0
Dietary Fiber	24.0	32.3	29.1	29.3
Cholesterol	89.6	91.4 ^{††}	80.1	87.0
All DRI-Based Targets	<3	<3	<3	<3
Number of Weekly Menus	232	539	340	1,111

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: The DRI-based targets for nutrient content were developed by the Institute of Medicine (IOM 2010). Average weekly menus were not expected to meet these nutrient targets. However, it is expected that if school breakfasts were planned to meet the SBP nutrition standards, they would be consistent with most of these nutrient targets. Exceptions are vitamin E, potassium, linoleic acid, and alpha-linolenic acid.

^aThe standards (or targets) for breakfast are based on 21.5 percent of the daily school meal-target median intake for the age-grade group.

^bMean falls between specified minimums and maximums for grade group (school type).

Difference between urban and suburban schools is significantly different from zero at the *** 0.001 level, ** 0.01 level or * 0.05 level.

Difference between suburban and rural schools is significantly different from zero at the †† 0.01 level.

Difference between urban and rural schools is significantly different from zero at the ## 0.01 level or # 0.05 level.

DRI = Dietary Reference Intakes; IOM = Institute of Medicine; SBP = School Breakfast Program.

[^] Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 0 and 3 percent are displayed as <3 and flagged percentages between 97 and 100 percent are displayed as >97.

Table E.21. Percentage of Average Weekly Breakfast Menus That Were Consistent with Each and All of the DRI-Based Targets for Nutrient Content for SBP Breakfasts *Prepared*, by District Child Poverty Rate

	Lower (less than 20 percent)	Higher (20 percent or more)	All Schools
DRI-Based Targets for Nutrient Content^a			
Percentage of Calories from Total Fat ^b	4.7	6.5	5.6
Linoleic Acid	50.7	45.6	48.2
Alpha-Linolenic Acid	69.6	63.5	66.6
Protein	65.7	65.9	65.8
Vitamin A	96.8	95.3	96.1
Vitamin C	93.3	92.5	92.9
Vitamin E	3.6	4.3	3.9
Thiamin	>97**	94.2	96.3
Riboflavin	>97	>97	>97
Niacin	80.5	75.9	78.3
Vitamin B ₆	93.4**	88.2	90.9
Folate	80.7	76.0	78.4
Vitamin B ₁₂	>97	>97	>97
Iron	83.2	79.6	81.5
Magnesium	86.7	83.1	85.0
Zinc	92.0*	86.8	89.5
Calcium	>97	>97	>97
Phosphorus	>97	>97	>97
Potassium	27.6*	18.0	23.0
Dietary Fiber	34.2*	23.9	29.3
Cholesterol	86.9	87.2	87.0
All DRI-Based Targets	<3	<3	<3
Number of Weekly Menus	588	523	1,111

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: The DRI-based targets for nutrient content were developed by the Institute of Medicine (IOM 2010). Average weekly menus were not expected to meet these nutrient targets. However, it is expected that if school breakfasts were planned to meet the SBP nutrition standards, they would be consistent with most of these nutrient targets. Exceptions are vitamin E, potassium, linoleic acid, and alpha-linolenic acid. Data on child poverty rates were from the 2011 U.S. Census Bureau's Small Area Income and Poverty Estimates school district file.

^aThe standards (or targets) for breakfast are based on 21.5 percent of the daily school meal-target median intake for the age-grade group.

^bMean falls between specified minimums and maximums for grade group (school type).

Difference between lower and higher poverty schools is significantly different from zero at the *** 0.001 level, ** 0.01 level or * 0.05 level.

DRI = Dietary Reference Intakes; IOM = Institute of Medicine; SBP = School Breakfast Program.

<3 and >97 = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 0 and 3 percent are displayed as <3 and flagged percentages between 97 and 100 percent are displayed as >97.

Table E.22. Average Calorie and Nutrient Content of SBP Breakfasts *Prepared*, Relative to DRI-Based Targets for Nutrient Content

	Elementary Schools			Middle Schools			High Schools		
	Target	Mean	Percentage of Target	Target	Mean	Percentage of Target	Target	Mean	Percentage of Target
DRI-Based Targets for Nutrient Content^a									
Linoleic Acid (g)	2.2	2.3	104.7	2.5	2.7	108.1	3.0	2.8	93.3
Alpha-Linolenic Acid (g)	0.21	0.27	128.4	0.25	0.31	123.7	0.30	0.31	102.5
Protein (g)	10.2	16.7	163.9	21.6	18.0	83.3	21.8	18.6	85.3
Vitamin A (mcg RAE)	129	268	207.7	162	255	157.6	186	249	134.1
Vitamin C (mg)	16	39	245.7	20	42	209.4	26	42	160.4
Vitamin E (mg AT)	2.0	1.1	56.6	2.7	1.2	45.7	3.7	1.3	34.5
Thiamin (mg)	0.2	0.5	256.2	0.3	0.5	174.3	0.4	0.5	129.6
Riboflavin (mg)	0.31	0.91	293.3	0.41	0.91	221.6	0.45	0.90	201.0
Niacin (mg)	3.2	5.4	168.4	4.0	5.4	135.1	4.9	5.2	106.2
Vitamin B ₆ (mg)	0.3	0.6	204.1	0.4	0.6	148.6	0.4	0.6	146.4
Folate (mcg DFE)	91	180	197.5	114	168	147.6	138	161	116.4
Vitamin B ₁₂ (mcg)	0.8	2.2	271.5	0.9	2.0	227.6	1.1	2.0	179.8
Iron (mg)	2.3	4.9	211.9	3.5	4.6	132.7	4.0	4.5	111.5
Magnesium (mg)	49	86	176.5	66	92	139.2	99	94	94.9
Zinc (mg)	2.0	3.6	182.4	2.5	3.6	144.6	2.9	3.5	121.0
Calcium (mg)	223	474	212.4	296	489	165.3	323	498	154.2
Phosphorus (mg)	242	441	182.3	362	464	128.2	384	474	123.4
Potassium (mg)	909	863	94.9	1,023	900	88.0	1,169	917	78.4
Dietary Fiber (g)	5.7	5.3	93.0	6.3	5.6	88.2	7.2	5.9	82.0
Cholesterol (mg)	< 65	36	54.9	< 65	41	63.6	< 65	47	73.0
Number of Weekly Menus	415			352			344		

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: The DRI-based targets for nutrient content were developed by the Institute of Medicine (IOM 2010). Average weekly menus were not expected to meet these nutrient targets. However, it is expected that if school breakfasts were planned to meet the SBP nutrition standards, they would be consistent with most of these nutrient targets. Exceptions are vitamin E, potassium, linoleic acid, and alpha-linolenic acid.

^aThe targets for breakfast are based on 21.5 percent of the daily school meal-target median intake for the age-grade group.

AT= alpha-tocopherol; DFE = dietary folate equivalents; DRI = Dietary Reference Intakes; IOM = Institute of Medicine; RAE = retinol activity equivalents; SBP = School Breakfast Program.

Table E.23. Percentage of Weekly Menus That Were Consistent with Each and All of the DRI-Based Targets for Nutrient Content for SBP Breakfasts Served

	Elementary Schools	Middle Schools	High Schools	All Schools
DRI-Based Targets for Nutrient Content^a				
Percentage of Calories from Total Fat ^b	4.7**	13.5	13.3###	8.2
Linoleic Acid	41.9	42.4†††	25.3###	38.4
Alpha-Linolenic Acid	66.9	60.6†††	35.0###	58.8
Protein	95.3***	3.2	5.6###	59.1
Vitamin A	94.7***	67.7†††	42.0###	78.3
Vitamin C	94.7*	88.0†††	72.4###	88.6
Vitamin E	3.4†	<3	<3##	2.2
Thiamin	>97***	94.1†††	53.7###	88.8
Riboflavin	>97**	>97††	90.1###	97.3
Niacin	87.5***	51.2†††	22.0###	66.7
Vitamin B ₆	95.1***	58.4	56.9###	80.1
Folate	87.3***	49.5†††	24.9###	66.9
Vitamin B ₁₂	>97***	89.7†††	71.8###	90.7
Iron	96.5***	40.7†††	23.1###	70.4
Magnesium	>97***	73.3†††	7.7###	73.5
Zinc	92.6***	60.7†††	35.5###	74.4
Calcium	>97***	86.5††	74.3###	91.2
Phosphorus	>97***	60.8†	49.4###	81.1
Potassium	10.8**	4.5†	<3###	7.5
Dietary Fiber	19.1***	8.6†	3.7###	13.9
Cholesterol	92.1	89.0	82.4##	89.4
All DRI-Based Targets	<3	<3	<3	<3
Number of Weekly Menus	414	352	344	1,110

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: The DRI-based targets for nutrient content were developed by the Institute of Medicine (IOM 2010). Average weekly menus were not expected to meet these nutrient targets. However, it is expected that if school breakfasts were planned to meet the SBP nutrition standards, they would be consistent with most of these nutrient targets. Exceptions are vitamin E, potassium, linoleic acid, and alpha-linolenic acid.

^aThe targets for breakfast are based on 21.5 percent of the daily school meal-target median intake for the age-grade group.

^bMean falls between specified minimums and maximums for grade group (school type).

Difference between elementary and middle schools is significantly different from zero at the *** 0.001 level, ** 0.01 level, or * 0.05 level.

Difference between middle and high schools is significantly different from zero at the ††† 0.001 level, †† 0.01 level, or † 0.05 level.

Difference between elementary and high schools is significantly different from zero at the ### 0.001 level or ## 0.01 level.

DRI = Dietary Reference Intakes; IOM = Institute of Medicine; SBP = School Breakfast Program.

<3 and >97 = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 0 and 3 percent are displayed as <3 and flagged percentages between 97 and 100 percent are displayed as >97.

Table E.24. Percentage of Weekly Menus That Were Consistent with Each and All of the DRI-Based Targets for Nutrient Content for SBP Breakfasts Served, by School Size

	Small (Fewer than 500 students)	Medium (500 to 999 students)	Large (1,000 or more students)	All Schools
DRI-Based Targets for Nutrient Content^a				
Percentage of Calories from Total Fat ^b	8.0	6.8 [†]	13.4	8.2
Linoleic Acid	38.6	38.1	38.3	38.4
Alpha-Linolenic Acid	57.4	64.0 ^{†††}	47.5 [#]	58.8
Protein	64.7	65.2 ^{†††}	17.1 ^{###}	59.1
Vitamin A	84.3	80.5 ^{†††}	47.9 ^{###}	78.3
Vitamin C	88.7	90.7 ^{††}	81.6 [#]	88.6
Vitamin E	<3	<3	<3	2.2
Thiamin	92.6	90.9 ^{†††}	67.5 ^{###}	88.8
Riboflavin	>97	>97 ^{††}	89.7 ^{###}	97.3
Niacin	68.0	73.6 ^{†††}	38.9 ^{###}	66.7
Vitamin B ₆	83.8	81.4 ^{†††}	61.3 ^{###}	80.1
Folate	70.6	72.1 ^{†††}	35.2 ^{###}	66.9
Vitamin B ₁₂	94.0	92.1 ^{†††}	73.2 ^{###}	90.7
Iron	77.2	73.8 ^{†††}	32.7 ^{###}	70.4
Magnesium	77.2	81.2 ^{†††}	34.4 ^{###}	73.5
Zinc	79.2	78.1 ^{†††}	43.7 ^{###}	74.4
Calcium	94.6	91.3 ^{†††}	77.4 ^{###}	91.2
Phosphorus	87.4	81.9 ^{†††}	53.5 ^{###}	81.1
Potassium	10.0	5.9	<3 ^{##}	7.5
Dietary Fiber	13.9	15.2	9.6	13.9
Cholesterol	86.6 [*]	93.7 [†]	86.6	89.4
All DRI-Based Targets	<3	<3	<3	<3
Number of Weekly Menus	394	454	262	1,110

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: The DRI-based targets for nutrient content were developed by the Institute of Medicine (IOM 2010). Average weekly menus were not expected to meet these nutrient targets. However, it is expected that if school breakfasts were planned to meet the SBP nutrition standards, they would be consistent with most of these nutrient targets. Exceptions are vitamin E, potassium, linoleic acid, and alpha-linolenic acid.

^aThe targets for breakfast are based on 21.5 percent of the daily school meal-target median intake for the age-grade group.

^bMean falls between specified minimums and maximums for grade group (school type).

Difference between small and medium-sized schools is significantly different from zero at the * 0.05 level.

Difference between medium-sized and large schools is significantly different from zero at the ^{†††} 0.001 level, ^{††} 0.01 level, or [†] 0.05 level.

Difference between large and small schools is significantly different from zero at the ^{###} 0.001 level, ^{##} 0.01 level, or [#] 0.05 level.

DRI = Dietary Reference Intakes; IOM = Institute of Medicine; SBP = School Breakfast Program.

<3 and >97 = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 0 and 3 percent are displayed as <3 and flagged percentages between 97 and 100 percent are displayed as >97.

Table E.25. Percentage of Weekly Menus That Were Consistent with Each and All of the DRI-Based Targets for Nutrient Content for SBP Breakfasts Served, by Urbanicity

	Urban	Suburban	Rural	All Schools
DRI-Based Targets for Nutrient Content^a				
Percentage of Calories from Total Fat ^b	6.8	6.4	11.2	8.2
Linoleic Acid	35.2	37.7	41.3	38.4
Alpha-Linolenic Acid	58.1	61.0	56.6	58.8
Protein	62.0	58.1	58.4	59.1
Vitamin A	81.0	74.5	81.3	78.3
Vitamin C	91.1	90.0	85.3	88.6
Vitamin E	4.3 [^]	<3	<3	2.2
Thiamin	91.5	88.3	87.7	88.8
Riboflavin	96.8 [^]	96.1 [†]	>97	97.3
Niacin	68.7	63.9	68.7	66.7
Vitamin B ₆	83.6	77.8	80.6	80.1
Folate	75.0 ^{**}	63.7	65.4 [#]	66.9
Vitamin B ₁₂	93.7 [^]	86.7 [†]	93.6	90.7
Iron	73.1	69.8	69.4	70.4
Magnesium	75.3	74.1	71.7	73.5
Zinc	75.1	72.3	76.5	74.4
Calcium	91.7	88.7 [†]	93.8	91.2
Phosphorus	81.5	79.5	82.7	81.1
Potassium	7.2	6.4	9.0	7.5
Dietary Fiber	11.5	14.8	14.2	13.9
Cholesterol	92.0	92.7 [†]	83.8	89.4
All DRI-Based Targets	<3	<3	<3	<3
Number of Weekly Menus	231	539	340	1,110

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: The DRI-based targets for nutrient content were developed by the Institute of Medicine (IOM 2010). Average weekly menus were not expected to meet these nutrient targets. However, it is expected that if school breakfasts were planned to meet the SBP nutrition standards, they would be consistent with most of these nutrient targets. Exceptions are vitamin E, potassium, linoleic acid, and alpha-linolenic acid.

^aThe targets for breakfast are based on 21.5 percent of the daily school meal-target median intake for the age-grade group.

^bMean falls between specified minimums and maximums for grade group (school type).

Difference between urban and suburban schools is significantly different from zero at the ** 0.01 level or * 0.05 level.

Difference between suburban and rural schools is significantly different from zero at the [†] 0.05 level.

Difference between urban and rural schools is significantly different from zero at the [#] 0.05 level.

DRI = Dietary Reference Intakes; IOM = Institute of Medicine; SBP = School Breakfast Program.

[^] Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 0 and 3 percent are displayed as <3 and flagged percentages between 97 and 100 percent are displayed as >97.

Table E.26. Percentage of Weekly Menus That Were Consistent with Each and All of the DRI-Based Targets for Nutrient Content for SBP Breakfasts Served, by District Child Poverty Rate

	Lower (less than 20 percent)	Higher (20 percent or more)	All Schools
DRI-Based Targets for Nutrient Content^a			
Percentage of Calories from Total Fat ^b	7.1	9.3	8.2
Linoleic Acid	36.7	40.2	38.4
Alpha-Linolenic Acid	60.3	57.2	58.8
Protein	58.2	60.1	59.1
Vitamin A	79.5	77.1	78.3
Vitamin C	88.6	88.7	88.6
Vitamin E	<3	2.9	2.2
Thiamin	89.5	88.2	88.8
Riboflavin	>97	97.0	97.3
Niacin	67.1	66.2	66.7
Vitamin B ₆	81.9	78.2	80.1
Folate	67.3	66.4	66.9
Vitamin B ₁₂	91.5	89.8	90.7
Iron	70.4	70.5	70.4
Magnesium	75.1	71.8	73.5
Zinc	76.6	72.1	74.4
Calcium	92.6	89.6	91.2
Phosphorus	81.9	80.2	81.1
Potassium	7.8	7.1	7.5
Dietary Fiber	15.6	12.0	13.9
Cholesterol	88.2	90.7	89.4
All DRI-Based Targets	<3	<3	<3
Number of Weekly Menus	587	523	1,110

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: The DRI-based targets for nutrient content were developed by the Institute of Medicine (IOM 2010). Average weekly menus were not expected to meet these nutrient targets. However, it is expected that if school breakfasts were planned to meet the SBP nutrition standards, they would be consistent with most of these nutrient targets. Exceptions are vitamin E, potassium, linoleic acid, and alpha-linolenic acid. Data on child poverty rates were from the 2011 U.S. Census Bureau's Small Area Income and Poverty Estimates school district file. None of the differences between lower and higher poverty schools were statistically significant.

^aThe targets for breakfast are based on 21.5 percent of the daily school meal-target median intake for the age-grade group.

^bMean falls between specified minimums and maximums for grade group (school type).

DRI = Dietary Reference Intakes; IOM = Institute of Medicine; SBP = School Breakfast Program.

<3 and >97 = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 0 and 3 percent are displayed as <3 and flagged percentages between 97 and 100 percent are displayed as >97.

Table E.27. Average Calorie and Nutrient Content of SBP Breakfasts *Served*, Relative to DRI-Based Targets for Nutrient Content

	Elementary Schools			Middle Schools			High Schools		
	Target	Mean	Percentage of Target	Target	Mean	Percentage of Target	Target	Mean	Percentage of Target
DRI-Based Targets for Nutrient Content^a									
Linoleic Acid (g)	2.2	2.1	96.8	2.5	2.5	98.6	3.0	2.5	84.1
Alpha-Linolenic Acid (g)	0.21	0.25	118.5	0.25	0.28	111.8	0.30	0.28	92.0
Protein (g)	10.2	14.8	144.9	21.6	15.1	69.9	21.8	15.3	70.2
Vitamin A (mcg RAE)	129	225	174.6	162	193	118.9	186	184	99.0
Vitamin C (mg)	16	34	211.2	20	34	171.5	26	35	134.4
Vitamin E (mg AT)	2.0	1.0	49.8	2.7	1.0	38.4	3.7	1.1	29.1
Thiamin (mg)	0.2	0.4	221.0	0.3	0.4	142.0	0.4	0.4	105.5
Riboflavin (mg)	0.31	0.78	251.3	0.41	0.72	174.9	0.45	0.70	154.9
Niacin (mg)	3.2	4.6	143.6	4.0	4.4	109.1	4.9	4.2	86.0
Vitamin B ₆ (mg)	0.3	0.5	171.0	0.4	0.5	116.8	0.4	0.5	115.4
Folate (mcg DFE)	91	148	163.2	114	128	112.4	138	124	89.9
Vitamin B ₁₂ (mcg)	0.8	1.8	228.5	0.9	1.6	173.1	1.1	1.5	133.1
Iron (mg)	2.3	4.1	177.5	3.5	3.6	104.0	4.0	3.5	88.1
Magnesium (mg)	49	76	154.4	66	76	114.6	99	76	76.8
Zinc (mg)	2.0	3.1	154.5	2.5	2.9	114.1	2.9	2.7	94.2
Calcium (mg)	223	410	183.9	296	393	132.9	323	388	120.0
Phosphorus (mg)	242	386	159.6	362	381	105.2	384	379	98.7
Potassium (mg)	909	747	82.1	1,023	728	71.2	1,169	729	62.4
Dietary Fiber (g)	5.7	4.6	80.2	6.3	4.6	72.7	7.2	4.8	66.9
Cholesterol (mg)	< 65	33	50.7	< 65	38	58.3	< 65	43	66.6
Number of Weekly Menus	414			352			344		

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: The DRI-based targets for nutrient content were developed by the Institute of Medicine (IOM 2010). Average weekly menus were not expected to meet these nutrient targets. However, it is expected that if school breakfasts were planned to meet the SBP nutrition standards, they would be consistent with most of these nutrient targets. Exceptions are vitamin E, potassium, linoleic acid, and alpha-linolenic acid.

^aThe targets for breakfast are based on 21.5 percent of the daily school meal-target median intake for the age-grade group.

AT= alpha-tocopherol; DFE = dietary folate equivalents; DRI = Dietary Reference Intakes; IOM = Institute of Medicine; RAE = retinol activity equivalents; SBP = School Breakfast Program.

Table E.28. Average Calorie and Nutrient Content of SBP Breakfasts Prepared

	Elementary Schools	Middle Schools	High Schools	All Schools
Average Amount				
Calories	491 ^{***}	532	541 ^{###}	510
Macronutrients				
Total fat (g)	10 ^{***}	12	12 ^{###}	11
Saturated fat (g)	3 ^{***}	4	4 ^{###}	4
Monounsaturated fat (g)	3 ^{***}	4	4 ^{###}	3
Polyunsaturated fat (g)	3 ^{***}	3	3 ^{###}	3
Linoleic acid (g)	2 ^{***}	3	3 ^{###}	2
Alpha-linolenic acid (g)	0.3 ^{***}	0.3	0.3 ^{###}	0.3
Carbohydrate (g)	88 ^{**}	93	94 ^{###}	90
Protein (g)	17 ^{***}	18	19 ^{###}	17
Vitamins				
Vitamin A (mcg RAE)	268	255	249 [#]	262
Vitamin C (mg)	39	42	42	40
Vitamin D (mcg)	4.5	5.3	5.1	4.8
Vitamin E (mg AT)	1.1	1.2	1.3 [#]	1.2
Vitamin B ₆ (mg)	0.6	0.6	0.6	0.6
Vitamin B ₁₂ (mcg)	2.2 [*]	2.0	2.0 ^{###}	2.1
Folate (mcg DFE)	180	168	161	173
Niacin (mg)	5	5	5	5
Riboflavin (mg)	0.9	0.9	0.9	0.9
Thiamin (mg)	0.5	0.5	0.5	0.5
Minerals				
Calcium (mg)	474 [*]	489	498 [#]	482
Iron (mg)	4.9	4.6	4.5 [#]	4.7
Magnesium (mg)	86 ^{***}	92	94 ^{###}	89
Phosphorus (mg)	441 ^{***}	464	474 ^{###}	452
Potassium (mg)	863 ^{**}	900	917 ^{###}	881
Sodium (mg)	505 ^{***}	564	584 ^{###}	533
Zinc (mg)	3.6	3.6	3.5	3.6
Other Dietary Components				
Cholesterol (mg)	36 [*]	41 [†]	47 ^{###}	39
Dietary fiber (g)	5	6 [†]	6 ^{###}	5
Dietary fiber (g/1,000 calories)	11	10 [†]	11	11
Average Percentage of Calories from:				
Total Fat	17.7 ^{***}	19.3	19.5 ^{###}	18.4
Saturated Fat	6.2 ^{***}	6.8	7.0 ^{###}	6.5
Monounsaturated Fat	5.8 ^{***}	6.3	6.4 ^{###}	6.0
Polyunsaturated Fat	4.7 ^{***}	5.1	5.1 ^{###}	4.9
Linoleic Acid	4.1 ^{***}	4.5	4.6 ^{###}	4.3
Alpha-Linolenic Acid	0.5 ^{**}	0.5	0.5	0.5
Carbohydrate	71.9 ^{***}	70.1	69.8 ^{###}	71.1
Protein	13.8	13.8	14.0	13.9
Number of Schools	415	352	344	1,111

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Difference between elementary and middle schools is significantly different from zero at the *** 0.001 level, ** 0.01 level, or * 0.05 level.

Difference between middle and high schools is significantly different from zero at the † 0.05 level.

Difference between elementary and high schools is significantly different from zero at the ### 0.001 level, # 0.01 level, or # 0.05 level.

AT = alpha-tocopherol; DFE = dietary folate equivalents; RAE = retinol activity equivalents; SBP = School Breakfast Program.

Table E.29. Average Calorie and Nutrient Content of SBP Breakfasts Prepared, by School Size

	Small (Fewer than 500 students)	Medium (500 to 999 students)	Large (1,000 or more students)	All Schools
Average Amount				
Calories	521**	491+++	525	510
Macronutrients				
Total fat (g)	11	10+++	12	11
Saturated fat (g)	4	4++	4	4
Monounsaturated fat (g)	4	3+++	4	3
Polyunsaturated fat (g)	3	3+++	3###	3
Linoleic acid (g)	2	2+++	3###	2
Alpha-linolenic acid (g)	0.3	0.3++	0.3##	0.3
Carbohydrate (g)	93**	87+	92	90
Protein (g)	18**	17+++	18	17
Vitamins				
Vitamin A (mcg RAE)	271	256	244##	262
Vitamin C (mg)	43***	38	38##	40
Vitamin D (mcg)	4.5	4.9	5.4#	4.8
Vitamin E (mg AT)	1.3*	1.1	1.2	1.2
Vitamin B ₆ (mg)	0.6	0.6	0.6	0.6
Vitamin B ₁₂ (mcg)	2.2*	2.1†	2.0###	2.1
Folate (mcg DFE)	186	165†	149###	173
Niacin (mg)	6	5	5	5
Riboflavin (mg)	0.9*	0.9	0.9#	0.9
Thiamin (mg)	0.5**	0.5	0.5#	0.5
Minerals				
Calcium (mg)	493**	468†	485	482
Iron (mg)	5.0*	4.5	4.4##	4.7
Magnesium (mg)	91**	86+++	92	89
Phosphorus (mg)	462***	438+++	463	452
Potassium (mg)	901***	854++	893	881
Sodium (mg)	551**	503+++	558	533
Zinc (mg)	3.8	3.5	3.3##	3.6
Other Dietary Components				
Cholesterol (mg)	42*	36++	42	39
Dietary fiber (g)	6*	5†	6	5
Dietary fiber (g/1,000 calories)	11	11	11	11
Average Percentage of Calories from:				
Total Fat	18.3	18.2++	19.4##	18.4
Saturated Fat	6.5	6.5	6.7	6.5
Monounsaturated Fat	6.0	5.9†	6.3	6.0
Polyunsaturated Fat	4.7	4.9++	5.3###	4.9
Linoleic Acid	4.2	4.3+++	4.7###	4.3
Alpha-Linolenic Acid	0.5***	0.5	0.5###	0.5
Carbohydrate	71.3	71.3†	70.0#	71.1
Protein	13.9	13.8	13.8	13.9
Number of Schools	394	455	262	1,111

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Difference between small and medium-sized schools is significantly different from zero at the *** 0.001 level, ** 0.01 level, or * 0.05 level.

Difference between medium-sized and large schools is significantly different from zero at the +++ 0.001 level, ++ 0.01 level, or † 0.05 level.

Difference between large and small schools is significantly different from zero at the ### 0.001 level, ## 0.01 level, or # 0.05 level.

AT = alpha-tocopherol; DFE = dietary folate equivalents; RAE = retinol activity equivalents; SBP = School Breakfast Program.

Table E.30. Average Calorie and Nutrient Content of SBP Breakfasts Prepared, by Urbanicity

	Urban	Suburban	Rural	All Schools
Average Amount				
Calories	476***	517	522###	510
Macronutrients				
Total fat (g)	10*	10†	11###	11
Saturated fat (g)	3*	4†	4###	4
Monounsaturated fat (g)	3	3†	4##	3
Polyunsaturated fat (g)	3**	3	3##	3
Linoleic acid (g)	2**	3	3##	2
Alpha-linolenic acid (g)	0.3*	0.3	0.3	0.3
Carbohydrate (g)	85***	93	91##	90
Protein (g)	16*	17†	18###	17
Vitamins				
Vitamin A (mcg RAE)	258	261	265	262
Vitamin C (mg)	39	40	42	40
Vitamin D (mcg)	4.7	4.7	4.9	4.8
Vitamin E (mg AT)	1.2	1.2	1.2	1.2
Vitamin B ₆ (mg)	0.6	0.6	0.6	0.6
Vitamin B ₁₂ (mcg)	2.1	2.1	2.1	2.1
Folate (mcg DFE)	173	170	178	173
Niacin (mg)	5	5	6	5
Riboflavin (mg)	0.9	0.9	0.9	0.9
Thiamin (mg)	0.5*	0.5	0.5	0.5
Minerals				
Calcium (mg)	479	476	491	482
Iron (mg)	4.7	4.8	4.7	4.7
Magnesium (mg)	83***	90	91###	89
Phosphorus (mg)	437	452	463##	452
Potassium (mg)	852*	885	897#	881
Sodium (mg)	487*	526†	571###	533
Zinc (mg)	3.5	3.6	3.7	3.6
Other Dietary Components				
Cholesterol (mg)	36	37†	44#	39
Dietary fiber (g)	5*	6	5	5
Dietary fiber (g/1,000 calories)	11	11	11	11
Average Percentage of Calories from:				
Total Fat	18.1	17.9††	19.1#	18.4
Saturated Fat	6.3	6.3††	6.8#	6.5
Monounsaturated Fat	5.9	5.7†††	6.4#	6.0
Polyunsaturated Fat	4.8	4.9	4.9	4.9
Linoleic Acid	4.2	4.3	4.3	4.3
Alpha-Linolenic Acid	0.5	0.5	0.5	0.5
Carbohydrate	71.2	72.0†††	70.0	71.1
Protein	14.1**	13.5†††	14.1	13.9
Number of Schools	232	539	340	1,111

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Difference between urban and suburban schools is significantly different from zero at the *** 0.001 level, ** 0.01 level, or * 0.05 level.

Difference between suburban and rural schools is significantly different from zero at the ††† 0.001 level, †† 0.01 level, or † 0.05 level.

Difference between urban and rural schools is significantly different from zero at the ### 0.001 level, ## 0.01 level, or # 0.05 level.

AT = alpha-tocopherol; DFE = dietary folate equivalents; RAE = retinol activity equivalents; SBP = School Breakfast Program.

Table E.31. Average Calorie and Nutrient Content of SBP Breakfasts Prepared, by District Child Poverty Rate

	Lower (less than 20 percent)	Higher (20 percent or more)	All Schools
Average Amount			
Calories	527***	491	510
Macronutrients			
Total fat (g)	11	10	11
Saturated fat (g)	4	4	4
Monounsaturated fat (g)	4	3	3
Polyunsaturated fat (g)	3	3	3
Linoleic acid (g)	3	2	2
Alpha-linolenic acid (g)	0.3*	0.3	0.3
Carbohydrate (g)	94***	86	90
Protein (g)	18	17	17
Vitamins			
Vitamin A (mcg RAE)	266	257	262
Vitamin C (mg)	42*	39	40
Vitamin D (mcg)	4.9	4.6	4.8
Vitamin E (mg AT)	1.2	1.2	1.2
Vitamin B ₆ (mg)	0.6*	0.6	0.6
Vitamin B ₁₂ (mcg)	2.1	2.1	2.1
Folate (mcg DFE)	174	173	173
Niacin (mg)	5	5	5
Riboflavin (mg)	0.9	0.9	0.9
Thiamin (mg)	0.5	0.5	0.5
Minerals			
Calcium (mg)	491*	471	482
Iron (mg)	4.8	4.6	4.7
Magnesium (mg)	92***	86	89
Phosphorus (mg)	459*	445	452
Potassium (mg)	905***	856	881
Sodium (mg)	538	528	533
Zinc (mg)	3.7	3.5	3.6
Other Dietary Components			
Cholesterol (mg)	39	39	39
Dietary fiber (g)	6***	5	5
Dietary fiber (g/1,000 calories)	11*	10	11
Average Percentage of Calories from:			
Total Fat	18.2	18.6	18.4
Saturated Fat	6.4	6.6	6.5
Monounsaturated Fat	5.9	6.1	6.0
Polyunsaturated Fat	4.8	4.9	4.9
Linoleic Acid	4.3	4.3	4.3
Alpha-Linolenic Acid	0.5	0.5	0.5
Carbohydrate	71.7*	70.5	71.1
Protein	13.6***	14.2	13.9
Number of Schools	588	523	1,111

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Note: Data on child poverty rates were from the 2011 U.S. Census Bureau's Small Area Income and Poverty Estimates school district file.

Difference between lower and higher poverty schools is significantly different from zero at the *** 0.001 level or * 0.05 level.

AT = alpha-tocopherol; DFE = dietary folate equivalents; SBP = School Breakfast Program; RAE = retinol activity equivalents.

Table E.32. Average and Distribution of Calories and Nutrients in SBP Breakfasts *Prepared* in Elementary Schools

	Average	SE	Percentiles						
			5th	10th	25th	50th	75th	90th	95th
Calories	491	5.0	385	405	433	477	533	601	637
Macronutrients									
Total fat (g)	10	0.2	6	7	8	9	11	14	15
Saturated fat (g)	3	0.1	2	2	3	3	4	5	6
Monounsaturated fat (g)	3	0.1	2	2	2	3	4	5	5
Polyunsaturated fat (g)	3	0.0	1	2	2	2	3	4	4
Linoleic acid (g)	2	0.0	1	1	2	2	3	3	4
Alpha-linolenic acid (g)	0.3	0.01	0.1	0.2	0.2	0.3	0.3	0.4	0.4
Carbohydrate (g)	88	1.0	66	69	76	86	97	109	117
Protein (g)	17	0.2	13	14	15	16	18	20	21
Vitamins									
Vitamin A (mcg RAE)	268	4.6	181	191	214	254	303	356	409
Vitamin C (mg)	39	0.9	17	21	30	38	47	59	67
Vitamin D (mcg)	4.5	0.23	3.1	3.2	3.4	3.7	4.0	5.0	10.7
Vitamin E (mg AT)	1.1	0.04	0.6	0.7	0.8	1.0	1.3	1.6	2.0
Vitamin B ₆ (mg)	0.6	0.01	0.3	0.4	0.5	0.6	0.7	0.9	1.0
Vitamin B ₁₂ (mcg)	2.2	0.03	1.5	1.6	1.8	2.1	2.5	2.9	3.2
Folate (mcg)	125	3.3	64	74	89	115	143	183	226
Folate (mcg DFE)	180	5.4	83	95	123	163	206	281	346
Niacin (mg)	5	0.1	3	3	4	5	6	8	9
Riboflavin (mg)	0.9	0.01	0.7	0.7	0.8	0.9	1.0	1.1	1.2
Thiamin (mg)	0.5	0.01	0.4	0.4	0.4	0.5	0.6	0.7	0.7
Minerals									
Calcium (mg)	474	4.5	384	402	420	460	513	569	613
Iron (mg)	4.9	0.12	2.6	2.9	3.6	4.4	5.6	7.3	9.3
Magnesium (mg)	86	0.9	66	69	76	85	94	105	112
Phosphorus (mg)	441	3.6	361	375	399	433	476	514	546
Potassium (mg)	863	8.1	690	717	779	842	933	1,025	1,113
Sodium (mg)	505	8.3	340	364	408	473	571	677	738
Zinc (mg)	3.6	0.07	2.2	2.4	2.8	3.4	4.2	5.0	5.9
Other Dietary Components									
Cholesterol (mg)	36	1.4	13	15	20	29	44	64	84
Dietary fiber (g)	5	0.1	3	4	4	5	6	7	8

	Average	SE	Percentiles						
			5th	10th	25th	50th	75th	90th	95th
Percentage of Calories From:									
Total fat	17.7	0.20	12.6	13.6	15.5	17.1	19.8	22.2	23.9
Saturated fat	6.2	0.10	3.9	4.3	5.1	6.1	7.1	8.6	9.3
Monounsaturated fat	5.8	0.09	3.8	4.2	4.8	5.6	6.6	7.5	8.2
Polyunsaturated fat	4.7	0.07	3.0	3.3	3.9	4.6	5.3	6.0	6.5
Linoleic acid	4.1	0.06	2.6	2.9	3.5	4.1	4.7	5.4	5.9
Alpha-linolenic acid	0.5	0.01	0.3	0.3	0.4	0.5	0.6	0.7	0.7
Carbohydrate	71.9	0.29	63.3	65.1	68.7	72.4	75.2	77.7	79.3
Protein	13.8	0.09	11.4	12.0	12.8	13.7	14.7	15.8	16.8
Number of Schools	415								

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

AT = alpha-tocopherol; DFE = dietary folate equivalents; RAE = retinol activity equivalents; SBP = School Breakfast Program; SE = standard error.

Table E.33. Average and Distribution of Calories and Nutrients in SBP Breakfasts *Prepared* in Middle Schools

	Average	SE	Percentiles						
			5th	10th	25th	50th	75th	90th	95th
Calories	532	7.6	395	424	460	508	579	681	771
Macronutrients									
Total fat (g)	12	0.3	7	8	9	11	13	17	19
Saturated fat (g)	4	0.1	2	3	3	4	5	6	7
Monounsaturated fat (g)	4	0.1	2	2	3	3	4	6	7
Polyunsaturated fat (g)	3	0.1	2	2	2	3	3	4	5
Linoleic acid (g)	3	0.1	1	2	2	3	3	4	4
Alpha-linolenic acid (g)	0.3	0.01	0.2	0.2	0.2	0.3	0.3	0.4	0.5
Carbohydrate (g)	93	1.4	66	72	78	91	103	120	135
Protein (g)	18	0.2	14	15	16	17	19	22	24
Vitamins									
Vitamin A (mcg RAE)	255	6.0	166	178	199	234	292	358	407
Vitamin C (mg)	42	1.1	18	23	32	40	50	61	70
Vitamin D (mcg)	5.3	0.33	3.1	3.1	3.3	3.7	4.3	8.0	17.0
Vitamin E (mg AT)	1.2	0.05	0.7	0.8	0.9	1.1	1.3	1.8	2.4
Vitamin B ₆ (mg)	0.6	0.02	0.3	0.4	0.4	0.5	0.7	0.9	1.1
Vitamin B ₁₂ (mcg)	2.0	0.04	1.4	1.4	1.6	1.9	2.4	2.9	3.3
Folate (mcg)	120	5.1	59	69	82	100	141	186	218
Folate (mcg DFE)	168	8.5	71	85	109	136	205	275	338
Niacin (mg)	5	0.2	3	3	4	5	6	9	10
Riboflavin (mg)	0.9	0.02	0.7	0.7	0.8	0.9	1.0	1.2	1.2
Thiamin (mg)	0.5	0.01	0.4	0.4	0.4	0.5	0.6	0.7	0.8
Minerals									
Calcium (mg)	489	5.9	396	403	431	475	528	580	652
Iron (mg)	4.6	0.15	2.5	2.7	3.3	4.0	5.5	7.4	8.8
Magnesium (mg)	92	1.0	70	76	80	90	101	111	119
Phosphorus (mg)	464	4.9	380	396	420	447	496	546	592
Potassium (mg)	900	9.9	715	741	800	874	980	1,069	1,161
Sodium (mg)	564	12.0	380	398	446	540	643	780	850
Zinc (mg)	3.6	0.11	2.3	2.4	2.7	3.2	4.3	5.2	6.1
Other Dietary Components									
Cholesterol (mg)	41	1.8	17	19	24	34	52	74	87
Dietary fiber (g)	6	0.1	3	4	4	5	6	8	8

	Average	SE	Percentiles						
			5th	10th	25th	50th	75th	90th	95th
Percentage of Calories From:									
Total fat	19.3	0.27	14.2	15.1	16.7	18.8	21.5	24.1	25.4
Saturated fat	6.8	0.13	4.5	4.9	5.6	6.5	7.7	9.0	9.6
Monounsaturated fat	6.3	0.12	4.3	4.7	5.1	6.1	7.1	8.5	9.7
Polyunsaturated fat	5.1	0.07	3.4	3.8	4.3	5.0	5.9	6.4	7.0
Linoleic acid	4.5	0.07	3.0	3.2	3.8	4.4	5.2	5.7	6.2
Alpha-linolenic acid	0.5	0.01	0.3	0.4	0.4	0.5	0.6	0.7	0.8
Carbohydrate	70.1	0.37	61.5	63.5	67.0	70.5	73.9	75.3	77.1
Protein	13.8	0.12	10.9	11.7	12.6	13.6	15.2	15.9	16.8
Number of Schools	352								

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

AT = alpha-tocopherol; DFE = dietary folate equivalents; RAE = retinol activity equivalents; SBP = School Breakfast Program; SE = standard error.

Table E.34. Average and Distribution of Calories and Nutrients in SBP Breakfasts *Prepared* in High Schools

	Average	SE	Percentiles						
			5th	10th	25th	50th	75th	90th	95th
Calories	541	8.3	396	420	469	527	600	673	762
Macronutrients									
Total fat (g)	12	0.3	7	8	9	11	14	17	19
Saturated fat (g)	4	0.1	2	3	3	4	5	6	7
Monounsaturated fat (g)	4	0.1	2	2	3	4	5	6	7
Polyunsaturated fat (g)	3	0.1	2	2	2	3	4	5	5
Linoleic acid (g)	3	0.1	1	2	2	3	3	4	5
Alpha-linolenic acid (g)	0.3	0.01	0.2	0.2	0.2	0.3	0.4	0.4	0.5
Carbohydrate (g)	94	1.5	67	71	79	93	105	122	133
Protein (g)	19	0.3	14	15	16	18	20	23	25
Vitamins									
Vitamin A (mcg RAE)	249	5.8	168	176	199	233	279	338	378
Vitamin C (mg)	42	1.3	16	22	31	39	50	62	71
Vitamin D (mcg)	5.1	0.28	3.0	3.1	3.3	3.7	4.2	6.4	13.8
Vitamin E (mg AT)	1.3	0.06	0.7	0.7	0.9	1.1	1.4	2.0	2.6
Vitamin B ₆ (mg)	0.6	0.02	0.3	0.3	0.4	0.5	0.7	0.9	1.0
Vitamin B ₁₂ (mcg)	2.0	0.04	1.3	1.4	1.6	1.8	2.3	2.7	3.0
Folate (mcg)	116	5.0	65	69	82	104	135	169	205
Folate (mcg DFE)	161	8.4	78	86	106	133	188	243	305
Niacin (mg)	5	0.2	3	3	4	5	6	8	9
Riboflavin (mg)	0.9	0.02	0.7	0.7	0.8	0.9	1.0	1.1	1.2
Thiamin (mg)	0.5	0.01	0.3	0.4	0.4	0.5	0.6	0.7	0.8
Minerals									
Calcium (mg)	498	7.4	395	408	431	487	535	623	673
Iron (mg)	4.5	0.14	2.6	2.8	3.2	3.9	5.3	6.8	7.9
Magnesium (mg)	94	1.1	72	77	84	92	102	113	120
Phosphorus (mg)	474	5.5	384	397	423	459	509	577	602
Potassium (mg)	917	11.1	724	752	808	893	1,003	1,142	1,191
Sodium (mg)	584	14.3	371	403	452	542	677	805	952
Zinc (mg)	3.5	0.11	2.2	2.4	2.7	3.1	3.9	5.0	5.7
Other Dietary Components									
Cholesterol (mg)	47	2.4	13	18	27	39	62	99	109
Dietary fiber (g)	6	0.1	4	4	5	6	7	8	9

	Average	SE	Percentiles						
			5th	10th	25th	50th	75th	90th	95th
Percentage of Calories From:									
Total fat	19.5	0.29	13.4	14.9	17.0	19.4	22.0	24.5	25.7
Saturated fat	7.0	0.12	4.3	5.0	5.8	6.8	7.9	9.3	9.9
Monounsaturated fat	6.4	0.14	3.7	4.4	5.1	6.2	7.4	8.8	9.6
Polyunsaturated fat	5.1	0.08	3.2	3.6	4.4	5.1	5.9	6.8	7.1
Linoleic acid	4.6	0.08	2.8	3.1	3.9	4.5	5.2	6.0	6.3
Alpha-linolenic acid	0.5	0.01	0.3	0.3	0.4	0.5	0.6	0.7	0.7
Carbohydrate	69.8	0.40	60.9	62.8	66.1	69.9	73.5	76.0	78.0
Protein	14.0	0.13	11.5	11.8	12.7	13.8	15.2	16.3	17.3
Number of Schools	344								

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

AT = alpha-tocopherol; DFE = dietary folate equivalents; RAE = retinol activity equivalents; SBP = School Breakfast Program; SE = standard error.

Table E.35. Average and Distribution of Calories and Nutrients in SBP Breakfasts *Prepared in All Schools*

	Average	SE	Percentiles						
			5th	10th	25th	50th	75th	90th	95th
Calories	510	4.8	387	408	442	494	562	630	684
Macronutrients									
Total fat (g)	11	0.2	6	7	8	10	12	15	17
Saturated fat (g)	4	0.1	2	2	3	4	4	6	6
Monounsaturated fat (g)	3	0.1	2	2	3	3	4	5	6
Polyunsaturated fat (g)	3	0.0	1	2	2	3	3	4	5
Linoleic acid (g)	2	0.0	1	2	2	2	3	4	4
Alpha-linolenic acid (g)	0.3	0.00	0.2	0.2	0.2	0.3	0.3	0.4	0.5
Carbohydrate (g)	90	0.9	66	70	78	88	100	113	124
Protein (g)	17	0.2	13	14	15	17	19	21	23
Vitamins									
Vitamin A (mcg RAE)	262	4.0	172	184	207	247	296	351	406
Vitamin C (mg)	40	0.8	17	22	30	39	48	61	68
Vitamin D (mcg)	4.8	0.18	3.1	3.2	3.4	3.7	4.1	5.6	13.0
Vitamin E (mg AT)	1.2	0.03	0.6	0.7	0.9	1.0	1.3	1.8	2.2
Vitamin B ₆ (mg)	0.6	0.01	0.3	0.4	0.4	0.6	0.7	0.9	1.0
Vitamin B ₁₂ (mcg)	2.1	0.03	1.4	1.5	1.7	2.0	2.4	2.9	3.2
Folate (mcg)	122	3.3	63	72	86	110	142	182	221
Folate (mcg DFE)	173	5.5	78	91	113	152	205	277	330
Niacin (mg)	5	0.1	3	3	4	5	6	8	9
Riboflavin (mg)	0.9	0.01	0.7	0.7	0.8	0.9	1.0	1.1	1.2
Thiamin (mg)	0.5	0.01	0.4	0.4	0.4	0.5	0.6	0.7	0.8
Minerals									
Calcium (mg)	482	4.1	388	404	423	467	525	583	625
Iron (mg)	4.7	0.10	2.6	2.8	3.4	4.3	5.6	7.1	8.8
Magnesium (mg)	89	0.8	67	71	79	88	98	109	117
Phosphorus (mg)	452	3.3	363	380	409	442	486	539	578
Potassium (mg)	881	6.8	702	728	787	856	957	1,061	1,151
Sodium (mg)	533	8.4	347	374	424	502	616	730	800
Zinc (mg)	3.6	0.07	2.3	2.4	2.8	3.3	4.2	5.0	6.0
Other Dietary Components									
Cholesterol (mg)	39	1.3	13	16	22	32	49	72	97
Dietary fiber (g)	5	0.1	3	4	4	5	6	8	8

			Percentiles						
	Average	SE	5th	10th	25th	50th	75th	90th	95th
Percentage of Calories From:									
Total fat	18.4	0.17	13.0	14.1	16.0	18.0	20.4	23.4	25.1
Saturated fat	6.5	0.08	4.1	4.5	5.3	6.3	7.4	8.9	9.6
Monounsaturated fat	6.0	0.08	3.9	4.3	4.9	5.9	6.8	8.1	9.0
Polyunsaturated fat	4.9	0.05	3.1	3.4	4.1	4.8	5.6	6.3	6.9
Linoleic acid	4.3	0.05	2.7	3.0	3.6	4.2	4.9	5.6	6.2
Alpha-linolenic acid	0.5	0.01	0.3	0.3	0.4	0.5	0.6	0.7	0.7
Carbohydrate	71.1	0.24	62.0	64.3	68.1	71.9	74.4	77.2	78.7
Protein	13.9	0.08	11.3	11.9	12.8	13.7	14.9	16.0	16.9
Number of Schools	1,111								

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

AT = alpha-tocopherol; DFE = dietary folate equivalents; RAE = retinol activity equivalents; SBP = School Breakfast Program; SE = standard error.

Table E.36. Average and Distribution of Nutrients per 1,000 Calories in SBP Breakfasts Prepared in Elementary Schools

	DRI-Based Target per 1,000 Calories	Average per 1,000 Calories	SE	Percentiles per 1,000 Calories						
				5th	10th	25th	50th	75th	90th	95th
Linoleic Acid (g)	5.2	5	0.1	3	3	4	5	5	6	7
Alpha-Linolenic Acid (g)	0.49	0.5	0.01	0.3	0.4	0.4	0.5	0.6	0.7	0.8
Protein (g)	24.0	34	0.2	28	29	32	34	37	39	42
Vitamin A (mcg RAE)	304	552	8.8	366	391	449	541	618	728	780
Vitamin C (mg)	38	80	1.6	37	48	63	78	94	114	124
Vitamin D (mcg)	n.a. ^a	9	0.4	6	6	7	8	9	10	22
Vitamin E (mg AT)	4.7	2.3	0.07	1.5	1.6	1.8	2.1	2.4	3.2	4.0
Thiamin (mg)	0.5	1.0	0.01	0.8	0.8	0.9	1.0	1.2	1.3	1.4
Riboflavin (mg)	0.7	1.9	0.02	1.5	1.5	1.7	1.9	2.0	2.2	2.3
Niacin (mg)	7.5	10.9	0.20	6.6	7.3	8.6	10.7	12.6	15.3	16.7
Vitamin B ₆ (mg)	0.7	1.2	0.02	0.7	0.8	1.0	1.2	1.5	1.8	1.9
Folate (mcg DFE)	214	365	9.8	179	199	259	331	437	566	666
Vitamin B ₁₂ (mcg)	1.9	4.5	0.07	3.0	3.2	3.7	4.4	5.2	5.8	6.5
Iron (mg)	5.4	9.9	0.22	5.6	6.4	7.6	9.2	11.2	14.1	16.8
Magnesium (mg)	115	177	1.1	149	155	164	177	187	198	206
Zinc (mg)	4.7	7.5	0.13	4.9	5.2	6.0	7.1	8.7	10.1	10.9
Calcium (mg)	525	979	9.6	769	804	868	962	1,063	1,197	1,281
Phosphorus (mg)	569	908	6.2	760	787	832	904	973	1,047	1,066
Potassium (mg)	2,139	1,771	10.7	1,486	1,541	1,660	1,765	1,883	2,004	2,067
Sodium (mg)	≤ 1,021	1,025	12.6	776	815	897	1,006	1,120	1,216	1,340
Dietary Fiber (g)	13.4	11	0.1	8	8	9	11	12	13	14
Cholesterol (mg)	< 153	72	2.6	26	32	44	60	90	131	161
Number of Schools		415								

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: The DRI-based targets for nutrient content were developed by the Institute of Medicine (IOM 2010). Schools were not expected to meet these nutrient targets. However, it is expected that if school breakfasts were planned to meet the SBP nutrition standards, they would satisfy most of these nutrient targets. Exceptions are vitamin E, potassium, linoleic acid, and alpha-linolenic acid. The DRI-based nutrient targets shown in this table are per 1,000 calories.

^aThe IOM did not include a DRI-based nutrient target for vitamin D.

AT = alpha-tocopherol; DFE = dietary folate equivalents; DRI = Dietary Reference Intakes; IOM = Institute of Medicine; n.a. = not applicable; RAE = retinol activity equivalents; SBP = School Breakfast Program; SE = standard error.

Table E.37. Average and Distribution of Nutrients per 1,000 Calories in SBP Breakfasts *Prepared* in Middle Schools

	DRI-Based Target per 1,000 Calories	Average per 1,000 Calories	SE	Percentiles per 1,000 Calories						
				5th	10th	25th	50th	75th	90th	95th
Linoleic Acid (g)	5.3	5	0.1	3	4	4	5	6	7	7
Alpha-Linolenic Acid (g)	0.53	0.6	0.01	0.4	0.4	0.5	0.6	0.7	0.8	0.8
Protein (g)	45.5	34	0.3	27	29	31	34	37	40	42
Vitamin A (mcg RAE)	341	486	9.1	320	345	389	464	556	668	730
Vitamin C (mg)	42	79	1.8	37	47	64	77	93	113	126
Vitamin D (mcg)	n.a. ^a	10.0	0.62	5.4	5.9	6.4	7.3	8.6	16.9	31.0
Vitamin E (mg AT)	5.7	2.3	0.06	1.6	1.6	1.8	2.0	2.5	3.3	4.1
Thiamin (mg)	0.6	1.0	0.01	0.7	0.8	0.9	0.9	1.1	1.2	1.3
Riboflavin (mg)	0.9	1.7	0.02	1.4	1.4	1.5	1.7	1.9	2.1	2.1
Niacin (mg)	8.4	10.0	0.25	5.8	6.4	7.8	9.5	11.6	14.1	16.3
Vitamin B ₆ (mg)	0.8	1.1	0.02	0.7	0.7	0.8	1.1	1.3	1.5	1.7
Folate (mcg DFE)	240	312	11.6	147	169	215	272	375	504	579
Vitamin B ₁₂ (mcg)	1.9	3.9	0.07	2.6	2.7	3.2	3.7	4.5	5.2	5.8
Iron (mg)	7.4	8.7	0.24	5.1	5.6	6.5	7.8	10.0	13.7	14.7
Magnesium (mg)	139	175	1.2	148	150	164	175	186	196	200
Zinc (mg)	5.3	6.8	0.15	4.7	4.9	5.4	6.3	7.8	9.4	10.2
Calcium (mg)	623	939	11.3	701	752	829	921	1,034	1,137	1,250
Phosphorus (mg)	762	886	6.9	714	755	817	879	947	1,024	1,074
Potassium (mg)	2,154	1,715	14.3	1,373	1,462	1,608	1,708	1,841	1,948	2,058
Sodium (mg)	≤ 996	1,058	12.9	783	850	942	1,038	1,146	1,290	1,371
Dietary Fiber (g)	13.3	10	0.1	7	8	9	10	12	13	14
Cholesterol (mg)	< 137	77	2.9	32	38	48	67	92	129	155
Number of Schools		352								

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: The DRI-based targets for nutrient content were developed by the Institute of Medicine (IOM 2010). Schools were not expected to meet these nutrient targets. However, it is expected that if school breakfasts were planned to meet the SBP nutrition standards, they would satisfy most of these nutrient targets. Exceptions are vitamin E, potassium, linoleic acid, and alpha-linolenic acid. The DRI-based nutrient targets shown in this table are per 1,000 calories.

^aThe IOM did not include a DRI-based nutrient target for vitamin D.

AT = alpha-tocopherol; DFE = dietary folate equivalents; DRI = Dietary Reference Intakes; IOM = Institute of Medicine; n.a. = not applicable; RAE = retinol activity equivalents; SBP = School Breakfast Program; SE = standard error.

Table E.38. Average and Distribution of Nutrients per 1,000 Calories in SBP Breakfasts *Prepared* in High Schools

	DRI-Based Target per 1,000 Calories	Average per 1,000 Calories	SE	Percentiles per 1,000 Calories						
				5th	10th	25th	50th	75th	90th	95th
Linoleic Acid (g)	5.7	5	0.1	3	3	4	5	6	7	7
Alpha-Linolenic Acid (g)	0.57	0.6	0.01	0.3	0.4	0.5	0.6	0.6	0.8	0.8
Protein (g)	41.5	35	0.3	28	30	32	34	38	41	43
Vitamin A (mcg RAE)	354	468	8.6	313	345	379	434	553	624	676
Vitamin C (mg)	50	78	2.1	32	44	58	75	92	112	127
Vitamin D (mcg)	n.a. ^a	9.5	0.49	5.3	5.6	6.2	7.0	8.1	11.9	26.4
Vitamin E (mg AT)	7.0	2.3	0.08	1.4	1.6	1.8	2.1	2.6	3.2	4.3
Thiamin (mg)	0.8	1.0	0.01	0.8	0.8	0.8	0.9	1.0	1.2	1.3
Riboflavin (mg)	0.9	1.7	0.02	1.4	1.4	1.5	1.6	1.8	2.0	2.1
Niacin (mg)	9.3	9.5	0.25	6.0	6.5	7.5	8.9	10.6	13.3	14.9
Vitamin B ₆ (mg)	0.8	1.1	0.03	0.6	0.7	0.8	1.0	1.3	1.6	1.8
Folate (mcg DFE)	263	295	11.2	158	175	208	257	338	446	570
Vitamin B ₁₂ (mcg)	2.1	3.7	0.07	2.4	2.6	3.0	3.6	4.3	4.9	5.3
Iron (mg)	7.6	8.2	0.18	5.2	5.8	6.5	7.5	9.3	11.4	13.6
Magnesium (mg)	189	176	1.4	142	152	162	176	187	199	203
Zinc (mg)	5.5	6.5	0.13	4.5	4.8	5.3	6.1	7.3	8.6	9.8
Calcium (mg)	615	938	12.5	689	736	823	916	1,037	1,166	1,234
Phosphorus (mg)	731	890	8.0	722	761	821	875	972	1,036	1,073
Potassium (mg)	2,227	1,718	15.1	1,400	1,496	1,560	1,714	1,849	1,961	2,059
Sodium (mg)	≤ 943	1,074	14.4	769	844	923	1,061	1,182	1,347	1,430
Dietary Fiber (g)	13.7	11	0.2	7	8	9	11	12	14	15
Cholesterol (mg)	< 124	87	3.7	25	36	52	77	107	159	178
Number of Schools		344								

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: The DRI-based targets for nutrient content were developed by the Institute of Medicine (IOM 2010). Schools were not expected to meet these nutrient targets. However, it is expected that if school breakfasts were planned to meet the SBP nutrition standards, they would satisfy most of these nutrient targets. Exceptions are vitamin E, potassium, linoleic acid, and alpha-linolenic acid. The DRI-based nutrient targets shown in this table are per 1,000 calories.

^aThe IOM did not include a DRI-based nutrient target for vitamin D.

AT = alpha-tocopherol; DFE = dietary folate equivalents; DRI = Dietary Reference Intakes; IOM = Institute of Medicine; n.a. = not applicable; RAE = retinol activity equivalents; SBP = School Breakfast Program; SE = standard error.

Table E.39. Average and Distribution of Nutrients per 1,000 Calories in SBP Breakfasts Prepared in All Schools

	DRI-Based Target per 1,000 Calories			Average per 1,000 Calories	SE	Percentiles per 1,000 Calories						
	Elementary Schools	Middle Schools	High Schools			5th	10th	25th	50th	75th	90th	95th
Linoleic Acid (g)	5.2	5.3	5.7	5	0.1	3	3	4	5	6	6	7
Alpha-Linolenic Acid (g)	0.49	0.53	0.57	0.6	0.01	0.3	0.4	0.5	0.6	0.6	0.8	0.8
Protein (g)	24.0	45.5	41.5	34	0.2	28	29	32	34	37	40	42
Vitamin A (mcg RAE)	304	341	354	521	7.0	337	366	417	502	597	700	754
Vitamin C (mg)	38	42	50	79	1.4	36	47	63	77	94	113	125
Vitamin D (mcg)	n.a. ^a	n.a. ^a	n.a. ^a	9.5	0.35	5.6	5.9	6.6	7.5	8.7	11.6	25.1
Vitamin E (mg AT)	4.7	5.7	7.0	2.3	0.05	1.5	1.6	1.8	2.1	2.5	3.2	4.0
Thiamin (mg)	0.5	0.6	0.8	1.0	0.01	0.8	0.8	0.9	1.0	1.1	1.3	1.4
Riboflavin (mg)	0.7	0.9	0.9	1.8	0.01	1.4	1.5	1.6	1.8	2.0	2.1	2.3
Niacin (mg)	7.5	8.4	9.3	10.5	0.17	6.3	6.9	8.1	10.1	12.1	14.8	16.4
Vitamin B ₆ (mg)	0.7	0.8	0.8	1.2	0.02	0.7	0.8	0.9	1.1	1.4	1.7	1.9
Folate (mcg DFE)	214	240	263	340	8.4	166	185	228	302	417	548	638
Vitamin B ₁₂ (mcg)	1.9	1.9	2.1	4.2	0.05	2.6	2.9	3.4	4.1	4.8	5.7	6.2
Iron (mg)	5.4	7.4	7.6	9.3	0.17	5.4	6.0	7.0	8.7	10.9	13.7	15.7
Magnesium (mg)	115	139	189	176	0.9	148	154	164	177	187	198	204
Zinc (mg)	4.7	5.3	5.5	7.1	0.11	4.7	5.0	5.6	6.7	8.1	9.8	10.8
Calcium (mg)	525	623	615	963	8.2	725	779	848	949	1,053	1,183	1,274
Phosphorus (mg)	569	762	731	900	5.0	751	776	827	892	964	1,046	1,071
Potassium (mg)	2,139	2,154	2,227	1,749	9.6	1,448	1,522	1,619	1,748	1,872	1,999	2,065
Sodium (mg)	≤ 1,021	≤ 996	≤ 943	1,042	10.2	780	827	910	1,019	1,140	1,286	1,371
Dietary Fiber (g)	13.4	13.3	13.7	11	0.1	8	8	9	11	12	14	14
Cholesterol (mg)	< 153	< 137	< 124	76	2.2	27	34	46	64	95	142	168
Number of Schools	1,111											

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: The DRI-based targets for nutrient content were developed by the Institute of Medicine (IOM 2010). Schools were not expected to meet these nutrient targets. However, it is expected that if school breakfasts were planned to meet the SBP nutrition standards, they would satisfy most of these nutrient targets. Exceptions are vitamin E, potassium, linoleic acid, and alpha-linolenic acid. The DRI-based nutrient targets shown in this table are per 1,000 calories.

^aThe IOM did not include a DRI-based nutrient target for vitamin D.

AT = alpha-tocopherol; DFE = dietary folate equivalents; DRI = Dietary Reference Intakes; IOM = Institute of Medicine; n.a. = not applicable; RAE = retinol activity equivalents; SBP = School Breakfast Program; SE = standard error.

Table E.40. Average Calorie and Nutrient Content of SBP Breakfasts Served

	Elementary Schools	Middle Schools	High Schools	All Schools
Average Amount				
Calories	432*	447	449#	438
Macronutrients				
Total fat (g)	9***	10	11###	10
Saturated fat (g)	3***	4	4###	3
Monounsaturated fat (g)	3***	3	3###	3
Polyunsaturated fat (g)	2***	3	3###	3
Linoleic acid (g)	2***	2	3###	2
Alpha-linolenic acid (g)	0.2***	0.3	0.3##	0.3
Carbohydrate (g)	77	77	77	77
Protein (g)	15	15	15	15
Vitamins				
Vitamin A (mcg RAE)	225***	193	184###	210
Vitamin C (mg)	34	34	35	34
Vitamin D (mcg)	3.9	4.5	4.3	4.1
Vitamin E (mg AT)	1.0	1.0	1.1	1.0
Vitamin B ₆ (mg)	0.5**	0.5	0.5#	0.5
Vitamin B ₁₂ (mcg)	1.8***	1.6	1.5###	1.7
Folate (mcg DFE)	148**	128	124###	139
Niacin (mg)	5	4	4#	4
Riboflavin (mg)	0.8***	0.7	0.7###	0.8
Thiamin (mg)	0.4	0.4	0.4#	0.4
Minerals				
Calcium (mg)	410*	393	388#	402
Iron (mg)	4.1**	3.6	3.5###	3.9
Magnesium (mg)	76	76	76	76
Phosphorus (mg)	386	381	379	384
Potassium (mg)	747	728	729	740
Sodium (mg)	454***	494	507###	473
Zinc (mg)	3.1**	2.9	2.7###	3.0
Other Dietary Components				
Cholesterol (mg)	33*	38	43###	36
Dietary fiber (g)	5	5	5#	5
Dietary fiber (g/1,000 calories)	11	10†	11	11
Average Percentage of Calories from:				
Total Fat	18.3***	20.5	20.8###	19.2
Saturated Fat	6.4***	7.1	7.3###	6.7
Monounsaturated Fat	6.0***	6.8	6.8###	6.3
Polyunsaturated Fat	4.9***	5.6	5.6###	5.2
Linoleic Acid	4.4***	4.9	5.0###	4.6
Alpha-Linolenic Acid	0.5***	0.6	0.5#	0.5
Carbohydrate	71.1***	68.8	68.5###	70.1
Protein	13.8	13.6	13.7	13.8
Number of Schools	414	352	344	1,110

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Difference between elementary and middle schools is significantly different from zero at the *** 0.001 level, ** 0.01 level, or * 0.05 level.

Difference between middle and high schools is significantly different from zero at the † 0.05 level.

Difference between elementary and high schools is significantly different from zero at the ### 0.001 level, ## 0.01 level, or # 0.05 level.

AT = alpha-tocopherol; DFE = dietary folate equivalents; RAE = retinol activity equivalents; SBP = School Breakfast Program.

Table E.41. Average Calorie and Nutrient Content of SBP Breakfasts Served, by School Size

	Small (Fewer than 500 students)	Medium (500 to 999 students)	Large (1,000 or more students)	All Schools
Average Amount				
Calories	443	431	444	438
Macronutrients				
Total fat (g)	10	9 ^{†††}	10 [#]	10
Saturated fat (g)	3	3 ^{††}	3	3
Monounsaturated fat (g)	3	3 ^{††}	3	3
Polyunsaturated fat (g)	3	3 ^{†††}	3 ^{###}	3
Linoleic acid (g)	2	2 ^{†††}	3 ^{###}	2
Alpha-linolenic acid (g)	0.3	0.3 [†]	0.3 ^{###}	0.3
Carbohydrate (g)	77	76	76	77
Protein (g)	15 [*]	15	15	15
Vitamins				
Vitamin A (mcg RAE)	218	211 ^{†††}	180 ^{###}	210
Vitamin C (mg)	35	33	33	34
Vitamin D (mcg)	3.9	4.3	4.5	4.1
Vitamin E (mg AT)	1.0	1.0	1.0	1.0
Vitamin B ₆ (mg)	0.5	0.5	0.5	0.5
Vitamin B ₁₂ (mcg)	1.8	1.7 ^{†††}	1.4 ^{###}	1.7
Folate (mcg DFE)	144	140 ^{††}	120 ^{###}	139
Niacin (mg)	4	4	4	4
Riboflavin (mg)	0.8	0.7 ^{†††}	0.7 ^{###}	0.8
Thiamin (mg)	0.4	0.4	0.4 [#]	0.4
Minerals				
Calcium (mg)	414 [*]	395 [†]	378 ^{###}	402
Iron (mg)	4.0	3.9 [†]	3.5 ^{##}	3.9
Magnesium (mg)	77	74	75	76
Phosphorus (mg)	394 [*]	375	371 [#]	384
Potassium (mg)	757 [*]	725	716 [#]	740
Sodium (mg)	482 [*]	454 ^{††}	494	473
Zinc (mg)	3.1	3.0 ^{††}	2.7 ^{###}	3.0
Other Dietary Components				
Cholesterol (mg)	38	33 ^{††}	39	36
Dietary fiber (g)	5	5	5	5
Dietary fiber (g/1,000 calories)	10	11	11	11
Average Percentage of Calories from:				
Total Fat	19.1	19.0 ^{†††}	20.7 ^{###}	19.2
Saturated Fat	6.7	6.6 [†]	7.0 [#]	6.7
Monounsaturated Fat	6.3	6.2 ^{†††}	6.8 [#]	6.3
Polyunsaturated Fat	5.0	5.2 ^{†††}	5.8 ^{###}	5.2
Linoleic Acid	4.5	4.6 ^{†††}	5.1 ^{###}	4.6
Alpha-Linolenic Acid	0.5 ^{***}	0.5	0.6 ^{###}	0.5
Carbohydrate	70.2	70.5 ^{††}	68.8 [#]	70.1
Protein	14.0	13.6	13.4 ^{##}	13.8
Number of Schools	394	454	262	1,110

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Difference between small and medium-sized schools is significantly different from zero at the *** 0.001 level or * 0.05 level.

Difference between medium-sized and large schools is significantly different from zero at the ⁺⁺⁺ 0.001 level, ⁺⁺ 0.01 level, or ⁺ 0.05 level.

Difference between large and small schools is significantly different from zero at the ^{###} 0.001 level, ^{##} 0.01 level, or [#] 0.05 level.

AT = alpha-tocopherol; DFE = dietary folate equivalents; RAE = retinol activity equivalents; SBP = School Breakfast Program.

Table E.42. Average Calorie and Nutrient Content of SBP Breakfasts Served, by Urbanicity

	Urban	Suburban	Rural	All Schools
Average Amount				
Calories	422	434 [†]	454 ^{##}	438
Macronutrients				
Total fat (g)	9	9 ^{†††}	10 ^{###}	10
Saturated fat (g)	3	3 ^{†††}	4 ^{###}	3
Monounsaturated fat (g)	3	3 ^{†††}	3 ^{##}	3
Polyunsaturated fat (g)	2	3	3	3
Linoleic acid (g)	2	2	2	2
Alpha-linolenic acid (g)	0.3	0.3	0.3	0.3
Carbohydrate (g)	74	77	78	77
Protein (g)	14	14 ^{†††}	16 ^{###}	15
Vitamins				
Vitamin A (mcg RAE)	216	203	216	210
Vitamin C (mg)	34	33	36	34
Vitamin D (mcg)	4.0	4.0	4.3	4.1
Vitamin E (mg AT)	1.1	1.0	1.0	1.0
Vitamin B ₆ (mg)	0.5 [*]	0.5	0.5	0.5
Vitamin B ₁₂ (mcg)	1.8 [*]	1.6	1.7	1.7
Folate (mcg DFE)	151 [*]	132	141	139
Niacin (mg)	5	4	5	4
Riboflavin (mg)	0.8	0.7 [†]	0.8	0.8
Thiamin (mg)	0.4	0.4	0.4	0.4
Minerals				
Calcium (mg)	405	388 ^{††}	417	402
Iron (mg)	4.1	3.8	3.8	3.9
Magnesium (mg)	72	75 [†]	79 ^{###}	76
Phosphorus (mg)	376	374 ^{††}	400 [#]	384
Potassium (mg)	724	724 ^{††}	769 [#]	740
Sodium (mg)	445	458 ^{†††}	508 ^{###}	473
Zinc (mg)	3.0	2.8 [†]	3.1	3.0
Other Dietary Components				
Cholesterol (mg)	34	34 [†]	41 [#]	36
Dietary fiber (g)	5	5	5	5
Dietary fiber (g/1,000 calories)	11	11	10	11
Average Percentage of Calories from:				
Total Fat	19.0	18.8 ^{††}	20.0 [#]	19.2
Saturated Fat	6.5	6.5 ^{††}	7.0 [#]	6.7
Monounsaturated Fat	6.3	6.0 ^{†††}	6.7	6.3
Polyunsaturated Fat	5.2	5.2	5.2	5.2
Linoleic Acid	4.6	4.6	4.6	4.6
Alpha-Linolenic Acid	0.5	0.5	0.5	0.5
Carbohydrate	70.4	71.0 ^{†††}	69.0 [#]	70.1
Protein	13.8	13.4 ^{†††}	14.2	13.8
Number of Schools	231	539	340	1,110

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Difference between urban and suburban schools is significantly different from zero at the * 0.05 level.

Difference between suburban and rural schools is significantly different from zero at the ††† 0.001 level, †† 0.01 level, or † 0.05 level.

Difference between urban and rural schools is significantly different from zero at the ### 0.001 level, ## 0.01 level, or # 0.05 level.

AT = alpha-tocopherol; DFE = dietary folate equivalents; RAE = retinol activity equivalents; SBP = School Breakfast Program.

Table E.43. Average Calorie and Nutrient Content of SBP Breakfasts Served, by District Child Poverty Rate

	Lower (less than 20 percent)	Higher (20 percent or more)	All Schools
Average Amount			
Calories	443	433	438
Macronutrients			
Total fat (g)	9	10	10
Saturated fat (g)	3	3	3
Monounsaturated fat (g)	3	3	3
Polyunsaturated fat (g)	3	3	3
Linoleic acid (g)	2	2	2
Alpha-linolenic acid (g)	0.3	0.3	0.3
Carbohydrate (g)	78*	75	77
Protein (g)	15	15	15
Vitamins			
Vitamin A (mcg RAE)	209	212	210
Vitamin C (mg)	34	34	34
Vitamin D (mcg)	4.3	3.9	4.1
Vitamin E (mg AT)	1.0	1.0	1.0
Vitamin B ₆ (mg)	0.5	0.5	0.5
Vitamin B ₁₂ (mcg)	1.7	1.7	1.7
Folate (mcg DFE)	134	145	139
Niacin (mg)	4	5	4
Riboflavin (mg)	0.8	0.7	0.8
Thiamin (mg)	0.4	0.4	0.4
Minerals			
Calcium (mg)	407	397	402
Iron (mg)	3.8	4.0	3.9
Magnesium (mg)	77*	74	76
Phosphorus (mg)	386	381	384
Potassium (mg)	749	729	740
Sodium (mg)	468	478	473
Zinc (mg)	3.0	3.0	3.0
Other Dietary Components			
Cholesterol (mg)	36	37	36
Dietary fiber (g)	5	5	5
Dietary fiber (g/1,000 calories)	11	10	11
Average Percentage of Calories from:			
Total Fat	18.9	19.6	19.2
Saturated Fat	6.6	6.8	6.7
Monounsaturated Fat	6.2	6.5	6.3
Polyunsaturated Fat	5.1	5.3	5.2
Linoleic Acid	4.5	4.7	4.6
Alpha-Linolenic Acid	0.5	0.5	0.5
Carbohydrate	70.6*	69.6	70.1
Protein	13.7	13.9	13.8
Number of Schools	587	523	1,110

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Note: Data on child poverty rates were from the 2011 U.S. Census Bureau's Small Area Income and Poverty Estimates school district file.

Difference between lower and higher poverty schools is significantly different from zero at the * 0.05 level.

AT = alpha-tocopherol; DFE = dietary folate equivalents; SBP = School Breakfast Program; RAE = retinol activity equivalents.

Table E.44. Average and Distribution of Calories and Nutrients in SBP Breakfasts Served in Elementary Schools

	Average	SE	Percentiles						
			5th	10th	25th	50th	75th	90th	95th
Calories	432	4.0	334	353	385	432	466	516	557
Macronutrients									
Total fat (g)	9	0.1	6	6	7	9	10	12	13
Saturated fat (g)	3	0.1	2	2	2	3	4	4	5
Monounsaturated fat (g)	3	0.1	2	2	2	3	3	4	5
Polyunsaturated fat (g)	2	0.0	1	2	2	2	3	3	4
Linoleic acid (g)	2	0.0	1	1	2	2	3	3	3
Alpha-linolenic acid (g)	0.2	0.00	0.1	0.2	0.2	0.2	0.3	0.3	0.4
Carbohydrate (g)	77	0.8	58	61	68	75	85	92	99
Protein (g)	15	0.2	10	11	13	15	16	18	19
Vitamins									
Vitamin A (mcg RAE)	225	4.2	124	145	183	217	262	310	333
Vitamin C (mg)	34	0.7	15	19	26	33	40	50	56
Vitamin D (mcg)	3.9	0.22	1.8	2.3	2.8	3.3	3.6	4.3	10.5
Vitamin E (mg AT)	1.0	0.03	0.6	0.6	0.7	0.9	1.1	1.4	1.7
Vitamin B ₆ (mg)	0.5	0.01	0.3	0.3	0.4	0.5	0.6	0.8	0.9
Vitamin B ₁₂ (mcg)	1.8	0.03	1.0	1.2	1.5	1.8	2.1	2.5	2.7
Folate (mcg)	104	2.5	58	67	80	95	119	155	180
Folate (mcg DFE)	148	4.3	72	86	106	132	170	235	276
Niacin (mg)	5	0.1	3	3	4	4	5	7	7
Riboflavin (mg)	0.8	0.01	0.5	0.6	0.7	0.8	0.9	1.0	1.0
Thiamin (mg)	0.4	0.01	0.3	0.3	0.4	0.4	0.5	0.6	0.6
Minerals									
Calcium (mg)	410	4.7	278	316	368	407	458	509	537
Iron (mg)	4.1	0.10	2.4	2.7	3.2	3.8	4.5	5.6	6.8
Magnesium (mg)	76	0.8	52	59	66	75	84	92	95
Phosphorus (mg)	386	4.0	274	290	349	388	428	462	482
Potassium (mg)	747	8.3	509	570	661	744	824	911	954
Sodium (mg)	454	7.3	308	329	372	431	505	611	660
Zinc (mg)	3.1	0.06	1.9	2.1	2.5	2.9	3.6	4.2	4.6
Other Dietary Components									
Cholesterol (mg)	33	1.3	12	14	19	28	40	59	77
Dietary fiber (g)	5	0.1	3	3	4	4	5	6	6

	Average	SE	Percentiles						
			5th	10th	25th	50th	75th	90th	95th
Percentage of Calories From:									
Total fat	18.3	0.21	13.0	13.9	16.1	17.9	20.3	22.9	24.7
Saturated fat	6.4	0.10	4.2	4.5	5.3	6.2	7.3	8.6	9.4
Monounsaturated fat	6.0	0.09	3.9	4.3	5.0	5.9	6.9	7.8	8.6
Polyunsaturated fat	4.9	0.07	3.1	3.4	4.1	4.9	5.7	6.7	7.3
Linoleic acid	4.4	0.07	2.7	3.0	3.7	4.3	5.0	5.9	6.4
Alpha-linolenic acid	0.5	0.01	0.3	0.4	0.4	0.5	0.6	0.7	0.8
Carbohydrate	71.1	0.30	62.8	64.3	68.2	71.5	74.3	77.1	78.6
Protein	13.8	0.10	11.0	11.7	12.8	13.7	14.8	16.1	16.8
Number of Schools	414								

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

AT = alpha-tocopherol; DFE = dietary folate equivalents; RAE = retinol activity equivalents; SBP = School Breakfast Program; SE = standard error.

Table E.45. Average and Distribution of Calories and Nutrients in SBP Breakfasts Served in Middle Schools

	Average	SE	Percentiles						
			5th	10th	25th	50th	75th	90th	95th
Calories	447	5.2	333	366	394	434	481	547	594
Macronutrients									
Total fat (g)	10	0.2	6	7	8	10	12	14	16
Saturated fat (g)	4	0.1	2	2	3	3	4	5	5
Monounsaturated fat (g)	3	0.1	2	2	3	3	4	5	6
Polyunsaturated fat (g)	3	0.1	2	2	2	3	3	4	4
Linoleic acid (g)	2	0.0	1	2	2	2	3	3	4
Alpha-linolenic acid (g)	0.3	0.01	0.2	0.2	0.2	0.3	0.3	0.4	0.4
Carbohydrate (g)	77	0.9	56	62	68	74	84	94	99
Protein (g)	15	0.2	10	11	13	15	17	19	21
Vitamins									
Vitamin A (mcg RAE)	193	4.8	85	107	147	184	237	283	308
Vitamin C (mg)	34	0.9	15	19	27	33	40	48	54
Vitamin D (mcg)	4.5	0.34	1.4	1.9	2.6	3.2	3.8	7.3	16.5
Vitamin E (mg AT)	1.0	0.03	0.6	0.7	0.8	0.9	1.1	1.5	2.0
Vitamin B ₆ (mg)	0.5	0.01	0.2	0.3	0.3	0.4	0.6	0.7	0.8
Vitamin B ₁₂ (mcg)	1.6	0.04	0.7	0.9	1.2	1.5	1.9	2.3	2.5
Folate (mcg)	93	2.7	50	56	67	84	108	141	161
Folate (mcg DFE)	128	4.6	63	71	90	113	149	204	243
Niacin (mg)	4	0.1	2	3	3	4	5	6	7
Riboflavin (mg)	0.7	0.01	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Thiamin (mg)	0.4	0.01	0.3	0.3	0.4	0.4	0.5	0.6	0.6
Minerals									
Calcium (mg)	393	6.3	240	267	338	390	453	506	535
Iron (mg)	3.6	0.10	2.2	2.4	2.8	3.3	4.1	5.4	6.2
Magnesium (mg)	76	0.9	53	60	66	75	84	92	100
Phosphorus (mg)	381	5.2	248	278	328	386	431	485	506
Potassium (mg)	728	10.1	493	540	631	716	814	914	989
Sodium (mg)	494	9.1	323	356	398	475	557	671	719
Zinc (mg)	2.9	0.07	1.7	1.8	2.2	2.7	3.3	4.1	4.6
Other Dietary Components									
Cholesterol (mg)	38	1.7	14	16	22	32	47	67	82
Dietary fiber (g)	5	0.1	3	3	4	4	5	6	7

	Average	SE	Percentiles						
			5th	10th	25th	50th	75th	90th	95th
Percentage of Calories From:									
Total fat	20.5	0.27	14.5	15.4	18.0	20.3	22.9	25.6	26.5
Saturated fat	7.1	0.12	4.7	5.0	5.9	6.8	8.0	9.4	9.8
Monounsaturated fat	6.8	0.12	4.3	4.8	5.6	6.5	7.8	9.0	9.7
Polyunsaturated fat	5.6	0.08	3.4	3.9	4.7	5.5	6.5	7.3	7.7
Linoleic acid	4.9	0.08	3.0	3.4	4.1	4.9	5.8	6.5	6.9
Alpha-linolenic acid	0.6	0.01	0.3	0.4	0.5	0.5	0.6	0.8	0.9
Carbohydrate	68.8	0.37	59.9	61.8	65.5	69.4	72.5	74.8	76.7
Protein	13.6	0.13	10.5	11.1	12.3	13.8	14.9	16.1	16.8
Number of Schools	352								

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

AT = alpha-tocopherol; DFE = dietary folate equivalents; RAE = retinol activity equivalents; SBP = School Breakfast Program; SE = standard error.

Table E.46. Average and Distribution of Calories and Nutrients in SBP Breakfasts Served in High Schools

	Average	SE	Percentiles						
			5th	10th	25th	50th	75th	90th	95th
Calories	449	6.7	329	358	397	442	493	548	614
Macronutrients									
Total fat (g)	11	0.3	6	7	8	10	13	15	16
Saturated fat (g)	4	0.1	2	2	3	3	4	5	6
Monounsaturated fat (g)	3	0.1	2	2	3	3	4	5	6
Polyunsaturated fat (g)	3	0.1	2	2	2	3	3	4	5
Linoleic acid (g)	3	0.1	1	2	2	2	3	4	4
Alpha-linolenic acid (g)	0.3	0.01	0.1	0.2	0.2	0.3	0.3	0.4	0.4
Carbohydrate (g)	77	1.1	55	59	67	75	85	95	100
Protein (g)	15	0.3	9	11	13	15	18	20	22
Vitamins									
Vitamin A (mcg RAE)	184	5.3	85	102	135	170	224	284	325
Vitamin C (mg)	35	1.1	14	19	24	33	44	55	58
Vitamin D (mcg)	4.3	0.32	1.4	1.6	2.2	3.0	3.7	5.8	13.7
Vitamin E (mg AT)	1.1	0.04	0.6	0.7	0.8	1.0	1.2	1.7	2.0
Vitamin B ₆ (mg)	0.5	0.01	0.2	0.3	0.3	0.4	0.5	0.7	0.8
Vitamin B ₁₂ (mcg)	1.5	0.04	0.7	0.8	1.1	1.4	1.8	2.2	2.3
Folate (mcg)	91	2.5	55	58	68	82	104	138	162
Folate (mcg DFE)	124	4.0	67	74	89	108	137	198	236
Niacin (mg)	4	0.1	2	3	3	4	5	6	7
Riboflavin (mg)	0.7	0.01	0.4	0.4	0.6	0.7	0.8	0.9	1.0
Thiamin (mg)	0.4	0.01	0.3	0.3	0.4	0.4	0.5	0.6	0.6
Minerals									
Calcium (mg)	388	9.6	216	246	320	383	445	508	546
Iron (mg)	3.5	0.08	2.2	2.4	2.7	3.2	4.0	5.1	5.9
Magnesium (mg)	76	1.2	52	56	67	75	85	95	103
Phosphorus (mg)	379	7.3	218	248	321	380	440	492	534
Potassium (mg)	729	13.2	448	512	616	725	822	974	1,003
Sodium (mg)	507	10.9	307	343	393	475	605	724	750
Zinc (mg)	2.7	0.06	1.6	1.8	2.2	2.6	3.1	3.7	4.4
Other Dietary Components									
Cholesterol (mg)	43	2.3	11	16	24	38	51	90	106
Dietary fiber (g)	5	0.1	3	3	4	5	6	7	7

	Average	SE	Percentiles						
			5th	10th	25th	50th	75th	90th	95th
Percentage of Calories From:									
Total fat	20.8	0.28	14.4	15.8	18.1	20.7	23.2	25.8	27.8
Saturated fat	7.3	0.13	4.5	5.0	6.0	7.2	8.3	9.5	10.3
Monounsaturated fat	6.8	0.13	3.9	4.7	5.5	6.7	8.1	9.0	9.8
Polyunsaturated fat	5.6	0.10	3.4	3.9	4.7	5.6	6.5	7.6	8.2
Linoleic acid	5.0	0.09	2.9	3.4	4.1	4.9	5.8	6.7	7.3
Alpha-linolenic acid	0.5	0.01	0.3	0.4	0.4	0.5	0.7	0.7	0.8
Carbohydrate	68.5	0.38	59.0	62.0	65.0	68.6	71.8	75.7	77.2
Protein	13.7	0.15	10.1	11.0	12.3	13.6	15.1	16.5	17.3
Number of Schools	344								

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

AT = alpha-tocopherol; DFE = dietary folate equivalents; RAE = retinol activity equivalents; SBP = School Breakfast Program; SE = standard error.

Table E.47. Average and Distribution of Calories and Nutrients in SBP Breakfasts Served in All Schools

	Average	SE	Percentiles						
			5th	10th	25th	50th	75th	90th	95th
Calories	438	3.5	334	355	390	434	474	531	565
Macronutrients									
Total fat (g)	10	0.1	6	7	8	9	11	13	15
Saturated fat (g)	3	0.1	2	2	3	3	4	5	5
Monounsaturated fat (g)	3	0.1	2	2	2	3	4	5	5
Polyunsaturated fat (g)	3	0.0	1	2	2	2	3	4	4
Linoleic acid (g)	2	0.0	1	1	2	2	3	3	4
Alpha-linolenic acid (g)	0.3	0.00	0.1	0.2	0.2	0.2	0.3	0.4	0.4
Carbohydrate (g)	77	0.6	56	61	68	75	85	94	100
Protein (g)	15	0.2	10	11	13	15	17	19	20
Vitamins									
Vitamin A (mcg RAE)	210	3.5	106	126	167	205	247	301	328
Vitamin C (mg)	34	0.6	15	19	26	33	40	50	57
Vitamin D (mcg)	4.1	0.18	1.6	2.0	2.7	3.2	3.7	5.0	11.3
Vitamin E (mg AT)	1.0	0.03	0.6	0.7	0.8	0.9	1.1	1.5	1.9
Vitamin B ₆ (mg)	0.5	0.01	0.3	0.3	0.4	0.5	0.6	0.7	0.8
Vitamin B ₁₂ (mcg)	1.7	0.03	0.8	1.0	1.4	1.7	2.0	2.4	2.6
Folate (mcg)	99	2.0	55	62	75	91	114	147	177
Folate (mcg DFE)	139	3.3	71	78	98	123	163	224	265
Niacin (mg)	4	0.1	3	3	3	4	5	7	7
Riboflavin (mg)	0.8	0.01	0.5	0.5	0.6	0.8	0.8	1.0	1.0
Thiamin (mg)	0.4	0.00	0.3	0.3	0.4	0.4	0.5	0.6	0.6
Minerals									
Calcium (mg)	402	4.7	247	290	353	404	453	510	539
Iron (mg)	3.9	0.07	2.3	2.5	2.9	3.6	4.4	5.6	6.7
Magnesium (mg)	76	0.7	53	59	66	75	84	93	99
Phosphorus (mg)	384	3.7	259	285	338	387	429	469	506
Potassium (mg)	740	7.2	495	545	642	740	823	928	984
Sodium (mg)	473	6.6	315	337	382	449	531	652	704
Zinc (mg)	3.0	0.05	1.7	2.0	2.4	2.8	3.4	4.1	4.6
Other Dietary Components									
Cholesterol (mg)	36	1.2	11	14	20	29	45	65	87
Dietary fiber (g)	5	0.1	3	3	4	4	5	6	7

			Percentiles						
	Average	SE	5th	10th	25th	50th	75th	90th	95th
Percentage of Calories From:									
Total fat	19.2	0.18	13.5	14.4	16.7	18.9	21.7	24.4	26.1
Saturated fat	6.7	0.08	4.2	4.7	5.5	6.5	7.7	9.1	9.7
Monounsaturated fat	6.3	0.08	4.0	4.5	5.2	6.2	7.3	8.5	9.2
Polyunsaturated fat	5.2	0.06	3.2	3.6	4.3	5.1	6.0	7.0	7.5
Linoleic acid	4.6	0.05	2.8	3.1	3.8	4.5	5.3	6.2	6.8
Alpha-linolenic acid	0.5	0.01	0.3	0.4	0.4	0.5	0.6	0.7	0.8
Carbohydrate	70.1	0.25	61.1	63.3	66.8	70.8	73.7	76.7	78.0
Protein	13.8	0.09	10.8	11.4	12.6	13.7	14.9	16.1	16.9
Number of Schools	1,110								

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

AT = alpha-tocopherol; DFE = dietary folate equivalents; RAE = retinol activity equivalents; SBP = School Breakfast Program; SE = standard error.

Table E.48. Average and Distribution of Nutrients per 1,000 Calories in SBP Breakfasts Served in Elementary Schools

	DRI-Based Target per 1,000 Calories	Average per 1,000 Calories	SE	Percentiles per 1,000 Calories						
				5th	10th	25th	50th	75th	90th	95th
Linoleic Acid (g)	5.2	5	0.1	3	3	4	5	6	7	7
Alpha-Linolenic Acid (g)	0.49	0.6	0.01	0.4	0.4	0.5	0.6	0.7	0.8	0.9
Protein (g)	24.0	34	0.3	27	29	32	34	37	40	42
Vitamin A (mcg RAE)	304	525	9.2	329	354	423	510	596	687	784
Vitamin C (mg)	38	79	1.6	36	48	62	77	94	110	119
Vitamin D (mcg)	n.a. ^a	9.1	0.47	4.6	5.7	6.5	7.5	8.7	10.4	21.5
Vitamin E (mg AT)	4.7	2.3	0.08	1.4	1.6	1.8	2.1	2.4	3.0	3.7
Thiamin (mg)	0.5	1.0	0.01	0.8	0.8	0.9	1.0	1.1	1.2	1.4
Riboflavin (mg)	0.7	1.8	0.02	1.4	1.5	1.6	1.8	2.0	2.2	2.3
Niacin (mg)	7.5	10.7	0.19	7.0	7.5	8.4	10.2	12.2	14.9	15.9
Vitamin B ₆ (mg)	0.7	1.2	0.02	0.7	0.8	0.9	1.1	1.4	1.7	1.9
Folate (mcg DFE)	214	346	9.4	177	201	248	320	412	540	599
Vitamin B ₁₂ (mcg)	1.9	4.3	0.07	2.4	2.9	3.5	4.2	4.9	5.6	6.4
Iron (mg)	5.4	9.5	0.22	5.8	6.5	7.4	8.9	10.6	13.1	14.9
Magnesium (mg)	115	175	1.2	142	149	164	176	187	199	206
Zinc (mg)	4.7	7.2	0.13	4.6	5.1	5.9	6.9	8.2	9.6	10.6
Calcium (mg)	525	957	10.1	718	768	838	942	1,055	1,177	1,277
Phosphorus (mg)	569	899	6.8	724	760	831	894	966	1,046	1,085
Potassium (mg)	2,139	1,731	11.1	1,397	1,460	1,612	1,739	1,854	1,986	2,039
Sodium (mg)	≤ 1,021	1,049	13.1	777	841	907	1,031	1,134	1,270	1,369
Dietary Fiber (g)	13.4	11	0.1	7	8	9	10	12	13	14
Cholesterol (mg)	< 153	76	2.8	28	34	45	64	93	144	171
Number of Schools		414								

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: The DRI-based targets for nutrient content were developed by the Institute of Medicine (IOM 2010). Schools were not expected to meet these nutrient targets. However, it is expected that if school breakfasts were planned to meet the SBP nutrition standards, they would satisfy most of these nutrient targets. Exceptions are vitamin E, potassium, linoleic acid, and alpha-linolenic acid. The DRI-based nutrient targets shown in this table are per 1,000 calories.

^aThe IOM did not include a DRI-based nutrient target for vitamin D.

AT = alpha-tocopherol; DFE = dietary folate equivalents; DRI = Dietary Reference Intakes; IOM = Institute of Medicine; n.a. = not applicable; RAE = retinol activity equivalents; SBP = School Breakfast Program; SE = standard error.

Table E.49. Average and Distribution of Nutrients per 1,000 Calories in SBP Breakfasts Served in Middle Schools

	DRI-Based Target per 1,000 Calories	Average per 1,000 Calories	SE	Percentiles per 1,000 Calories						
				5th	10th	25th	50th	75th	90th	95th
Linoleic Acid (g)	5.3	6	0.1	3	4	5	5	6	7	8
Alpha-Linolenic Acid (g)	0.53	0.6	0.01	0.4	0.4	0.5	0.6	0.7	0.9	1.0
Protein (g)	45.5	34	0.3	26	28	30	34	37	40	42
Vitamin A (mcg RAE)	341	434	10.0	213	252	335	408	530	633	693
Vitamin C (mg)	42	78	2.0	33	42	61	76	93	109	126
Vitamin D (mcg)	n.a. ^a	9.9	0.74	3.7	4.5	5.8	7.1	8.4	16.2	32.9
Vitamin E (mg AT)	5.7	2.3	0.05	1.6	1.7	1.9	2.1	2.5	3.2	3.8
Thiamin (mg)	0.6	1.0	0.01	0.7	0.8	0.8	0.9	1.1	1.2	1.3
Riboflavin (mg)	0.9	1.6	0.02	1.2	1.3	1.4	1.6	1.8	2.0	2.1
Niacin (mg)	8.4	9.8	0.21	6.1	6.4	7.8	9.3	11.4	13.2	15.8
Vitamin B ₆ (mg)	0.8	1.0	0.02	0.6	0.7	0.8	1.0	1.2	1.5	1.7
Folate (mcg DFE)	240	289	9.5	147	166	206	253	340	486	543
Vitamin B ₁₂ (mcg)	1.9	3.5	0.08	1.8	2.1	2.8	3.4	4.3	5.0	5.6
Iron (mg)	7.4	8.2	0.22	5.3	5.5	6.4	7.5	9.2	12.2	14.1
Magnesium (mg)	139	170	1.3	134	143	157	170	185	193	199
Zinc (mg)	5.3	6.4	0.14	4.1	4.5	5.1	5.9	7.2	9.3	9.6
Calcium (mg)	623	886	12.1	599	655	755	875	1,004	1,115	1,220
Phosphorus (mg)	762	856	8.1	633	696	778	859	934	1,025	1,069
Potassium (mg)	2,154	1,634	15.1	1,260	1,342	1,470	1,631	1,788	1,917	1,993
Sodium (mg)	≤ 996	1,105	13.9	822	873	971	1,091	1,202	1,351	1,464
Dietary Fiber (g)	13.3	10	0.1	7	8	9	10	11	13	14
Cholesterol (mg)	< 137	84	3.3	31	38	52	71	104	147	175
Number of Schools		352								

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: The DRI-based targets for nutrient content were developed by the Institute of Medicine (IOM 2010). Schools were not expected to meet these nutrient targets. However, it is expected that if school breakfasts were planned to meet the SBP nutrition standards, they would satisfy most of these nutrient targets. Exceptions are vitamin E, potassium, linoleic acid, and alpha-linolenic acid. The DRI-based nutrient targets shown in this table are per 1,000 calories.

^aThe IOM did not include a DRI-based nutrient target for vitamin D.

AT = alpha-tocopherol; DFE = dietary folate equivalents; DRI = Dietary Reference Intakes; IOM = Institute of Medicine; n.a. = not applicable; RAE = retinol activity equivalents; SBP = School Breakfast Program; SE = standard error.

Table E.50. Average and Distribution of Nutrients per 1,000 Calories in SBP Breakfasts Served in High Schools

	DRI-Based Target per 1,000 Calories	Average per 1,000 Calories	SE	Percentiles per 1,000 Calories						
				5th	10th	25th	50th	75th	90th	95th
Linoleic Acid (g)	5.7	6	0.1	3	4	5	6	7	8	8
Alpha-Linolenic Acid (g)	0.57	0.6	0.01	0.3	0.4	0.5	0.6	0.7	0.8	0.9
Protein (g)	41.5	34	0.4	25	27	30	34	38	41	43
Vitamin A (mcg RAE)	354	409	9.6	213	255	313	387	495	587	644
Vitamin C (mg)	50	79	2.2	33	41	59	78	95	116	133
Vitamin D (mcg)	n.a. ^a	9.3	0.62	3.6	4.0	5.1	6.6	7.9	13.8	29.1
Vitamin E (mg AT)	7.0	2.4	0.07	1.5	1.7	1.9	2.2	2.6	3.3	3.9
Thiamin (mg)	0.8	0.9	0.01	0.7	0.8	0.8	0.9	1.0	1.1	1.2
Riboflavin (mg)	0.9	1.6	0.02	1.1	1.2	1.3	1.5	1.7	1.9	2.1
Niacin (mg)	9.3	9.4	0.21	5.7	6.5	7.6	9.0	10.6	13.3	14.2
Vitamin B ₆ (mg)	0.8	1.0	0.02	0.6	0.7	0.8	0.9	1.2	1.5	1.8
Folate (mcg DFE)	263	279	8.4	158	171	208	244	314	439	523
Vitamin B ₁₂ (mcg)	2.1	3.3	0.07	1.8	2.0	2.4	3.1	4.0	4.6	5.0
Iron (mg)	7.6	7.9	0.16	5.2	5.7	6.2	7.3	8.9	10.8	12.0
Magnesium (mg)	189	170	1.5	137	143	155	169	184	196	202
Zinc (mg)	5.5	6.1	0.11	4.1	4.5	4.9	5.7	6.7	8.1	9.4
Calcium (mg)	615	864	13.5	581	624	739	842	980	1,118	1,203
Phosphorus (mg)	731	844	10.1	601	642	753	853	926	1,010	1,056
Potassium (mg)	2,227	1,623	16.8	1,228	1,292	1,468	1,610	1,789	1,891	2,059
Sodium (mg)	≤ 943	1,123	14.4	814	857	960	1,107	1,243	1,423	1,530
Dietary Fiber (g)	13.7	11	0.1	7	8	9	11	12	14	14
Cholesterol (mg)	< 124	95	4.0	25	35	54	86	123	173	199
Number of Schools		344								

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: The DRI-based targets for nutrient content were developed by the Institute of Medicine (IOM 2010). Schools were not expected to meet these nutrient targets. However, it is expected that if school breakfasts were planned to meet the SBP nutrition standards, they would satisfy most of these nutrient targets. Exceptions are vitamin E, potassium, linoleic acid, and alpha-linolenic acid. The DRI-based nutrient targets shown in this table are per 1,000 calories.

^aThe IOM did not include a DRI-based nutrient target for vitamin D.

AT = alpha-tocopherol; DFE = dietary folate equivalents; DRI = Dietary Reference Intakes; IOM = Institute of Medicine; n.a. = not applicable; RAE = retinol activity equivalents; SBP = School Breakfast Program; SE = standard error.

Table E.51. Average and Distribution of Nutrients per 1,000 Calories in SBP Breakfasts Served in All Schools

	DRI-Based Target per 1,000 Calories			Average per 1,000 Calories	SE	Percentiles per 1,000 Calories						
	Elementary Schools	Middle Schools	High Schools			5th	10th	25th	50th	75th	90th	95th
Linoleic Acid (g)	5.2	5.3	5.7	5	0.1	3	4	4	5	6	7	8
Alpha-Linolenic Acid (g)	0.49	0.53	0.57	0.6	0.01	0.4	0.4	0.5	0.6	0.7	0.8	0.9
Protein (g)	24.0	45.5	41.5	34	0.2	27	28	31	34	37	40	42
Vitamin A (mcg RAE)	304	341	354	483	7.4	256	305	379	467	580	660	749
Vitamin C (mg)	38	42	50	78	1.4	34	45	61	77	94	111	121
Vitamin D (mcg)	n.a. ^a	n.a. ^a	n.a. ^a	9.3	0.38	4.0	4.9	6.2	7.2	8.5	11.7	25.1
Vitamin E (mg AT)	4.7	5.7	7.0	2.3	0.05	1.5	1.6	1.9	2.1	2.5	3.2	3.8
Thiamin (mg)	0.5	0.6	0.8	1.0	0.01	0.8	0.8	0.9	1.0	1.1	1.2	1.3
Riboflavin (mg)	0.7	0.9	0.9	1.7	0.01	1.2	1.3	1.5	1.7	1.9	2.1	2.2
Niacin (mg)	7.5	8.4	9.3	10.2	0.16	6.3	7.1	8.0	9.7	11.9	14.4	15.7
Vitamin B ₆ (mg)	0.7	0.8	0.8	1.1	0.02	0.7	0.7	0.9	1.0	1.3	1.6	1.8
Folate (mcg DFE)	214	240	263	321	7.3	165	184	224	288	380	513	573
Vitamin B ₁₂ (mcg)	1.9	1.9	2.1	3.9	0.06	2.1	2.4	3.1	3.9	4.6	5.4	6.0
Iron (mg)	5.4	7.4	7.6	8.9	0.16	5.5	5.9	6.9	8.3	10.3	12.3	14.4
Magnesium (mg)	115	139	189	173	1.0	139	147	160	174	186	198	204
Zinc (mg)	4.7	5.3	5.5	6.8	0.10	4.4	4.7	5.5	6.5	7.8	9.3	10.3
Calcium (mg)	525	623	615	924	8.6	636	714	809	914	1,029	1,145	1,253
Phosphorus (mg)	569	762	731	879	5.9	669	722	807	879	957	1,038	1,076
Potassium (mg)	2,139	2,154	2,227	1,690	9.8	1,329	1,404	1,552	1,702	1,825	1,972	2,038
Sodium (mg)	≤ 1,021	≤ 996	≤ 943	1,075	10.5	785	849	931	1,057	1,167	1,305	1,446
Dietary Fiber (g)	13.4	13.3	13.7	11	0.1	7	8	9	10	12	13	14
Cholesterol (mg)	< 153	< 137	< 124	82	2.3	28	35	47	68	101	150	177
Number of Schools	1,110											

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: The DRI-based targets for nutrient content were developed by the Institute of Medicine (IOM 2010). Schools were not expected to meet these nutrient targets. However, it is expected that if school breakfasts were planned to meet the SBP nutrition standards, they would satisfy most of these nutrient targets. Exceptions are vitamin E, potassium, linoleic acid, and alpha-linolenic acid. The DRI-based nutrient targets shown in this table are per 1,000 calories.

^aThe IOM did not include a DRI-based nutrient target for vitamin D.

AT = alpha-tocopherol; DFE = dietary folate equivalents; DRI = Dietary Reference Intakes; IOM = Institute of Medicine; n.a. = not applicable; RAE = retinol activity equivalents; SBP = School Breakfast Program; SE = standard error.

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APPENDIX F

SUPPLEMENTAL ANALYSIS OF THE AVAILABILITY OF SCHOOL MEALS THAT MET DIETARY SPECIFICATIONS OR TARGETS FOR CALORIES, SATURATED FAT, SODIUM, TOTAL FAT, AND DIETARY FIBER

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Chapters 3 and 4 described the extent to which average weekly menus prepared met the dietary specifications for calories, saturated fat, and sodium included in the updated nutrition standards. About one-third (34 percent) of average weekly lunch menus met all of the NSLP dietary specifications (Table C.10), and just under half (47 percent) of average weekly breakfast menus met all of the SBP dietary specifications requirements (Table E.10).

However, even in weekly menus where the *average* lunch or breakfast prepared did not meet a particular dietary specification, it is possible that *available* lunch and breakfast options could have met the specification. In other words, it is possible that individual students could have selected, from available choices, meals that were consistent with the dietary specification. This appendix presents findings from an analysis that examined the extent to which weekly menus offered meal choices that met the NSLP and SBP dietary specifications for calories, saturated fat, and sodium. The analysis also examined the extent to which weekly menus also met the DRI-based nutrient targets for total fat and dietary fiber¹ and an alternative target for total fat based on the former SMI nutrition standards.

A. Methods Used for Healthiest-Choice Meals Analysis

To assess the availability of school meals that met the dietary specifications and other nutrient targets, the study team constructed six “healthiest-choice” meal types: lowest calorie, highest calorie, lowest percentage saturated fat, lowest sodium, lowest percentage total fat, and highest dietary fiber. For each school, individual daily menus were reviewed to identify items that were most consistent with the relevant specification or target for each healthiest-choice meal type.

For example, the lowest-calorie lunch for any given daily menu consisted of the lowest-calorie milk; the lowest-calorie entrée or meats/meat alternate; the lowest-calorie grain/bread (if offered); the lowest-calorie fruit; and the lowest-calorie vegetable. The analysis then averaged the data over the week to compute the calorie and nutrient content of the lowest-calorie meal offered for the target week. Condiments not linked to specific menu items and non-grain-based desserts or other items not considered part of the reimbursable meal were not included in the analysis. The study team used the same basic approach to determine the average calorie and nutrient content of the lowest-saturated-fat meals, the lowest-sodium meals, and the lowest-total-fat meals. For the highest-calorie meals and the highest-dietary-fiber meals, the healthiest-choice meals included the menu items that were highest in calories and dietary fiber, respectively.

The analysis involved comparing the average calorie and nutrient content of each healthiest-choice meal type to the corresponding dietary specification or nutrient target to determine the percentage of weekly menus that offered students the option to select meals that, on average, met that dietary specification or nutrient target (for example, the percentage of weekly menus with lowest-saturated-fat lunches that, on average, met the NSLP dietary specification for saturated fat). The analysis considered the lowest- and highest-calorie meals to be compliant with the dietary specification for calories if the average meal met both the minimum and maximum calorie levels. In addition, the analysis involved comparing the average calorie and nutrient content of each healthiest-choice meal type to all of the other dietary specifications and nutrient

¹ Additional information on the DRI-based nutrient targets is provided in Chapters 3 and 4 and Appendix D.

targets considered in this analysis to assess the extent to which these healthiest-choice meals met other dietary specifications and other nutrient targets (for example, the percentage of weekly menus with lowest-saturated fat lunches that, on average, met the dietary specification for sodium).

All findings are based on analysis of data from the Menu Survey, which was completed by SNMs during one school week in the spring of SY 2014–2015. Data are presented separately by school type: elementary, middle, and high schools.

B. Percentage of Weekly Menus Offering Healthiest-Choice Lunches That Met the NSLP Dietary Specifications or Other Nutrient Targets

Tables F.1–F.6 provide information about the extent to which specific types of healthiest-choice lunches met the NSLP dietary specifications and other nutrient targets of interest. The findings summarized below focus on the percentage of weekly menus that offered each type of healthiest-choice lunch that, on average, met corresponding dietary specification or nutrient target.

Calories. Relatively few weekly menus offered lowest- or highest-calorie lunches that met both minimum and maximum calorie levels. Overall, virtually all weekly menus offered lowest-calorie lunches that met the maximum calorie level (Table F.1). However, only 3 percent of weekly menus offered lowest-calorie lunches that met the minimum calorie level, and only 3 percent of weekly menus met both the minimum and maximum levels. This pattern of findings was observed for all three school types and is consistent with the fact that the lowest-calorie lunches constructed for this analysis included the lowest-calorie option from each meal component included in the updated nutrition standards.

The highest-calorie lunches did a somewhat better job of meeting the minimum and maximum calorie levels, but the percentage of weekly menus offering highest-calorie lunches that met both the minimum and maximum calorie levels was still low (17 to 20 percent) (Table F.2). The vast majority of weekly menus in elementary and middle schools (92 to 96 percent) offered highest-calorie lunches that met the minimum calorie level, but substantially smaller proportions of weekly menus in these schools (21 to 24 percent) offered highest-calorie lunches that met the maximum calorie level. The pattern of findings for high schools was different, with a smaller proportion of weekly menus offering highest-calorie lunches that met the minimum calorie level, relative to weekly menus in elementary and middle schools (74 percent versus 92 and 96 percent, respectively), and a larger proportion of weekly menus offering highest-calorie lunches that met the maximum calorie level (46 percent versus 24 and 21 percent, respectively).

Saturated Fat and Sodium. Virtually all weekly menus offered lowest-saturated fat lunches that met the limit for saturated fat (Table F.3) and lowest-sodium lunches that met the limit for sodium (Table F.4).

Total Fat. Less than 4 percent of weekly menus offered lowest-total fat lunches that were consistent with the DRI-based target for total fat (25 to 35 percent of calories; Table F.5). For the most part, this is because, on average, fewer than 25 percent of the calories in the lowest-fat healthiest-choice lunches came from fat. Consistent with this finding, the lowest-fat healthiest-choice lunches offered in virtually all weekly menus met the older, more liberal SMI target for

total fat (no more than 30 percent of calories), which does not specify a minimum percentage of calories from total fat.

Dietary Fiber. The vast majority of weekly menus (94 percent) offered highest-dietary fiber lunches that met the DRI-based target for dietary fiber (Table F.6).

C. Percentage of Weekly Menus Offering Healthiest-Choice Breakfasts That Met the SBP Dietary Specifications or Other Nutrient Targets

Tables F.7–F.12 provide information about the extent to which specific types of healthiest-choice breakfasts met the SBP dietary specifications or other nutrient targets of interest. The findings summarized below focus on the percentage of weekly menus that offered each type of healthiest-choice breakfast that, on average, met corresponding dietary specification or nutrient target.

Calories. Overall, only 3 percent of weekly menus offered lowest-calorie breakfasts that met both minimum and maximum calorie levels (Table F.7). As observed for the lowest-fat lunches, this is largely because lowest-calorie breakfasts did not meet the minimum calorie level. Virtually all weekly menus offered lowest-calorie breakfasts that met the maximum calorie level.

Almost two-thirds (65 percent) of weekly menus offered highest-calorie breakfasts that met both the minimum and maximum calorie levels (Table F.8). Relative to high schools, more weekly menus in elementary and middle schools offered highest-calorie breakfasts that met both the minimum and maximum calorie levels (70 and 63 percent versus 55 percent; differences were not tested for statistical significance).

Saturated Fat and Sodium. Virtually all weekly menus offered lowest-saturated fat breakfasts that met the limit for saturated fat (Table F.9) and lowest-sodium breakfasts that met the limit for sodium (Table F.10).

Total Fat. Virtually no weekly menus offered lowest-total fat breakfasts that met the DRI-based target for total fat (25 to 35 percent of calories; Table F.11). In contrast, virtually all weekly menus offered healthiest-choice breakfasts that met the older, more liberal SMI target (no more than 30 percent of calories). This finding reflects the fact that the lowest-fat breakfast typically had a total fat content falling below the 25 percent minimum for the DRI-based target.

Dietary Fiber. Overall, 61 percent of weekly menus offered highest-dietary fiber breakfasts that met the DRI-based target for dietary fiber (Table F.12).

Table F.1. Percentage of Weekly Menus Offering Healthiest-Choice Lunches That Met Each, All, and Different Combinations of the NSLP Dietary Specifications and Other Nutrient Targets: *Lowest Calorie Lunches*

	Elementary Schools	Middle Schools	High Schools	All Schools
Dietary Specifications				
Calorie Minimum and Maximum	4.1	<3	<3	2.9
Calorie Minimum	4.5	<3	<3	3.1
Calorie Maximum	>97	>97	>97	>97
Percentage of Calories from Saturated Fat	74.9	76.1	74.7	75.1
Sodium	95.8	96.2 ^a	94.6	95.6
Other Nutrient Targets^a				
Percentage of Calories from Total Fat (25-35%)	49.9	38.9	42.1	46.2
Percentage of Calories from Total Fat ($\leq 30\%$)	91.5	91.2	93.5	91.9
Dietary Fiber	13.6	5.5	5.1	10.2
Combinations of Dietary Specifications and Other Nutrient Targets				
All NSLP Dietary Specifications	<3	<3	<3	1.3
All NSLP Dietary Specifications and Other Nutrient Targets ^b	<3	<3	<3	<3
Number of Weekly Menus	451	384	372	1,207

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

^aOther nutrient targets are based on the DRI-based targets for nutrient content developed by the Institute of Medicine (IOM 2010). The alternative target for total fat (no more than 30 percent of calories) is based on the former School Meals Initiative nutrient standard

^bFor this analysis, the target for total fat was based on the DRI-based target for nutrient content developed by the IOM (25 to 35 percent of calories).

DRI = Dietary Reference Intakes; IOM = Institute of Medicine; NSLP = National School Lunch Program.

[^] Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 0 and 3 percent are displayed as <3 and flagged percentages between 97 and 100 percent are displayed as >97.

Table F.2. Percentage of Weekly Menus Offering Healthiest-Choice Lunches That Met Each, All, and Different Combinations of the NSLP Dietary Specifications and Other Nutrient Targets: *Highest Calorie Lunches*

	Elementary Schools	Middle Schools	High Schools	All Schools
Dietary Specifications				
Calorie Minimum and Maximum	16.6	17.0	20.4	17.5
Calorie Minimum	92.2	96.1	74.2	88.9
Calorie Maximum	24.4	20.9	46.2	28.6
Percentage of Calories from Saturated Fat	89.2	84.5	88.3	88.2
Sodium	71.4	57.7	62.1	66.8
Other Nutrient Targets^a				
Percentage of Calories from Total Fat (25-35%)	41.5	55.1	46.0	45.0
Percentage of Calories from Total Fat ($\leq 30\%$)	81.7	74.9	76.7	79.4
Dietary Fiber	87.2	83.2	78.0	84.4
Combinations of Dietary Specifications and Other Nutrient Targets				
All NSLP Dietary Specifications	14.5	12.9	13.8	14.1
All NSLP Dietary Specifications and Other Nutrient Targets ^b	<3	<3	4.9	1.8
Number of Weekly Menus	451	384	372	1,207

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

^aOther nutrient targets are based on the DRI-based targets for nutrient content developed by the Institute of Medicine (IOM 2010). The alternative target for total fat (no more than 30 percent of calories) is based on the former School Meals Initiative nutrient standard

^bFor this analysis, the target for total fat was based on the DRI-based target for nutrient content developed by the IOM (25 to 35 percent of calories).

DRI = Dietary Reference Intakes; IOM = Institute of Medicine; NSLP = National School Lunch Program.

<3 = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 0 and 3 percent are displayed as <3.

Table F.3. Percentage of Weekly Menus Offering Healthiest-Choice Lunches That Met Each, All, and Different Combinations of the NSLP Dietary Specifications and Other Nutrient Targets: *Lowest Percentage Saturated Fat Lunches*

	Elementary Schools	Middle Schools	High Schools	All Schools
Dietary Specifications				
Calories ^a	35.6	30.1	14.8	30.0
Percentage of Calories from Saturated Fat	>97	>97	>97	>97
Sodium	91.8	94.2	90.9	92.1
Other Nutrient Targets^b				
Percentage of Calories from Total Fat (25-35%)	16.2	7.0	8.5	12.8
Percentage of Calories from Total Fat (≤ 30%)	95.3	>97	>97	96.7
Dietary Fiber	59.1	49.0	45.5	54.3
Combinations of Dietary Specifications and Other Nutrient Targets				
All NSLP Dietary Specifications	33.8	28.8	11.6	27.9
All NSLP Dietary Specifications and Other Nutrient Targets ^c	3.1 [^]	<3	<3	2.1
Number of Weekly Menus	451	384	372	1,207

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

^aMeets both the minimum and maximum calorie requirement for the grade group (school type).

^bOther nutrient targets are based on the DRI-based targets for nutrient content developed by the Institute of Medicine (IOM 2010). The alternative target for total fat (no more than 30 percent of calories) is based on the former School Meals Initiative nutrient standard

^cFor this analysis, the target for total fat was based on the DRI-based target for nutrient content developed by the IOM (25 to 35 percent of calories).

DRI = Dietary Reference Intakes; IOM = Institute of Medicine; NSLP = National School Lunch Program.

[^] Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 0 and 3 percent are displayed as <3 and flagged percentages between 97 and 100 percent are displayed as >97.

Table F.4. Percentage of Weekly Menus Offering Healthiest-Choice Lunches That Met Each, All, and Different Combinations of the NSLP Dietary Specifications and Other Nutrient Targets: *Lowest Sodium Lunches*

	Elementary Schools	Middle Schools	High Schools	All Schools
Dietary Specifications				
Calories ^a	35.0	14.8	4.7	24.6
Percentage of Calories from Saturated Fat	95.7	95.7	93.1	95.1
Sodium	>97	>97	>97	>97
Other Nutrient Targets^b				
Percentage of Calories from Total Fat (25-35%)	27.5	24.2	22.9	25.9
Percentage of Calories from Total Fat ($\leq$ 30%)	93.4	96.1 [^]	93.9	94.0
Dietary Fiber	51.6	31.9	27.7	42.7
Combinations of Dietary Specifications and Other Nutrient Targets				
All NSLP Dietary Specifications	33.8	14.0	4.6	23.7
All NSLP Dietary Specifications and Other Nutrient Targets ^c	8.7	<3	<3	5.9
Number of Weekly Menus	451	384	372	1,207

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

^aMeets both the minimum and maximum calorie requirement for the grade group (school type).

^bOther nutrient targets are based on the DRI-based targets for nutrient content developed by the Institute of Medicine (IOM 2010). The alternative target for total fat (no more than 30 percent of calories) is based on the former School Meals Initiative nutrient standard

^cFor this analysis, the target for total fat was based on the DRI-based target for nutrient content developed by the IOM (25 to 35 percent of calories).

DRI = Dietary Reference Intakes; IOM = Institute of Medicine; NSLP = National School Lunch Program.

[^] Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 0 and 3 percent are displayed as <3 and flagged percentages between 97 and 100 percent are displayed as >97.

Table F.5. Percentage of Weekly Menus Offering Healthiest-Choice Lunches That Met Each, All, and Different Combinations of the NSLP Dietary Specifications and Other Nutrient Targets: *Lowest Percentage Total Fat Lunches*

	Elementary Schools	Middle Schools	High Schools	All Schools
Dietary Specifications				
Calories ^a	38.4	27.0	10.9	30.2
Percentage of Calories from Saturated Fat	>97	>97	>97	>97
Sodium	82.9	83.5	88.0	84.2
Other Nutrient Targets^b				
Percentage of Calories from Total Fat (25-35%)	5.0	<3	<3	3.9
Percentage of Calories from Total Fat (≤ 30%)	>97	>97	>97	>97
Dietary Fiber	59.2	44.5	42.7	52.9
Combinations of Dietary Specifications and Other Nutrient Targets				
All NSLP Dietary Specifications	31.0	23.0	8.5	24.5
All NSLP Dietary Specifications and Other Nutrient Targets ^c	<3	<3	<3	<3
Number of Weekly Menus	451	384	372	1,207

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

^aMeets both the minimum and maximum calorie requirement for the grade group (school type).

^bOther nutrient targets are based on the DRI-based targets for nutrient content developed by the Institute of Medicine (IOM 2010). The alternative target for total fat (no more than 30 percent of calories) is based on the former School Meals Initiative nutrient standard

^cFor this analysis, the target for total fat was based on the DRI-based target for nutrient content developed by the IOM (25 to 35 percent of calories).

DRI = Dietary Reference Intakes; IOM = Institute of Medicine; NSLP = National School Lunch Program.

<3 and >97 = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 0 and 3 percent are displayed as <3 and flagged percentages between 97 and 100 percent are displayed as >97

Table F.6. Percentage of Weekly Menus Offering Healthiest-Choice Lunches That Met Each, All, and Different Combinations of the NSLP Dietary Specifications and Other Nutrient Targets: *Highest Fiber Lunches*

	Elementary Schools	Middle Schools	High Schools	All Schools
Dietary Specifications				
Calories ^a	26.6	29.0	25.2	26.7
Percentage of Calories from Saturated Fat	94.7	95.3	96.0 [^]	95.1
Sodium	73.5	63.8	69.0	70.8
Other Nutrient Targets^b				
Percentage of Calories from Total Fat (25-35%)	31.5	39.3	32.4	33.1
Percentage of Calories from Total Fat ($\leq 30\%$)	86.7	87.9	90.1	87.7
Dietary Fiber	95.8	93.4	91.2	94.3
Combinations of Dietary Specifications and Other Nutrient Targets				
All NSLP Dietary Specifications	22.9	24.0	15.6	21.5
All NSLP Dietary Specifications and Other Nutrient Targets ^c	4.2	6.4	6.7	5.2
Number of Weekly Menus	451	384	372	1,207

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

^aMeets both the minimum and maximum calorie requirement for the grade group (school type).

^bOther nutrient targets are based on the DRI-based targets for nutrient content developed by the Institute of Medicine (IOM 2010). The alternative target for total fat (no more than 30 percent of calories) is based on the former School Meals Initiative nutrient standard

^cFor this analysis, the target for total fat was based on the DRI-based target for nutrient content developed by the IOM (25 to 35 percent of calories).

DRI = Dietary Reference Intakes; IOM = Institute of Medicine; NSLP = National School Lunch Program.

[^] Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1.

Table F.7. Percentage of Weekly Menus Offering Healthiest-Choice Breakfasts That Met Each, All, and Different Combinations of the SBP Dietary Specifications and Other Nutrient Targets: *Lowest Calorie Breakfasts*

	Elementary Schools	Middle Schools	High Schools	All Schools
Dietary Specifications				
Calorie Minimum and Maximum	4.3	<3	<3	2.6
Calorie Minimum	4.3	<3	<3	2.6
Calorie Maximum	>97	>97	>97	>97
Percentage of Calories from Saturated Fat	81.6	85.8	76.3	81.2
Sodium	>97	>97	>97	>97
Other Nutrient Targets^a				
Percentage of Calories from Total Fat (25-35%)	11.6	10.8	17.2	12.7
Percentage of Calories from Total Fat ($\leq$ 30%)	>97	>97	93.3	96.3
Dietary Fiber	<3	<3	<3	<3
Combinations of Dietary Specifications and Other Nutrient Targets				
All SBP Dietary Specifications	3.4 [^]	<3	<3	2.0
All SBP Dietary Specifications and Other Nutrient Targets ^b	<3	<3	<3	<3
Number of Weekly Menus	415	352	344	1,111

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

^aOther nutrient targets are based on the DRI-based targets for nutrient content developed by the Institute of Medicine (IOM 2010). The alternative target for total fat (no more than 30 percent of calories) is based on the former School Meals Initiative nutrient standard

^bFor this analysis, the target for total fat was based on the DRI-based target for nutrient content developed by the IOM (25 to 35 percent of calories).

DRI = Dietary Reference Intakes; IOM = Institute of Medicine; SBP = School Breakfast Program.

[^] Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 0 and 3 percent are displayed as <3 and flagged percentages between 97 and 100 percent are displayed as >97.

Table F.8. Percentage of Weekly Menus Offering Healthiest-Choice Breakfasts That Met Each, All, and Different Combinations of the SBP Dietary Specifications and Other Nutrient Targets: *Highest Calorie Breakfasts*

	Elementary Schools	Middle Schools	High Schools	All Schools
Dietary Specifications				
Calorie Minimum and Maximum	69.6	63.0	55.4	65.3
Calorie Minimum	84.1	85.5	69.9	81.2
Calorie Maximum	85.5	77.6	85.5	84.1
Percentage of Calories from Saturated Fat	96.0	91.1	91.8	94.2
Sodium	81.1	76.7	79.1	79.9
Other Nutrient Targets^a				
Percentage of Calories from Total Fat (25-35%)	6.4	14.5	16.8	10.1
Percentage of Calories from Total Fat ($\leq$ 30%)	>97	>97	95.5	98.0
Dietary Fiber	28.5	36.1	30.3	30.3
Combinations of Dietary Specifications and Other Nutrient Targets				
All SBP Dietary Specifications	58.9	46.8	41.3	52.9
All SBP Dietary Specifications and Other Nutrient Targets ^b	<3	<3	<3	<3
Number of Weekly Menus	415	352	344	1,111

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

^aOther nutrient targets are based on the DRI-based targets for nutrient content developed by the Institute of Medicine (IOM 2010). The alternative target for total fat (no more than 30 percent of calories) is based on the former School Meals Initiative nutrient standard

^bFor this analysis, the target for total fat was based on the DRI-based target for nutrient content developed by the IOM (25 to 35 percent of calories).

DRI = Dietary Reference Intakes; IOM = Institute of Medicine; SBP = School Breakfast Program.

<3 and >97 = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 0 and 3 percent are displayed as <3 and flagged percentages between 97 and 100 percent are displayed as >97.

Table F.9. Percentage of Weekly Menus Offering Healthiest-Choice Breakfasts That Met Each, All, and Different Combinations of the SBP Dietary Specifications and Other Nutrient Targets: *Lowest Percentage Saturated Fat Breakfasts*

	Elementary Schools	Middle Schools	High Schools	All Schools
Dietary Specifications				
Calories ^a	22.2	10.7	7.7	17.0
Percentage of Calories from Saturated Fat	>97	>97	>97	>97
Sodium	>97	>97	>97	98.6
Other Nutrient Targets^b				
Percentage of Calories from Total Fat (25-35%)	<3	<3	<3	<3
Percentage of Calories from Total Fat ($\leq 30\%$)	>97	>97	>97	>97
Dietary Fiber	5.6	5.7	<3	5.0
Combinations of Dietary Specifications and Other Nutrient Targets				
All SBP Dietary Specifications	21.2	10.4	7.1	16.2
All SBP Dietary Specifications and Other Nutrient Targets ^c	<3	<3	<3	<3
Number of Weekly Menus	415	352	344	1,111

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

^aMeets both the minimum and maximum calorie requirement for the grade group (school type).

^bOther nutrient targets are based on the DRI-based targets for nutrient content developed by the Institute of Medicine (IOM 2010). The alternative target for total fat (no more than 30 percent of calories) is based on the former School Meals Initiative nutrient standard

^cFor this analysis, the target for total fat was based on the DRI-based target for nutrient content developed by the IOM (25 to 35 percent of calories).

DRI = Dietary Reference Intakes; IOM = Institute of Medicine; SBP = School Breakfast Program.

<3 and >97 = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 0 and 3 percent are displayed as <3 and flagged percentages between 97 and 100 percent are displayed as >97.

Table F.10. Percentage of Weekly Menus Offering Healthiest-Choice Breakfasts That Met Each, All, and Different Combinations of the SBP Dietary Specifications and Other Nutrient Targets: *Lowest Sodium Breakfasts*

	Elementary Schools	Middle Schools	High Schools	All Schools
Dietary Specifications				
Calories ^a	20.2	10.5	<3	14.6
Percentage of Calories from Saturated Fat	>97	>97	>97	>97
Sodium	>97	>97	>97	>97
Other Nutrient Targets^b				
Percentage of Calories from Total Fat (25-35%)	<3	<3	3.1 [^]	1.4
Percentage of Calories from Total Fat ($\leq$ 30%)	>97	>97	>97	>97
Dietary Fiber	22.0	18.2	8.1	18.3
Combinations of Dietary Specifications and Other Nutrient Targets				
All SBP Dietary Specifications	20.1	10.4	<3	14.4
All SBP Dietary Specifications and Other Nutrient Targets ^c	<3	<3	<3	<3
Number of Weekly Menus	415	352	344	1,111

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

^aMeets both the minimum and maximum calorie requirement for the grade group (school type).

^bOther nutrient targets are based on the DRI-based targets for nutrient content developed by the Institute of Medicine (IOM 2010). The alternative target for total fat (no more than 30 percent of calories) is based on the former School Meals Initiative nutrient standard

^cFor this analysis, the target for total fat was based on the DRI-based target for nutrient content developed by the IOM (25 to 35 percent of calories).

DRI = Dietary Reference Intakes; IOM = Institute of Medicine; SBP = School Breakfast Program.

[^] Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 0 and 3 percent are displayed as <3 and flagged percentages between 97 and 100 percent are displayed as >97.

Table F.11. Percentage of Weekly Menus Offering Healthiest-Choice Breakfasts That Met Each, All, and Different Combinations of the SBP Dietary Specifications and Other Nutrient Targets: *Lowest Percentage Total Fat Breakfasts*

	Elementary Schools	Middle Schools	High Schools	All Schools
Dietary Specifications				
Calories ^a	21.7	11.4	8.5	16.9
Percentage of Calories from Saturated Fat	>97	>97	>97	>97
Sodium	>97	>97	>97	98.6
Other Nutrient Targets^b				
Percentage of Calories from Total Fat (25-35%)	<3	<3	<3	<3
Percentage of Calories from Total Fat ($\leq 30\%$)	>97	>97	>97	>97
Dietary Fiber	4.8	4.8	<3	4.2
Combinations of Dietary Specifications and Other Nutrient Targets				
All SBP Dietary Specifications	20.2	11.4	7.9	15.9
All SBP Dietary Specifications and Other Nutrient Targets ^c	<3	<3	<3	<3
Number of Weekly Menus	415	352	344	1,111

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

^aMeets both the minimum and maximum calorie requirement for the grade group (school type).

^bOther nutrient targets are based on the DRI-based targets for nutrient content developed by the Institute of Medicine (IOM 2010). The alternative target for total fat (no more than 30 percent of calories) is based on the former School Meals Initiative nutrient standard

^cFor this analysis, the target for total fat was based on the DRI-based target for nutrient content developed by the IOM (25 to 35 percent of calories).

DRI = Dietary Reference Intakes; IOM = Institute of Medicine; SBP = School Breakfast Program.

<3 and >97 = Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 0 and 3 percent are displayed as <3 and flagged percentages between 97 and 100 percent are displayed as >97.

Table F.12. Percentage of Weekly Menus Offering Healthiest-Choice Breakfasts That Met Each, All, and Different Combinations of the SBP Dietary Specifications and Other Nutrient Targets: *Highest Fiber Breakfasts*

	Elementary Schools	Middle Schools	High Schools	All Schools
Dietary Specifications				
Calories ^a	56.1	49.4	41.3	51.6
Percentage of Calories from Saturated Fat	>97	96.6 [^]	96.2 [^]	97.8
Sodium	94.7	90.3	90.7	93.0
Other Nutrient Targets^b				
Percentage of Calories from Total Fat (25-35%)	<3	4.5	6.8	3.4
Percentage of Calories from Total Fat ($\leq$ 30%)	>97	>97	>97	>97
Dietary Fiber	60.0	66.8	59.2	61.1
Combinations of Dietary Specifications and Other Nutrient Targets				
All SBP Dietary Specifications	52.2	43.0	34.0	46.5
All SBP Dietary Specifications and Other Nutrient Targets ^c	<3	<3	<3	<3
Number of Weekly Menus	415	352	344	1,111

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

^aMeets both the minimum and maximum calorie requirement for the grade group (school type).

^bOther nutrient targets are based on the DRI-based targets for nutrient content developed by the Institute of Medicine (IOM 2010). The alternative target for total fat (no more than 30 percent of calories) is based on the former School Meals Initiative nutrient standard

^cFor this analysis, the target for total fat was based on the DRI-based target for nutrient content developed by the IOM (25 to 35 percent of calories).

DRI = Dietary Reference Intakes; IOM = Institute of Medicine; SBP = School Breakfast Program.

[^] Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1. When these rules are applied, percentages close to 0 or 100 are often flagged. In this table, flagged percentages between 0 and 3 percent are displayed as <3 and flagged percentages between 97 and 100 percent are displayed as >97.

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APPENDIX G

CHAPTER 5 SUPPLEMENTAL TABLES

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Table G.1. Mean Healthy Eating Index-2010 Scores and Percentage of Maximum Scores for NSLP Lunches Prepared

HEI-2010 Component	Maximum Score	Elementary Schools		Middle Schools		High Schools		All Schools	
		Mean Score	Percentage of Maximum Score	Mean Score	Percentage of Maximum Score	Mean Score	Percentage of Maximum Score	Mean Score	Percentage of Maximum Score
Adequacy Components (higher scores reflect higher concentrations in NSLP lunches)									
Total Fruit	5	4.8*	95.8*	4.6†	92.9†	4.8	95.6	4.8	95.3
Whole Fruit	5	4.9	98.7	4.9	97.5	4.9	97.7	4.9	98.3
Total Vegetables	5	4.1	82.2	4.0††	80.5††	4.3	85.3	4.1	82.5
Greens and Beans	5	3.6	72.8	3.4†	68.8†	3.7	74.9	3.6	72.5
Whole Grains	10	9.5	95.1	9.5	95.3	9.4	94.5	9.5	95.0
Dairy	10	10.0	100.0	10.0	100.0	10.0	100.0	10.0	100.0
Total Protein Foods	5	4.5	89.2	4.5	89.2	4.5	89.1	4.5	89.2
Seafood and Plant Proteins	5	2.6**	52.1**	2.2	44.6	2.3###	45.0###	2.5	49.2
Fatty Acids	10	6.1	61.1	6.5	64.9	6.8###	67.9###	6.3	63.3
Moderation Components (higher scores reflect lower concentrations in NSLP lunches)									
Refined Grains	10	9.7	96.8	9.6	96.1	9.6	96.4	9.7	96.5
Sodium	10	3.1*	31.1*	2.7††	26.6††	2.2###	21.9###	2.8	28.2
Empty Calories	20	19.1	95.3	19.3	96.5	19.4##	96.9##	19.2	95.9
Total Score	100	82.0	82.0	81.2	81.2	81.8	81.8	81.8	81.8
Number of Schools		451		384		372		1,207	

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Note: Mean scores for the components may not sum to the total score due to rounding.

Difference between elementary and middle schools is significantly different from zero at the ** 0.01 level or * 0.05 level.

Difference between middle and high schools is significantly different from zero at the †† 0.01 level or † 0.05 level.

Difference between elementary and high schools is significantly different from zero at the ### 0.001 level or ## 0.01 level.

HEI = Healthy Eating Index; NSLP = National School Lunch Program.

Table G.2. Mean Healthy Eating Index-2010 Scores and Percentage of Maximum Scores for NSLP Lunches Prepared, by School Size

HEI-2010 Component	Maximum Score	Small (Fewer than 500 students)		Medium (500 to 999 students)		Large (1,000 or more students)		All Schools	
		Mean Score	Percentage of Maximum Score	Mean Score	Percentage of Maximum Score	Mean Score	Percentage of Maximum Score	Mean Score	Percentage of Maximum Score
Adequacy Components (higher scores reflect higher concentrations in NSLP lunches)									
Total Fruit	5	4.7	94.9	4.8	95.8	4.8	95.2	4.8	95.3
Whole Fruit	5	4.9	99.0	4.9	97.8	4.8#	97.0#	4.9	98.3
Total Vegetables	5	4.4***	88.2***	3.9	77.1	3.9###	77.4###	4.1	82.5
Greens and Beans	5	3.9**	77.1**	3.4	68.2	3.4##	68.0##	3.6	72.5
Whole Grains	10	9.4	93.7	9.6	96.2	9.6	96.3	9.5	95.0
Dairy	10	10.0	100.0	10.0	100.0	10.0	100.0	10.0	100.0
Total Protein Foods	5	4.5*	90.7*	4.4	87.5	4.4	88.6	4.5	89.2
Seafood and Plant Proteins	5	2.5	49.6	2.5†	50.1†	2.2	44.4	2.5	49.2
Fatty Acids	10	6.3	63.1	6.3	62.7	6.6	66.0	6.3	63.3
Moderation Components (higher scores reflect lower concentrations in NSLP lunches)									
Refined Grains	10	9.6	96.3	9.7	96.8	9.7	96.9	9.7	96.5
Sodium	10	2.5***	24.6***	3.2	32.3	3.0##	29.6##	2.8	28.2
Empty Calories	20	19.1	95.5	19.2†††	95.8†††	19.5###	97.7###	19.2	95.9
Total Score	100	81.8	81.8	81.8	81.8	82.0	82.0	81.8	81.8
Number of Schools		435		495		277		1,207	

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Note: Mean scores for the components may not sum to the total score due to rounding.

Difference between small and medium-sized schools is significantly different from zero at the *** 0.001 level, ** 0.01 level, or * 0.05 level.

Difference between medium-sized and large schools is significantly different from zero at the ††† 0.001 level or † 0.05 level.

Difference between large and small schools is significantly different from zero at the ### 0.001 level, ## 0.01 level, or # 0.05 level.

HEI = Healthy Eating Index; NSLP = National School Lunch Program.

Table G.3. Mean Healthy Eating Index-2010 Scores and Percentage of Maximum Scores for NSLP Lunches Prepared, by Urbanicity

HEI-2010 Component	Maximum Score	Urban		Suburban		Rural		All Schools	
		Mean Score	Percentage of Maximum Score	Mean Score	Percentage of Maximum Score	Mean Score	Percentage of Maximum Score	Mean Score	Percentage of Maximum Score
Adequacy Components (higher scores reflect higher concentrations in NSLP lunches)									
Total Fruit	5	4.8	96.7	4.8	95.3	4.7 [#]	94.3 [#]	4.8	95.3
Whole Fruit	5	4.9	97.9	4.9	98.3	4.9	98.5	4.9	98.3
Total Vegetables	5	4.0	80.6	3.9 ^{†††}	78.7 ^{†††}	4.4 ^{##}	88.6 ^{##}	4.1	82.5
Greens and Beans	5	3.6	71.8	3.5 [†]	69.8 [†]	3.8	76.3	3.6	72.5
Whole Grains	10	9.4	93.6	9.7 [†]	96.9 [†]	9.3	93.4	9.5	95.0
Dairy	10	10.0	100.0	10.0	100.0	10.0	100.0	10.0	100.0
Total Protein Foods	5	4.4	88.4	4.4 [†]	88.1 [†]	4.6	91.1	4.5	89.2
Seafood and Plant Proteins	5	2.6	51.3	2.3	47.0	2.5	50.5	2.5	49.2
Fatty Acids	10	6.0	60.0	6.5	64.7	6.4	63.6	6.3	63.3
Moderation Components (higher scores reflect lower concentrations in NSLP lunches)									
Refined Grains	10	9.5	94.8	9.7	97.1	9.7	96.9	9.7	96.5
Sodium	10	3.2	32.0	3.1 ^{†††}	31.3 ^{†††}	2.2 ^{###}	22.1 ^{###}	2.8	28.2
Empty Calories	20	19.3	96.4	19.1	95.6	19.2	95.9	19.2	95.9
Total Score	100	81.7	81.7	82.0	82.0	81.7	81.7	81.8	81.8
Number of Schools		240		597		370		1,207	

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Note: Mean scores for the components may not sum to the total score due to rounding. None of the differences between urban and suburban schools were statistically significant.

Difference between suburban and rural schools is significantly different from zero at the ^{†††} 0.001 level or [†] 0.05 level.

Difference between urban and rural schools is significantly different from zero at the ^{###} 0.001 level, ^{##} 0.01 level, or [#] 0.05 level.

HEI = Healthy Eating Index; NSLP = National School Lunch Program.

Table G.4. Mean Healthy Eating Index-2010 Scores and Percentage of Maximum Scores for NSLP Lunches Prepared, by District Child Poverty Rate

HEI-2010 Component	Maximum Score	Lower (less than 20 percent)		Higher (20 percent or more)		All Schools	
		Mean Score	Percentage of Maximum Score	Mean Score	Percentage of Maximum Score	Mean Score	Percentage of Maximum Score
Adequacy Components (higher scores reflect higher concentrations in NSLP lunches)							
Total Fruit	5	4.8*	96.2*	4.7	94.2	4.8	95.3
Whole Fruit	5	4.9	98.4	4.9	98.1	4.9	98.3
Total Vegetables	5	4.0**	80.3**	4.3	85.2	4.1	82.5
Greens and Beans	5	3.5*	70.1*	3.8	75.5	3.6	72.5
Whole Grains	10	9.5	94.7	9.5	95.3	9.5	95.0
Dairy	10	10.0	100.0	10.0	100.0	10.0	100.0
Total Protein Foods	5	4.4**	87.5**	4.6	91.2	4.5	89.2
Seafood and Plant Proteins	5	2.4	48.9	2.5	49.5	2.5	49.2
Fatty Acids	10	6.5	65.1	6.1	61.1	6.3	63.3
Moderation Components (higher scores reflect lower concentrations in NSLP lunches)							
Refined Grains	10	9.7	96.7	9.6	96.3	9.7	96.5
Sodium	10	2.9	29.0	2.7	27.4	2.8	28.2
Empty Calories	20	19.1	95.6	19.2	96.2	19.2	95.9
Total Score	100	81.7	81.7	81.9	81.9	81.8	81.8
Number of Schools		673		534		1,207	

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: Mean scores for the components may not sum to the total score due to rounding. Data on child poverty rates were from the 2011 U.S. Census Bureau's Small Area Income and Poverty Estimates school district file.

Difference between lower and higher poverty schools is significantly different from zero at the ** 0.01 level or * 0.05 level.

HEI = Healthy Eating Index; NSLP = National School Lunch Program.

Table G.5. Mean Healthy Eating Index-2010 Scores and Percentage of Maximum Scores for NSLP Lunches Served

HEI-2010 Component	Maximum Score	Elementary Schools		Middle Schools		High Schools		All Schools	
		Mean Score	Percentage of Maximum Score	Mean Score	Percentage of Maximum Score	Mean Score	Percentage of Maximum Score	Mean Score	Percentage of Maximum Score
Adequacy Components (higher scores reflect higher concentrations in NSLP lunches)									
Total Fruit	5	4.8**	95.4**	4.6††	91.9††	4.8	95.4	4.7	94.8
Whole Fruit	5	4.9*	98.6*	4.8	96.9	4.9	97.3	4.9	98.0
Total Vegetables	5	4.1	81.3	4.0†	80.7†	4.2#	85.0#	4.1	82.0
Greens and Beans	5	3.6	71.3	3.5	69.5	3.7	74.1	3.6	71.6
Whole Grains	10	9.5	95.3	9.6	95.9	9.5	94.8	9.5	95.3
Dairy	10	10.0	100.0	9.9	99.2	9.8###	98.1###	9.9	99.4
Total Protein Foods	5	4.5	90.0	4.5	90.8	4.5	91.0	4.5	90.4
Seafood and Plant Proteins	5	2.5**	49.4**	2.1	41.3	2.1##	41.2##	2.3	46.1
Fatty Acids	10	6.0**	60.5**	6.6	65.8	6.9###	69.1###	6.3	63.4
Moderation Components (higher scores reflect lower concentrations in NSLP lunches)									
Refined Grains	10	9.6	96.3	9.5	94.7	9.5	95.1	9.6	95.8
Sodium	10	3.0**	30.4**	2.5††	24.9††	2.0###	19.7###	2.7	27.0
Empty Calories	20	19.1*	95.5*	19.4	96.9	19.4##	97.2##	19.2	96.1
Total Score	100	81.6	81.6	81.0	81.0	81.3	81.3	81.5	81.5
Number of Schools		451		384		371		1,206	

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Note: Mean scores for the components may not sum to the total score due to rounding.

Difference between elementary and middle schools is significantly different from zero at the ** 0.01 level or * 0.05 level.

Difference between middle and high schools is significantly different from zero at the †† 0.01 level or † 0.05 level.

Difference between elementary and high schools is significantly different from zero at the ### 0.001 level, ## 0.01 level, or # 0.05 level.

HEI = Healthy Eating Index; NSLP = National School Lunch Program.

Table G.6. Mean Healthy Eating Index-2010 Scores and Percentage of Maximum Scores for NSLP Lunches Served, by School Size

HEI-2010 Component	Maximum Score	Small (Fewer than 500 students)		Medium (500 to 999 students)		Large (1,000 or more students)		All Schools	
		Mean Score	Percentage of Maximum Score	Mean Score	Percentage of Maximum Score	Mean Score	Percentage of Maximum Score	Mean Score	Percentage of Maximum Score
Adequacy Components (higher scores reflect higher concentrations in NSLP lunches)									
Total Fruit	5	4.7	94.4	4.8	95.2	4.7	94.9	4.7	94.8
Whole Fruit	5	4.9	98.7	4.9	97.7	4.8 [#]	96.5 [#]	4.9	98.0
Total Vegetables	5	4.4 ^{***}	87.1 ^{***}	3.8	76.9	3.9 ^{###}	78.4 ^{###}	4.1	82.0
Greens and Beans	5	3.8 ^{**}	76.1 ^{**}	3.3	67.0	3.4 ^{##}	68.1 ^{##}	3.6	71.6
Whole Grains	10	9.4	94.1	9.6	96.4	9.7	96.8	9.5	95.3
Dairy	10	9.9	99.2	10.0 ^{††}	99.8 ^{††}	9.9	98.8	9.9	99.4
Total Protein Foods	5	4.6	91.4	4.5	89.1	4.5	90.5	4.5	90.4
Seafood and Plant Proteins	5	2.3	46.5	2.4 [†]	47.1 [†]	2.1	41.6	2.3	46.1
Fatty Acids	10	6.3	62.9	6.3	62.7	6.7	67.3	6.3	63.4
Moderation Components (higher scores reflect lower concentrations in NSLP lunches)									
Refined Grains	10	9.6	95.5	9.6	96.1	9.5	95.4	9.6	95.8
Sodium	10	2.4 ^{***}	23.8 ^{***}	3.1 [†]	30.9 [†]	2.7	27.2	2.7	27.0
Empty Calories	20	19.1	95.7	19.2 ^{†††}	96.0 ^{†††}	19.6 ^{###}	98.2 ^{###}	19.2	96.1
Total Score	100	81.4	81.4	81.4	81.4	81.7	81.7	81.5	81.5
Number of Schools		434		495		277		1,206	

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Note: Mean scores for the components may not sum to the total score due to rounding.

Difference between small and medium-sized schools is significantly different from zero at the *** 0.001 level or ** 0.01 level.

Difference between medium-sized and large schools is significantly different from zero at the ††† 0.001 level, †† 0.01 level, or † 0.05 level.

Difference between large and small size schools is significantly different from zero at the ### 0.001 level, ## 0.01 level, or # 0.05 level.

HEI = Healthy Eating Index; NSLP = National School Lunch Program.

Table G.7. Mean Healthy Eating Index-2010 Scores and Percentage of Maximum Scores for NSLP Lunches Served, by Urbanicity

HEI-2010 Component	Maximum Score	Urban		Suburban		Rural		All Schools	
		Mean Score	Percentage of Maximum Score	Mean Score	Percentage of Maximum Score	Mean Score	Percentage of Maximum Score	Mean Score	Percentage of Maximum Score
Adequacy Components (higher scores reflect higher concentrations in NSLP lunches)									
Total Fruit	5	4.8	96.3	4.7	94.7	4.7 [#]	93.9 [#]	4.7	94.8
Whole Fruit	5	4.9	97.9	4.9	97.9	4.9	98.3	4.9	98.0
Total Vegetables	5	4.0	80.0	3.9 ^{†††}	78.2 ^{†††}	4.4 ^{###}	88.0 ^{##}	4.1	82.0
Greens and Beans	5	3.5	70.0	3.4 ^{††}	67.9 ^{††}	3.9 [#]	77.1 [#]	3.6	71.6
Whole Grains	10	9.4	94.1	9.7 [†]	97.2 [†]	9.4	93.8	9.5	95.3
Dairy	10	10.0	99.5	9.9	99.4	9.9	99.4	9.9	99.4
Total Protein Foods	5	4.5	90.1	4.5 [†]	89.3 [†]	4.6	91.9	4.5	90.4
Seafood and Plant Proteins	5	2.4	48.7	2.2	44.3	2.3	46.7	2.3	46.1
Fatty Acids	10	6.0	59.9	6.5	64.7	6.4	63.8	6.3	63.4
Moderation Components (higher scores reflect lower concentrations in NSLP lunches)									
Refined Grains	10	9.4	93.8	9.6	96.2	9.6	96.4	9.6	95.8
Sodium	10	3.1	30.7	3.0 ^{†††}	29.9 ^{†††}	2.1 ^{###}	21.1 ^{###}	2.7	27.0
Empty Calories	20	19.3	96.7	19.2	95.8	19.2	96.1	19.2	96.1
Total Score	100	81.3	81.3	81.5	81.5	81.5	81.5	81.5	81.5
Number of Schools		240		597		369		1,206	

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Note: Mean scores for the components may not sum to the total score due to rounding. None of the differences between urban and suburban schools were statistically significant.

Difference between suburban and rural schools is significantly different from zero at the ^{†††} 0.001 level, ^{††} 0.01 level, or [†] 0.05 level.

Difference between urban and rural schools is significantly different from zero at the ^{###} 0.001 level, ^{##} 0.01 level, or [#] 0.05 level.

HEI = Healthy Eating Index; NSLP = National School Lunch Program.

Table G.8. Mean Healthy Eating Index-2010 Scores and Percentage of Maximum Scores for NSLP Lunches Served, by District Child Poverty Rate

HEI-2010 Component	Maximum Score	Lower (less than 20 percent)		Higher (20 percent or more)		All Schools	
		Mean Score	Percentage of Maximum Score	Mean Score	Percentage of Maximum Score	Mean Score	Percentage of Maximum Score
Adequacy Components (higher scores reflect higher concentrations in NSLP lunches)							
Total Fruit	5	4.8*	95.7*	4.7	93.7	4.7	94.8
Whole Fruit	5	4.9	98.1	4.9	98.0	4.9	98.0
Total Vegetables	5	4.0**	79.6**	4.2	84.9	4.1	82.0
Greens and Beans	5	3.5	69.4	3.7	74.1	3.6	71.6
Whole Grains	10	9.5	95.0	9.6	95.7	9.5	95.3
Dairy	10	9.9	99.5	9.9	99.3	9.9	99.4
Total Protein Foods	5	4.4***	88.6***	4.6	92.5	4.5	90.4
Seafood and Plant Proteins	5	2.2	44.7	2.4	47.8	2.3	46.1
Fatty Acids	10	6.5	64.7	6.2	61.7	6.3	63.4
Moderation Components (higher scores reflect lower concentrations in NSLP lunches)							
Refined Grains	10	9.6	95.9	9.6	95.5	9.6	95.8
Sodium	10	2.8	28.1	2.6	25.7	2.7	27.0
Empty Calories	20	19.2	95.8	19.3	96.5	19.2	96.1
Total Score	100	81.3	81.3	81.6	81.6	81.5	81.5
Number of Schools		672		534		1,206	

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: Mean scores for the components may not sum to the total score due to rounding. Data on child poverty rates were from the 2011 U.S. Census Bureau's Small Area Income and Poverty Estimates school district file.

Difference between lower and higher poverty schools is significantly different from zero at the *** 0.001 level, ** 0.01 level, or * 0.05 level.

HEI = Healthy Eating Index; NSLP = National School Lunch Program.

Table G.9. Mean Healthy Eating Index-2010 Scores and Percentage of Maximum Scores for SBP Breakfasts Prepared

HEI-2010 Component	Maximum Score	Elementary Schools		Middle Schools		High Schools		All Schools	
		Mean Score	Percentage of Maximum Score	Mean Score	Percentage of Maximum Score	Mean Score	Percentage of Maximum Score	Mean Score	Percentage of Maximum Score
Adequacy Components (higher scores reflect higher concentrations in SBP breakfasts)									
Total Fruit	5	5.0	99.9	5.0	99.7	5.0	99.7	5.0	99.8
Whole Fruit	5	4.7	93.2	4.5	90.5	4.6	91.8	4.6	92.4
Total Vegetables	5	0.1	2.8	0.2	4.1	0.2	4.1	0.2	3.3
Greens and Beans	5	0.0 ^	0.1 ^	0.0 ^	0.1 ^	0.0 ^	0.1 ^	0.0^	0.1^
Whole Grains	10	9.5	95.0	9.6	96.1	9.5	95.3	9.5	95.2
Dairy	10	10.0	100.0	10.0	100.0	10.0	99.9	10.0	100.0
Total Protein Foods	5	1.3***	25.2***	1.6	31.9	1.8###	35.0###	1.4	28.6
Seafood and Plant Proteins	5	0.6	11.9	0.7	13.2	0.8	15.3	0.6	12.9
Fatty Acids	10	4.3	43.0	4.2	42.0	4.0	40.4	4.2	42.2
Moderation Components (higher scores reflect lower concentrations in SBP breakfasts)									
Refined Grains	10	9.7	96.8	9.7	96.9	9.7	97.0	9.7	96.9
Sodium	10	9.6	95.6	9.4	94.2	9.2##	92.3##	9.5	94.6
Empty Calories	20	16.7*	83.7*	16.1	80.7	16.2#	81.1#	16.5	82.6
Total Score	100	71.4	71.4	71.0	71.0	71.0	71.0	71.3	71.3
Number of Schools		415		352		344		1,111	

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: Mean scores for the components may not sum to the total score due to rounding. None of the differences between middle and high schools were statistically significant.

Difference between elementary and middle schools is significantly different from zero at the *** 0.001 level or * 0.05 level.

Difference between elementary and high schools is significantly different from zero at the ### 0.001 level, ## 0.01 level, or # 0.05 level.

HEI = Healthy Eating Index; SBP = School Breakfast Program.

^ Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1.

Table G.10. Mean Healthy Eating Index-2010 Scores and Percentage of Maximum Scores for SBP Breakfasts Prepared, by School Size

HEI-2010 Component	Maximum Score	Small (Fewer than 500 students)		Medium (500 to 999 students)		Large (1,000 or more students)		All Schools	
		Mean Score	Percentage of Maximum Score	Mean Score	Percentage of Maximum Score	Mean Score	Percentage of Maximum Score	Mean Score	Percentage of Maximum Score
Adequacy Components (higher scores reflect higher concentrations in SBP breakfasts)									
Total Fruit	5	5.0	99.7	5.0	100.0	5.0	99.9	5.0	99.8
Whole Fruit	5	4.6	92.1	4.7	93.2	4.5	91.0	4.6	92.4
Total Vegetables	5	0.2	3.0	0.2	3.3	0.2	4.8	0.2	3.3
Greens and Beans	5	0.0 ^	0.1 ^	0.0 ^	0.0 ^	0.0 ^	0.4 ^	0.0^	0.1^
Whole Grains	10	9.4	94.0	9.6	96.4	9.6	96.1	9.5	95.2
Dairy	10	10.0	100.0	10.0	100.0	10.0	99.9	10.0	100.0
Total Protein Foods	5	1.4	28.6	1.4 ^{††}	27.3 ^{††}	1.6	32.5	1.4	28.6
Seafood and Plant Proteins	5	0.6	12.0	0.7	13.5	0.7	14.3	0.6	12.9
Fatty Acids	10	4.1	41.2	4.3	43.3	4.3	43.1	4.2	42.2
Moderation Components (higher scores reflect lower concentrations in SBP breakfasts)									
Refined Grains	10	9.6	96.3	9.8	97.6	9.6	96.5	9.7	96.9
Sodium	10	9.4	94.1	9.6	95.5	9.4	93.7	9.5	94.6
Empty Calories	20	16.5	82.4	16.6	83.2	16.3	81.4	16.5	82.6
Total Score	100	70.8	70.8	71.8	71.8	71.4	71.4	71.3	71.3
Number of Schools		394		455		262		1,111	

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Note: Mean scores for the components may not sum to the total score due to rounding. None of the differences between small and medium schools or large and small schools were statistically significant.

Difference between medium-sized and large schools is significantly different from zero at the ^{††} 0.01 level.

HEI = Healthy Eating Index; SBP = School Breakfast Program.

^ Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1.

Table G.11. Mean Healthy Eating Index-2010 Scores and Percentage of Maximum Scores for SBP Breakfasts Prepared, by Urbanicity

HEI-2010 Component	Maximum Score	Urban		Suburban		Rural		All Schools	
		Mean Score	Percentage of Maximum Score	Mean Score	Percentage of Maximum Score	Mean Score	Percentage of Maximum Score	Mean Score	Percentage of Maximum Score
Adequacy Components (higher scores reflect higher concentrations in SBP breakfasts)									
Total Fruit	5	5.0	100.0	5.0	99.9	5.0	99.6	5.0	99.8
Whole Fruit	5	4.8	95.5	4.6	91.9	4.6 [#]	91.1 [#]	4.6	92.4
Total Vegetables	5	0.2 ^	3.3 ^	0.2	3.0	0.2	3.7	0.2	3.3
Greens and Beans	5	0.0 ^	0.1 ^	0.0 ^	0.2 ^	0.0 ^	0.0 ^	0.0 [^]	0.1 [^]
Whole Grains	10	9.5	94.5	9.6	95.9	9.5	94.9	9.5	95.2
Dairy	10	10.0	100.0	10.0	99.9	10.0	100.0	10.0	100.0
Total Protein Foods	5	1.3	26.1	1.3 ⁺⁺⁺	26.0 ⁺⁺⁺	1.7 ^{##}	33.3 ^{##}	1.4	28.6
Seafood and Plant Proteins	5	0.7	14.3	0.6	12.6	0.6	12.2	0.6	12.9
Fatty Acids	10	4.4	44.2	4.3	42.7	4.0	40.4	4.2	42.2
Moderation Components (higher scores reflect lower concentrations in SBP breakfasts)									
Refined Grains	10	9.7	96.6	9.7	97.1	9.7	96.7	9.7	96.9
Sodium	10	9.6	95.5	9.5	95.5	9.3	93.0	9.5	94.6
Empty Calories	20	17.5 ^{***}	87.3 ^{***}	16.2	81.1	16.3 ^{####}	81.4 ^{####}	16.5	82.6
Total Score	100	72.5 [*]	72.5 [*]	71.0	71.0	70.8 [#]	70.8 [#]	71.3	71.3
Number of Schools		232		539		340		1,111	

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Note: Mean scores for the components may not sum to the total score due to rounding.

Difference between urban and suburban schools is significantly different from zero at the *** 0.001 level or * 0.05 level.

Difference between suburban and rural schools is significantly different from zero at the +++ 0.001 level.

Difference between urban and rural schools is significantly different from zero at the ### 0.001 level, ## 0.01 level, or # 0.05 level.

HEI = Healthy Eating Index; SBP = School Breakfast Program.

[^] Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1.

Table G.12. Mean Healthy Eating Index-2010 Scores and Percentage of Maximum Scores for SBP Breakfasts Prepared, by District Child Poverty Rate

HEI-2010 Component	Maximum Score	Lower (less than 20 percent)		Higher (20 percent or more)		All Schools	
		Mean Score	Percentage of Maximum Score	Mean Score	Percentage of Maximum Score	Mean Score	Percentage of Maximum Score
Adequacy Components (higher scores reflect higher concentrations in SBP breakfasts)							
Total Fruit	5	5.0	99.9	5.0	99.7	5.0	99.8
Whole Fruit	5	4.7**	94.9**	4.5	89.7	4.6	92.4
Total Vegetables	5	0.2	3.4	0.2	3.2	0.2	3.3
Greens and Beans	5	0.0 ^	0.2 ^	0.0	0.0	0.0^	0.1^
Whole Grains	10	9.6	96.1	9.4	94.3	9.5	95.2
Dairy	10	10.0	100.0	10.0	100.0	10.0	100.0
Total Protein Foods	5	1.3*	26.8*	1.5	30.5	1.4	28.6
Seafood and Plant Proteins	5	0.6	12.4	0.7	13.4	0.6	12.9
Fatty Acids	10	4.3	42.7	4.2	41.7	4.2	42.2
Moderation Components (higher scores reflect lower concentrations in SBP breakfasts)							
Refined Grains	10	9.8*	98.0*	9.6	95.7	9.7	96.9
Sodium	10	9.6	95.8	9.3	93.4	9.5	94.6
Empty Calories	20	16.2**	81.0**	16.9	84.4	16.5	82.6
Total Score	100	71.3	71.3	71.2	71.2	71.3	71.3
Number of Schools		588		523		1,111	

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: Mean scores for the components may not sum to the total score due to rounding. Data on child poverty rates were from the 2011 U.S. Census Bureau's Small Area Income and Poverty Estimates school district file.

Difference between lower and higher poverty schools is significantly different from zero at the ** 0.01 level or * 0.05 level.

HEI = Healthy Eating Index; SBP = School Breakfast Program.

^ Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1.

Table G.13. Mean Healthy Eating Index-2010 Scores and Percentage of Maximum Scores for SBP Breakfasts Served

HEI-2010 Component	Maximum Score	Elementary Schools		Middle Schools		High Schools		All Schools	
		Mean Score	Percentage of Maximum Score	Mean Score	Percentage of Maximum Score	Mean Score	Percentage of Maximum Score	Mean Score	Percentage of Maximum Score
Adequacy Components (higher scores reflect higher concentrations in SBP breakfasts)									
Total Fruit	5	5.0	100.0	5.0	99.8	5.0	99.8	5.0	99.9
Whole Fruit	5	4.5*	90.7*	4.3	85.6	4.5	89.2	4.5	89.4
Total Vegetables	5	0.1*	2.7*	0.2	4.3	0.2#	4.3#	0.2	3.3
Greens and Beans	5	0.0 ^	0.0 ^	0.0 ^	0.1 ^	0.0 ^	0.1 ^	0.0^	0.1^
Whole Grains	10	9.6	95.6	9.6	96.3	9.5	95.1	9.6	95.6
Dairy	10	10.0**	99.6**	9.8	98.5	9.8###	97.9###	9.9	99.0
Total Protein Foods	5	1.4***	27.5***	1.8	36.7	2.0###	40.4###	1.6	32.0
Seafood and Plant Proteins	5	0.6	12.2	0.7	14.1	0.8#	16.1#	0.7	13.4
Fatty Acids	10	4.5	45.4	4.6	45.5	4.5	45.0	4.5	45.3
Moderation Components (higher scores reflect lower concentrations in SBP breakfasts)									
Refined Grains	10	9.5	95.5	9.4	94.3	9.5	94.7	9.5	95.1
Sodium	10	9.5*	94.5*	9.1	91.3	8.9###	89.4###	9.3	92.8
Empty Calories	20	16.7*	83.7*	16.2	81.1	16.3	81.7	16.6	82.8
Total Score	100	71.5	71.5	70.8	70.8	71.1	71.1	71.3	71.3
Number of Schools		414		352		344		1,110	

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: Mean scores for the components may not sum to the total score due to rounding. None of the differences between middle and high schools were statistically significant.

Difference between elementary and middle schools is significantly different from zero at the *** 0.001 level, ** 0.01 level, or * 0.05 level.

Difference between elementary and high schools is significantly different from zero at the ### 0.001 level or # 0.05 level.

HEI = Healthy Eating Index; SBP = School Breakfast Program.

[^] Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1.

Table G.14. Mean Healthy Eating Index-2010 Scores and Percentage of Maximum Scores for SBP Breakfasts Served, by School Size

HEI-2010 Component	Maximum Score	Small (Fewer than 500 students)		Medium (500 to 999 students)		Large (1,000 or more students)		All Schools	
		Mean Score	Percentage of Maximum Score	Mean Score	Percentage of Maximum Score	Mean Score	Percentage of Maximum Score	Mean Score	Percentage of Maximum Score
Adequacy Components (higher scores reflect higher concentrations in SBP breakfasts)									
Total Fruit	5	5.0	100.0	5.0	99.9	5.0	99.7	5.0	99.9
Whole Fruit	5	4.5	89.5	4.5	89.6	4.4	88.9	4.5	89.4
Total Vegetables	5	0.1	2.9	0.2	3.3	0.3 [#]	5.2 [#]	0.2	3.3
Greens and Beans	5	0.0 [^]	0.0 [^]	0.0 [^]	0.0 [^]	0.0 [^]	0.3 [^]	0.0 [^]	0.1 [^]
Whole Grains	10	9.5	94.5	9.7	96.6	9.7	96.7	9.6	95.6
Dairy	10	9.9	99.2	9.9 ^{††}	99.3 ^{††}	9.7 [#]	97.4 [#]	9.9	99.0
Total Protein Foods	5	1.6	31.8	1.5 ^{†††}	30.3 ^{†††}	1.9 ^{##}	37.9 ^{##}	1.6	32.0
Seafood and Plant Proteins	5	0.6	12.7	0.7	13.8	0.7	14.7	0.7	13.4
Fatty Acids	10	4.4	43.9	4.6	46.3	4.8	47.6	4.5	45.3
Moderation Components (higher scores reflect lower concentrations in SBP breakfasts)									
Refined Grains	10	9.5	94.7	9.6 [†]	96.1 [†]	9.3	93.1	9.5	95.1
Sodium	10	9.3	92.5	9.4 ^{††}	94.0 ^{††}	9.0	90.3	9.3	92.8
Empty Calories	20	16.5	82.6	16.6	83.2	16.5	82.3	16.6	82.8
Total Score	100	70.9	70.9	71.7	71.7	71.3	71.3	71.3	71.3
Number of Schools		394		454		262		1,110	

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Note: Mean scores for the components may not sum to the total score due to rounding. None of the differences between small and medium schools were statistically significant.

Difference between medium-sized and large schools is significantly different from zero at the ^{†††} 0.001 level, ^{††} 0.01 level, or [†] 0.05 level.

Difference between large and small size schools is significantly different from zero at the ^{##} 0.01 level, or [#] 0.05 level.

HEI = Healthy Eating Index; SBP = School Breakfast Program.

[^] Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1.

Table G.15. Mean Healthy Eating Index-2010 Scores and Percentage of Maximum Scores for SBP Breakfasts Served, by Urbanicity

HEI-2010 Component	Maximum Score	Urban		Suburban		Rural		All Schools	
		Mean Score	Percentage of Maximum Score	Mean Score	Percentage of Maximum Score	Mean Score	Percentage of Maximum Score	Mean Score	Percentage of Maximum Score
Adequacy Components (higher scores reflect higher concentrations in SBP breakfasts)									
Total Fruit	5	5.0	100.0	5.0	99.8	5.0	99.9	5.0	99.9
Whole Fruit	5	4.7**	94.1**	4.4	87.8	4.4#	88.3#	4.5	89.4
Total Vegetables	5	0.2 ^	3.5 ^	0.2	3.1	0.2	3.6	0.2	3.3
Greens and Beans	5	0.0 ^	0.1 ^	0.0 ^	0.1 ^	0.0	0.0	0.0^	0.1^
Whole Grains	10	9.6	95.6	9.6	95.8	9.5	95.4	9.6	95.6
Dairy	10	10.0*	99.6*	9.9	98.8	9.9#	98.8#	9.9	99.0
Total Protein Foods	5	1.5	29.2	1.5††	29.6††	1.8###	36.5###	1.6	32.0
Seafood and Plant Proteins	5	0.7	14.8	0.7	13.3	0.6	12.6	0.7	13.4
Fatty Acids	10	4.8	47.8	4.6	46.4	4.2	42.4	4.5	45.3
Moderation Components (higher scores reflect lower concentrations in SBP breakfasts)									
Refined Grains	10	9.4	94.3	9.5	95.1	9.6	95.6	9.5	95.1
Sodium	10	9.4	94.1	9.4	93.8	9.1	90.8	9.3	92.8
Empty Calories	20	17.3***	86.5***	16.3	81.7	16.4###	81.9###	16.6	82.8
Total Score	100	72.5*	72.5*	71.0	71.0	70.7#	70.7#	71.3	71.3
Number of Schools		231		539		340		1,110	

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Note: Mean scores for the components may not sum to the total score due to rounding.

Difference between urban and suburban schools is significantly different from zero at the *** 0.001 level, ** 0.01 level, or * 0.05 level.

Difference between suburban and rural schools is significantly different from zero at the †† 0.01 level.

Difference between urban and rural schools is significantly different from zero at the ## 0.01 level or # 0.05 level.

HEI = Healthy Eating Index; SBP = School Breakfast Program.

^ Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1.

Table G.16. Mean Healthy Eating Index-2010 Scores and Percentage of Maximum Scores for SBP Breakfasts Served, by District Child Poverty Rate

HEI-2010 Component	Maximum Score	Lower (less than 20 percent)		Higher (20 percent or more)		All Schools	
		Mean Score	Percentage of Maximum Score	Mean Score	Percentage of Maximum Score	Mean Score	Percentage of Maximum Score
Adequacy Components (higher scores reflect higher concentrations in SBP breakfasts)							
Total Fruit	5	5.0**	99.8**	5.0	100.0	5.0	99.9
Whole Fruit	5	4.5	91.0	4.4	87.8	4.5	89.4
Total Vegetables	5	0.2	3.4	0.2	3.3	0.2	3.3
Greens and Beans	5	0.0 ^	0.1 ^	0.0	0.0	0.0^	0.1^
Whole Grains	10	9.6	96.1	9.5	95.1	9.6	95.6
Dairy	10	9.9	98.8	9.9	99.3	9.9	99.0
Total Protein Foods	5	1.5	30.2	1.7	33.8	1.6	32.0
Seafood and Plant Proteins	5	0.6	12.5	0.7	14.4	0.7	13.4
Fatty Acids	10	4.5	45.0	4.6	45.7	4.5	45.3
Moderation Components (higher scores reflect lower concentrations in SBP breakfasts)							
Refined Grains	10	9.7**	96.8**	9.3	93.3	9.5	95.1
Sodium	10	9.4	94.0	9.2	91.6	9.3	92.8
Empty Calories	20	16.3**	81.4**	16.9	84.4	16.6	82.8
Total Score	100	71.2	71.2	71.3	71.3	71.3	71.3
Number of Schools		587		523		1,110	

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: Mean scores for the components may not sum to the total score due to rounding. Data on child poverty rates were from the 2011 U.S. Census Bureau's Small Area Income and Poverty Estimates school district file.

Difference between lower and higher poverty schools is significantly different from zero at the ** 0.01 level.

HEI = Healthy Eating Index; SBP = School Breakfast Program.

^ Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1.

Table G.17. Regression Coefficient Estimates for the Relationships between the Nutritional Quality of NSLP Lunches Prepared, as Measured by Total HEI-2010 Scores, and Key Characteristics of the Lunches

	Regression Coefficient (Standard Error)			
	Elementary Schools	Middle Schools	High Schools	All Schools
Compliance of Daily and Weekly Lunch Menus with NSLP Nutrition Standards				
Met Daily Quantity Requirement for Grains	0.6 (0.7)	0.1 (0.6)	0.8 (0.7)	0.4 (0.4)
Met Daily Quantity Requirement for Meats/Meat Alternatives	0.4 (1.3)	-1.4 (0.9)	-2.3 (1.9)	-0.9 (0.7)
Met Daily Quantity Requirement for Vegetables	0.3 (0.9)	0.3 (0.8)	0.3 (0.9)	0.3 (0.6)
Met Weekly Quantity Requirement for Meats/Meat Alternates	0.6 (0.6)	0.1 (0.6)	1.7 (1.9)	0.3 (0.4)
Met Weekly Quantity Requirement for Vegetables	-0.4 (1.0)	2.9** (1.1)	0.8 (0.9)	0.6 (0.8)
Met Relaxed Requirement That At Least Half of Weekly Grains Are Whole Grain-Rich	4.2*** (1.0)	4.9*** (0.9)	5.5*** (0.9)	4.9*** (0.7)
Met Minimum Calorie Level	1.2 (0.9)	1.8** (0.7)	1.5 (0.8)	1.4** (0.5)
Met Maximum Calorie Level	-1.3 (0.7)	-0.4 (0.7)	-1.4 (1.0)	-1.2* (0.5)
Met Target 1 Sodium Limit	3.9*** (0.8)	2.1* (0.9)	1.8** (0.6)	3.2*** (0.5)
Types of Foods Offered in Lunch Menus				
All Daily Menus Offered Raw Vegetables	0.6 (0.8)	1.2 (0.7)	-0.9 (0.6)	0.1 (0.5)
Median Number of Vegetable Choices Offered on Daily Menus				
Less than 2 (<i>reference category</i>)	--0--	--0--	--0--	--0--
2	-1.0 (1.0)	-0.4 (1.2)	1.2 (0.9)	-0.3 (0.8)
3 to 4	0.3 (1.2)	-2.0 (1.3)	2.8** (1.1)	0.6 (0.9)
5 or more	-0.1 (1.6)	-1.1 (1.6)	3.8 (1.2)	1.1 (1.1)
More than Half of Daily Menus Offered Dark Green Vegetables or Legumes	0.8 (0.6)	1.3* (0.6)	0.3 (0.6)	1.0* (0.4)
More than Half of Daily Menus Offered Red and Orange Vegetables	-0.4 (0.6)	-0.7 (0.6)	-1.1 (0.7)	-0.8 (0.5)

	Regression Coefficient (Standard Error)			
	Elementary Schools	Middle Schools	High Schools	All Schools
At Least One Daily Menu Offered Side Salad Bar	1.1 (0.9)	0.7 (0.7)	-0.3 (0.8)	0.9 (0.6)
No Daily Menus Offered French Fries or Similar Potato Products	0.2 (0.6)	1.5* (0.6)	0.5 (0.6)	0.4 (0.4)
More than Half of Daily Menus Offered Pizza or Pizza Products	-3.0** (0.9)	-0.5 (0.6)	-2.1*** (0.6)	-1.9*** (0.5)
At Least One Daily Menu Offered Breaded Meat (as Separate Choice or as Part of a Sandwich)	2.0** (0.7)	1.7 (0.9)	-0.2 (0.8)	1.5* (0.6)
SFA Size				
Fewer than 2,500 students (<i>reference category</i>)	--0--	--0--	--0--	--0--
2,500 to 9,999 students	-0.3 (0.7)	-0.9 (0.8)	-0.4 (0.8)	-0.3 (0.6)
10,000 or more students	-1.1 (0.8)	-1.0 (0.9)	-1.4 (1.0)	-1.0 (0.7)
School Size				
Fewer than 500 students (<i>reference category</i>)	--0--	--0--	--0--	--0--
500 to 999 students	-0.3 (0.6)	-0.5 (0.7)	-0.6 (0.7)	-0.5 (0.5)
1,000 or more students	‡	-0.1 (1.0)	-0.7 (0.9)	0.5 (0.6)
FNS Region				
Mid-Atlantic (<i>reference category</i>)	--0--	--0--	--0--	--0--
Northeast	2.3 (1.2)	-0.3 (1.1)	-2.7* (1.1)	0.9 (0.8)
Southeast	2.8** (1.0)	1.5 (1.0)	-0.9 (1.0)	1.8* (0.8)
Midwest	0.1 (1.0)	-2.1* (0.8)	-2.1* (0.9)	-0.5 (0.8)
Southwest	1.4 (1.1)	0.3 (0.9)	-0.7 (0.9)	0.8 (0.8)
Mountain Plains	2.3 (1.4)	-0.7 (0.9)	-1.7 (1.0)	0.8 (1.0)
Western	3.1*** (0.9)	2.5** (1.0)	2.6** (0.9)	2.9*** (0.7)

	Regression Coefficient (Standard Error)			
	Elementary Schools	Middle Schools	High Schools	All Schools
Urbanicity				
Urban (<i>reference category</i>)	--0--	--0--	--0--	--0--
Suburban	0.1 (0.9)	-0.1 (0.7)	-2.8*** (0.8)	-0.4 (0.7)
Rural	0.7 (1.0)	0.8 (0.9)	-3.6*** (0.9)	-0.1 (0.8)
Share of Minority Students in SFA				
Less than 20 percent (<i>reference category</i>)	--0--	--0--	--0--	--0--
20 to 39 percent	1.6* (0.7)	-2.7*** (0.8)	-0.6 (0.7)	0.3 (0.6)
40 to 59 percent	0.7 (1.1)	-1.0 (0.8)	-0.4 (0.9)	0.3 (0.8)
60 to 79 percent	0.8 (1.1)	-1.4 (1.1)	-0.5 (1.1)	0.1 (0.8)
80 to 100 percent	0.8 (1.3)	-1.2 (1.3)	-0.2 (1.0)	0.1 (1.0)
Share of Students Approved for Free or Reduced- Price Meals				
Less than 40 percent (<i>reference category</i>)	--0--	--0--	--0--	--0--
40 percent or more	1.7* (0.7)	1.4* (0.6)	-0.5 (0.6)	1.2** (0.5)
Number of Schools	451	384	372	1,207

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Coefficient estimates are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Relationship between characteristic and total HEI-2010 score is significantly different from zero at the ***0.001 level, ** 0.01 level, or * 0.05 level.

‡ Category was combined with the above category due to sparseness of observations.

--0-- = Reference category. Coefficient estimates for mutually exclusive categories are relative to the reference category's total HEI score.

HEI = Healthy Eating Index; FNS = Food and Nutrition Service; NSLP = National School Lunch Program; SFA = school food authority.

Table G.18. Regression Coefficient Estimates for the Relationships between the Nutritional Quality of SBP Breakfasts Prepared, as Measured by Total HEI-2010 Scores, and Key Characteristics of the Breakfasts

	Elementary Schools	Middle Schools	High Schools	All Schools
Compliance of Daily and Weekly Breakfast Menus with SBP Nutrition Standards				
Met Daily Quantity Requirement for Grains	-0.8 (0.6)	1.3* (0.6)	0.5 (0.7)	-0.3 (0.4)
Met Relaxed Requirement That At Least Half of Weekly Grains Are Whole Grain-Rich	5.8** (2.2)	5.0* (2.1)	3.6* (1.5)	5.3*** (1.5)
Met Minimum Calorie Level	†	1.8 (1.0)	1.5 (0.8)	1.4** (0.5)
Met Maximum Calorie Level	-0.2 (0.8)	-0.5 (0.8)	0.4 (1.0)	-0.2 (0.6)
Met Target 1 Sodium Limit	1.6 (0.8)	1.5 (0.8)	3.3*** (0.8)	1.8** (0.6)
Types of Foods Offered in Breakfast Menus				
All Daily Menus Offered Cold Cereal	0.9 (0.6)	1.3* (0.6)	0.5 (0.7)	1.0* (0.4)
More than Half of Daily Menus Offered Breakfast Pastries or Muffins	-0.3 (0.7)	0.0 0.6	0.3 (0.7)	-0.3 (0.5)
At Least One Daily Menu Offered Pizza or Pizza Products	1.3* (0.6)	2.2*** (0.7)	1.0 (0.7)	1.4** (0.5)
At Least One Daily Menu Offered Meat or Meat Alternates (as Separate Choice or as Part of an Entrée)	-1.4 (1.3)	-1.5 (2.1)	-0.6 (3.3)	-1.1 (1.1)
No Daily Menus Offered French Fries or Similar Potato Products	-0.2 (0.6)	-0.1 (0.6)	-1.0 (0.7)	-0.3 (0.4)
Institutional and Demographic Characteristics of Schools and SFAs				
SFA Size				
Fewer than 2,500 students (<i>reference category</i>)	--0--	--0--	--0--	--0--
2,500 to 9,999 students	0.2 (0.8)	1.2 (1.0)	2.7* (1.1)	0.9 (0.7)
10,000 or more students	0.3 (0.9)	1.8 (1.1)	3.4** (1.3)	1.1 (0.7)
School Size				
Fewer than 500 students (<i>reference category</i>)	--0--	--0--	--0--	--0--
500 to 999 students	0.6 (0.7)	0.3 (0.8)	-1.3 (1.0)	0.2 (0.5)
1,000 or more students	‡	0.7 (1.1)	-1.5 (1.1)	0.3 (0.7)

	Elementary Schools	Middle Schools	High Schools	All Schools
FNS Region				
Mid-Atlantic (<i>reference category</i>)	--0--	--0--	--0--	--0--
Northeast	-1.2 (1.2)	1.6 (1.4)	0.5 (1.2)	-0.6 (1.0)
Southeast	-1.6 (1.1)	-1.0 (1.3)	-1.6 (1.2)	-1.6 (0.9)
Midwest	-0.8 (1.1)	2.7* (1.3)	0.4 (1.3)	0.1 (0.9)
Southwest	-1.5 (1.0)	1.1 (1.1)	0.0 (1.2)	-0.7 (0.8)
Mountain Plains	-0.1 (1.2)	2.3 (1.5)	1.2 (1.4)	0.5 (1.1)
Western	0.8 (1.0)	4.5*** (1.2)	1.6 (1.2)	1.7* (0.8)
Urbanicity				
Urban (<i>reference category</i>)	--0--	--0--	--0--	--0--
Suburban	-1.1 (0.9)	-0.5 (0.8)	-2.1 (1.1)	-1.2 (0.7)
Rural	-0.6 (1.0)	0.5 (1.0)	-1.5 (1.2)	-0.5 (0.8)
Share of Minority Students in SFA				
Less than 20 percent (<i>reference category</i>)	--0--	--0--	--0--	--0--
20 to 39 percent	0.4 (0.9)	-2.1* (0.9)	-0.6 (1.0)	-0.2 (0.7)
40 to 59 percent	0.1 (0.9)	0.2 (1.1)	-1.0 (1.0)	-0.2 (0.8)
60 to 79 percent	-0.4 (1.1)	-1.4 (1.2)	-0.9 (1.1)	-0.8 (0.9)
80 to 100 percent	2.0 (1.2)	0.1 (1.3)	-1.1 (1.2)	0.9 (1.0)
Share of Students Approved for Free or Reduced- Price Meals				
Less than 40 percent (<i>reference category</i>)	--0--	--0--	--0--	--0--
40 percent or more	-0.3 (0.7)	1.3 (0.8)	0.2 (0.8)	0.2 (0.5)
Number of Schools	415	352	344	1,111

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Coefficient estimates are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Relationship between characteristic and total HEI-2010 score is significantly different from zero at the ***0.001 level, ** 0.01 level, or * 0.05 level.

--0-- = Reference category. Coefficient estimates for mutually exclusive categories are relative to the reference category's total HEI score.

† Variable was excluded from the model due to low within-sample variation.

‡ Category was combined with the above category due to sparseness of observations.

HEI = Healthy Eating Index; FNS = Food and Nutrition Service; SBP = School Breakfast Program; SFA = school food authority.

Table G.19. Regression Coefficient Estimates for the Relationships between the Nutritional Quality of NSLP Lunches Prepared, as Measured by Total HEI-2010 Scores, and Key Characteristics of School Foodservice Operations

	Elementary Schools	Middle Schools	High Schools	All Schools
Food Purchasing Characteristics				
SFA Uses Alliance for a Healthier Generation or Other Similar Tools for Selecting and Purchasing Healthy Foods	0.9 (0.6)	0.4 (0.7)	0.7 (0.6)	0.6 (0.5)
SFA Participates in a Food Purchasing Cooperative	1.8** (0.7)	1.7* (0.7)	1.1 (0.6)	1.6** (0.5)
SFA is Engaged in a Pouring Rights Contract	0.0 (0.7)	0.1 (0.8)	0.5 (0.7)	-0.1 (0.6)
Schools in SFA Offer Brand-Name or Chain Restaurant Foods	0.5 (1.3)	0.3 (0.9)	-1.2 (0.8)	0.0 (0.8)
School Participates in Farm to School Program	0.9 (0.9)	1.4* (0.7)	0.4 (0.8)	0.7 (0.6)
Menu Planning Characteristics				
School Uses Cycle Menus	1.2 (2.5)	0.3 (1.4)	-1.1 (1.0)	-0.6 (1.3)
SFA Conducts Nutrient Analysis of Menus	-0.1 (0.8)	0.0 (1.1)	1.4 (0.8)	0.3 (0.7)
Number of Challenges in Meeting the Updated Nutrition Standards that SFA Rated as 3 or Higher on a Scale of 1 (Not a Challenge) to 5 (Significant Challenge)				
4 or less (<i>reference category</i>)	--0--	--0--	--0--	--0--
5 to 7	0.6 (0.7)	-1.3 (0.7)	-1.5* (0.7)	-0.4 (0.6)
8	-0.1 (0.9)	-1.8* (0.8)	-1.1 (0.7)	-0.7 (0.7)
SFA Perception of New Meal Requirements' Helpfulness in Improving the Nutritional Quality of Meals				
Not at all helpful (<i>reference category</i>)	--0--	--0--	--0--	--0--
Somewhat helpful	2.0 (1.0)	-0.6 (1.0)	-0.5 (1.0)	1.4 (0.8)
Very helpful	1.8 (1.1)	-0.1 (1.0)	0.0 (1.0)	1.6 (0.9)
SFA was already improving the nutritional quality of meals prior to the new meal requirements	1.8 (1.0)	-0.3 (1.1)	-0.5 (1.0)	1.5 (0.8)
School Participates in School Breakfast Program	0.7 (1.8)	3.4** (1.3)	-1.5 (1.2)	1.1 (1.2)
School Participates in the Fresh Fruit and Vegetable Program	0.6 (0.7)	n.a. n.a.	n.a. n.a.	0.7 (0.7)

	Elementary Schools	Middle Schools	High Schools	All Schools
School Provides Afterschool Snacks or Suppers	0.7 (0.7)	1.5 (0.8)	-1.8 (1.0)	0.3 (0.6)
School Receives Fully or Partially Prepared Meals from a Separate Production or Central Kitchen	2.1* (0.8)	-0.5 (0.9)	0.5 (1.2)	1.5* (0.6)
SFA Uses a Foodservice Management Company	1.0 (0.9)	0.6 (0.9)	-2.2** (0.8)	0.0 (0.8)
School Uses Offer-Versus-Serve at Lunch	-1.2 (1.0)	1.5 (1.5)	†	-1.5 (0.8)
School Has Policies and Procedures for Accommodating Students with Food Allergies or Special Dietary Needs	1.6 (1.5)	2.3* (1.1)	0.3 (1.0)	0.9 (1.1)
Number of HealthierUS School Challenge Smarter Lunchroom Techniques Used				
Zero (<i>reference category</i>)	--0--	--0--	--0--	--0--
1	-0.5 (0.8)	-1.8 (1.0)	1.1 (1.0)	-0.3 (0.7)
2 to 3	1.5 (0.8)	0.5 (0.8)	0.6 (1.0)	1.2 (0.6)
4 to 7	1.1 (1.0)	0.5 (1.0)	0.2 (1.1)	0.6 (0.7)
Price Charged for Paid Lunches				
School Offered Free Lunch to All Students	-0.4 (1.0)	-0.4 (1.3)	-1.5 (1.3)	-0.3 (0.8)
\$2.25 or less (<i>reference category</i>)	--0--	--0--	--0--	--0--
\$2.26 to \$2.50	0.0 (1.0)	-0.6 (1.2)	-0.5 (1.1)	0.0 (0.8)
\$2.51 to \$2.75	-0.4 (0.9)	-0.3 (1.2)	-1.2 (0.9)	-0.7 (0.8)
More than \$2.75	-3.3 (1.7)	0.1 (1.1)	-1.8 (1.0)	-1.2 (0.9)
SFA Size				
Fewer than 2,500 students (<i>reference category</i>)	--0--	--0--	--0--	--0--
2,500 to 9,999 students	-0.5 (0.8)	-0.2 (0.9)	-0.6 (0.9)	-0.3 (0.7)
10,000 or more students	-1.2 (0.9)	-1.3 (1.0)	-2.2* (1.0)	-1.0 (0.8)
School Size				
Fewer than 500 students (<i>reference category</i>)	--0--	--0--	--0--	--0--
500 to 999 students	-0.2 (0.6)	-0.6 (0.8)	-0.9 (0.8)	-0.6 (0.5)
1,000 or more students	‡	-1.0 (1.1)	-0.8 (1.1)	-0.1 (0.7)

	Elementary Schools	Middle Schools	High Schools	All Schools
FNS Region				
Mid-Atlantic (<i>reference category</i>)	--0--	--0--	--0--	--0--
Northeast	0.4 (1.1)	-0.9 (1.3)	-3.8** (1.2)	-0.7 (0.9)
Southeast	-0.2 (1.0)	0.9 (1.1)	-1.6 (1.1)	-0.1 (0.9)
Midwest	-1.2 (1.0)	-2.4* (1.1)	-2.5* (1.1)	-1.3 (0.9)
Southwest	-0.2 (1.1)	0.4 (1.1)	-0.1 (1.0)	0.1 (0.9)
Mountain Plains	0.8 (1.4)	-0.9 (1.4)	-3.7** (1.2)	-0.5 (1.2)
Western	1.2 (1.1)	2.3 (1.2)	2.0 (1.1)	1.8* (0.9)
Urbanicity				
Urban (<i>reference category</i>)	--0--	--0--	--0--	--0--
Suburban	1.3 (0.9)	0.8 (0.8)	-2.3* (0.9)	0.6 (0.7)
Rural	1.3 (1.0)	2.0* (1.0)	-3.5*** (1.0)	0.6 (0.8)
Share of Minority Students in SFA				
Less than 20 percent (<i>reference category</i>)	--0--	--0--	--0--	--0--
20 to 39 percent	2.1** (0.8)	-2.2* (0.9)	-0.5 (0.8)	0.9 (0.6)
40 to 59 percent	1.6 (1.1)	0.1 (1.0)	0.8 (1.0)	1.0 (0.8)
60 to 79 percent	0.3 (1.1)	-1.5 (1.1)	-0.1 (1.1)	-0.1 (0.9)
80 to 100 percent	0.4 (1.2)	-1.8 (1.3)	-0.3 (1.2)	0.0 (1.0)
Share of Students Approved for Free or Reduced-Price Meals				
Less than 40 percent (<i>reference category</i>)	--0--	--0--	--0--	--0--
40 percent or more	1.1 (0.8)	0.0 (0.9)	-0.5 (0.7)	0.6 (0.6)
Number of Schools	451	384	372	1,207

Source: School Nutrition and Meal Cost Study, Menu Survey, School Food Authority Director Survey, School Nutrition Manager Survey, and Cafeteria Observation Guide, school year 2014-2015. Coefficient estimates are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Relationship between characteristic and total HEI-2010 score is significantly different from zero at the ***0.001 level, ** 0.01 level, or * 0.05 level.

--0-- = Reference category. Coefficient estimates for mutually exclusive categories are relative to the reference category's total HEI score.

† Variable was excluded from the model due to low within-sample variation.

‡ Category was combined with the above category due to sparseness of observations.

HEI = Healthy Eating Index; FNS = Food and Nutrition Service; NSLP = National School Lunch Program; SFA = school food authority.

Table G.20. Regression Coefficient Estimates for the Relationships between the Nutritional Quality of SBP Breakfasts Prepared, as Measured by Total HEI-2010 Scores, and Key Characteristics of School Foodservice Operations

	Elementary Schools	Middle Schools	High Schools	All Schools
Food Purchasing Characteristics				
SFA Uses Alliance for a Healthier Generation or Other Similar Tools for Selecting and Purchasing Healthy Foods	0.5 (0.6)	0.8 (0.7)	-0.5 (0.8)	0.2 (0.5)
SFA Participates in a Food Purchasing Cooperative	0.4 (0.7)	0.2 (0.8)	-0.3 (0.7)	0.2 (0.5)
School Participates in Farm to School Program	2.9*** (0.8)	-0.5 (1.0)	1.5* (0.8)	2.0*** (0.6)
Menu Planning Characteristics				
School Uses Cycle Menus	-0.7 (1.9)	0.0 (1.3)	0.2 (2.2)	-1.1 (1.2)
SFA Conducts Nutrient Analysis of Menus	0.7 (1.0)	-0.9 (1.0)	0.3 (0.9)	0.3 (0.7)
Number of Challenges in Meeting the Updated Nutrition Standards that SFA Rated as 3 or Higher on a Scale of 1 (Not a Challenge) to 5 (Significant Challenge)				
4 or less (<i>reference category</i>)	--0--	--0--	--0--	--0--
5 to 7	-1.4 (0.7)	-0.1 (0.7)	1.0 (0.9)	-0.7 (0.6)
8	-1.3 (0.8)	-0.7 (1.0)	0.3 (1.0)	-0.8 (0.7)
SFA Perception of New Meal Requirements' Helpfulness in Improving the Nutritional Quality of Meals				
Not at all helpful (<i>reference category</i>)	--0--	--0--	--0--	--0--
Somewhat helpful	2.1 (1.4)	0.9 (1.2)	0.8 (1.1)	1.8 (1.1)
Very helpful	0.9 (1.4)	1.4 (1.3)	3.2** (1.2)	1.5 (1.1)
SFA was already improving the nutritional quality of meals prior to the new meal requirements	1.8 (1.5)	1.5 (1.3)	-0.5 (1.2)	1.5 (1.1)
Characteristics of the School Meal Programs				
School Offers Grab-and-Go Option at Breakfast	-0.9 (1.0)	-1.0 (1.0)	-0.6 (0.8)	-0.9 (0.6)
Students Have Option of Eating Breakfast in the Classroom	-0.7 (0.7)	0.2 (1.0)	1.3 (1.2)	-0.1 (0.6)
School Participates in the Fresh Fruit and Vegetable Program	0.1 (0.6)	n.a. n.a.	n.a. n.a.	n.a. n.a.

	Elementary Schools	Middle Schools	High Schools	All Schools
Meal Service Characteristics				
School Receives Fully or Partially Prepared Meals from a Separate Production or Central Kitchen	2.1* (0.8)	-1.7 (1.1)	1.1 (1.5)	1.3 (0.7)
SFA Uses a Foodservice Management Company	1.3 (0.8)	-0.6 (1.2)	-0.7 (1.1)	0.8 (0.7)
School Uses Offer-Versus-Serve at Breakfast	1.1 (1.3)	-3.6* (1.5)	0.6 (1.9)	0.9 (1.1)
School Has Policies and Procedures for Accommodating Students with Food Allergies or Special Dietary Needs	-0.6 (1.4)	-0.4 (2.1)	-2.4 (1.4)	-0.9 (1.1)
Price Charged for Paid Breakfast				
School Offered Free Breakfast to All Students	-1.2 (1.2)	-2.1 (1.1)	-0.3 (1.0)	-1.2 (0.8)
Less than \$1.25 (<i>reference category</i>)	--0--	--0--	--0--	--0--
\$1.25 to \$1.49	-1.8* (0.9)	-1.6 (1.1)	1.8 (1.0)	-1.1 (0.7)
\$1.50 to \$1.99	-2.8** (1.0)	-3.3** (1.2)	0.6 (1.1)	-2.1** (0.8)
\$2.00 or more	-0.6 (1.2)	-0.5 (1.5)	-1.1 (1.2)	-0.9 (0.9)
Institutional and Demographic Characteristics of Schools and SFAs				
SFA Size				
Fewer than 2,500 students (<i>reference category</i>)	--0--	--0--	--0--	--0--
2,500 to 9,999 students	-0.1 (0.8)	0.2 (1.2)	1.8 (1.1)	0.4 (0.7)
10,000 or more students	-0.2 (0.9)	0.4 (1.3)	1.4 (1.3)	0.2 (0.8)
School Size				
Fewer than 500 students (<i>reference category</i>)	--0--	--0--	--0--	--0--
500 to 999 students	0.6 (0.6)	0.4 (1.0)	0.5 (1.1)	0.5 (0.5)
1,000 or more students	‡	0.2 (1.3)	0.3 (1.2)	0.7 (0.7)
FNS Region				
Mid-Atlantic (<i>reference category</i>)	--0--	--0--	--0--	--0--
Northeast	-1.2 (1.2)	1.3 (1.7)	-1.3 (1.5)	-0.9 (1.0)
Southeast	-1.6 (1.1)	-1.1 (1.2)	-0.9 (1.2)	-1.6 (0.9)
Midwest	-0.4 (1.1)	3.1* (1.3)	0.8 (1.3)	0.4 (0.9)
Southwest	-1.4 (1.1)	1.2 (1.1)	1.3 (1.2)	-0.5 (0.9)

	Elementary Schools	Middle Schools	High Schools	All Schools
Mountain Plains	0.2 (1.3)	2.5 (1.4)	1.3 (1.4)	0.7 (1.1)
Western	1.4 (1.0)	4.9*** (1.2)	2.0 (1.3)	2.1* (0.8)
Urbanicity				
Urban (<i>reference category</i>)	--0--	--0--	--0--	--0--
Suburban	-1.2 (0.8)	-0.6 (0.9)	-2.3 (1.2)	-1.2 (0.7)
Rural	-0.1 (1.0)	-0.3 (1.0)	-2.1 (1.2)	-0.4 (0.7)
Share of Minority Students in SFA				
Less than 20 percent (<i>reference category</i>)	--0--	--0--	--0--	--0--
20 to 39 percent	0.7 (0.8)	-0.5 (0.9)	0.7 (1.0)	0.2 (0.7)
40 to 59 percent	-0.5 (1.0)	0.8 (1.1)	0.6 (1.1)	-0.2 (0.8)
60 to 79 percent	-2.0 (1.3)	-0.4 (1.3)	0.6 (1.2)	-1.5 (1.0)
80 to 100 percent	0.9 (1.2)	0.8 (1.5)	-0.3 (1.3)	0.4 (1.0)
Share of Students Approved for Free or Reduced-Price Meals				
Less than 40 percent (<i>reference category</i>)	--0--	--0--	--0--	--0--
40 percent or more	-0.1 (0.7)	0.5 (0.8)	0.3 (0.8)	0.0 (0.5)
Number of Schools	415	352	344	1,111

Source: School Nutrition and Meal Cost Study, Menu Survey, School Food Authority Director Survey, School Nutrition Manager Survey, and Cafeteria Observation Guide, school year 2014-2015. Coefficient estimates are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Relationship between characteristic and total HEI-2010 score is significantly different from zero at the ***0.001 level, ** 0.01 level, or * 0.05 level.

‡ Category was combined with the above category due to sparseness of observations.

--0-- = Reference category. Coefficient estimates for mutually exclusive categories are relative to the reference category's total HEI score.

n.a. = Characteristic did not apply to any schools within the specific school type.

HEI = Healthy Eating Index; FNS = Food and Nutrition Service; SBP = School Breakfast Program; SFA = school food authority.

Table G.21. Regression Coefficient Estimates for the Relationships between the Nutritional Quality of NSLP Lunches Prepared, as Measured by Total HEI-2010 Scores, and Key Characteristics of the School Food Environment

	Elementary Schools	Middle Schools	High Schools	All Schools
Wellness Policies and Practices				
SFA Has Nutrition Standards for School Meals that Exceed Federal Standards	0.2 (0.7)	-0.9 (0.7)	-1.0 (0.7)	-0.3 (0.5)
SFA Has Plan for Informing Public About Wellness Policy Content and Implementation	0.7 (0.7)	1.2 (0.8)	0.2 (0.6)	0.6 (0.6)
School Has School-Level Wellness Policy in Addition to District Wellness Policy	0.2 (0.9)	-0.6 (1.0)	-2.0* (0.8)	-0.4 (0.6)
SFA Wellness Policy Includes Nutrition Promotion	-0.6 (0.8)	-0.1 (0.9)	0.6 (0.7)	-0.2 (0.6)
School Conducted a Nutrition Education Activity in the Classroom or Foodservice Area	0.8 (0.7)	1.1 (0.7)	-0.4 (0.5)	0.5 (0.5)
School Operates a School Garden	0.9 (1.0)	0.0 (1.0)	†	0.2 (0.8)
Competitive Foods				
School Does Not Sell Competitive Foods during Mealtimes	2.7* (1.2)	4.9*** (1.3)	5.8** (1.8)	2.8* (1.1)
School Sells Foods Other than Milk on an A la Carte Basis	0.5 (0.7)	1.2 (0.9)	0.8 (0.9)	0.5 (0.6)
School Sells Foods and Beverages in Vending Machine	-1.5 (1.2)	0.1 (0.7)	1.1 (0.7)	-0.1 (0.6)
SFA Has Standards for Competitive Foods that Exceed Smart Snacks in Schools Standards	-0.4 (0.7)	-0.8 (0.7)	-0.3 (0.7)	-0.5 (0.5)
Meal Service Practices				
Length of Lunch Period				
Less than 30 minutes (<i>reference category</i>)	--0--	--0--	--0--	--0--
30 to 44 minutes	-0.8 (0.8)	0.6 (0.9)	0.9 (0.7)	-0.1 (0.6)
45 minutes or more	-0.5 (1.1)	-0.7 (1.2)	0.4 (1.0)	0.2 (0.7)
School Has Multiple Lunch Periods	-0.7 (1.2)	0.3 (0.8)	1.4 (0.7)	0.0 (0.6)
School Has Other Activities Scheduled during Lunch Period	0.4 (0.8)	-0.7 (0.7)	0.5 (0.6)	0.4 (0.5)
School Has More than One Line or Station that Offers Reimbursable Lunches or Components of Reimbursable Lunches	0.4 (0.7)	-0.7 (0.7)	0.5 (0.8)	0.2 (0.5)

	Elementary Schools	Middle Schools	High Schools	All Schools
Institutional and Demographic Characteristics of Schools and SFAs				
SFA Size				
Fewer than 2,500 students (<i>reference category</i>)	--0--	--0--	--0--	--0--
2,500 to 9,999 students	0.7 (0.8)	-1.0 (0.9)	-0.6 (0.9)	0.1 (0.7)
10,000 or more students	-0.6 (1.0)	-1.5 (1.0)	-2.0 (1.1)	-0.9 (0.8)
School Size				
Fewer than 500 students (<i>reference category</i>)	--0--	--0--	--0--	--0--
500 to 999 students	0.0 (0.6)	-0.2 (0.8)	-1.3 (0.8)	-0.3 (0.5)
1,000 or more students	‡	-0.4 (1.1)	-1.8 (1.0)	0.3 (0.7)
FNS Region				
Mid-Atlantic (<i>reference category</i>)	--0--	--0--	--0--	--0--
Northeast	0.4 (1.3)	0.5 (1.3)	-4.4*** (1.2)	-0.6 (1.0)
Southeast	0.5 (1.2)	1.5 (1.2)	-1.1 (1.2)	0.6 (0.9)
Midwest	-0.2 (1.1)	-1.6 (1.1)	-2.5* (1.0)	-0.7 (0.9)
Southwest	0.0 (1.1)	0.2 (1.1)	0.4 (1.1)	0.4 (0.9)
Mountain Plains	0.9 (1.5)	-1.5 (1.5)	-3.1* (1.3)	-0.4 (1.2)
Western	2.1* (1.1)	3.2** (1.1)	2.4* (1.2)	2.5** (0.8)
Urbanicity				
Urban (<i>reference category</i>)	--0--	--0--	--0--	--0--
Suburban	0.4 (0.9)	0.1 (0.8)	-2.3* (0.9)	0.1 (0.7)
Rural	0.7 (1.1)	1.2 (1.0)	-2.7** (1.1)	0.2 (0.8)
Share of Minority Students in SFA				
Less than 20 percent (<i>reference category</i>)	--0--	--0--	--0--	--0--
20 to 39 percent	2.0* (0.9)	-2.0* (0.8)	-0.7 (0.7)	0.8 (0.7)
40 to 59 percent	0.9 (1.1)	-0.4 (1.0)	-0.5 (1.0)	0.6 (0.9)
60 to 79 percent	0.4 (1.2)	-0.7 (1.2)	-0.5 (0.9)	0.0 (0.9)

	Elementary Schools	Middle Schools	High Schools	All Schools
80 to 100 percent	0.4 (1.3)	-1.5 (1.4)	0.0 (1.1)	0.0 (1.0)
Share of Students Approved for Free or Reduced-Price Meals				
Less than 40 percent (<i>reference category</i>)	--0--	--0--	--0--	--0--
40 percent or more	1.5 (0.8)	0.8 (0.9)	-0.8 (0.7)	1.0 (0.6)
Number of Schools	451	384	372	1,207

Source: School Nutrition and Meal Cost Study, Menu Survey, School Food Authority Director Survey, School Nutrition Manager Survey, Principal Survey, Vending Machine and Other Sources of Foods and Beverages Checklist, A la Carte Checklist, and Cafeteria Observation Guide, school year 2014-2015. Coefficient estimates are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Relationship between characteristic and total HEI-2010 score is significantly different from zero at the ***0.001 level, ** 0.01 level, or * 0.05 level.

--0-- = Reference category. Coefficient estimates for mutually exclusive categories are relative to the reference category's total HEI score.

† Variable was excluded from the model due to low within-sample variation.

‡ Category was combined with the above category due to sparseness of observations.

HEI = Healthy Eating Index; FNS = Food and Nutrition Service; NSLP = National School Lunch Program; SFA = school food authority.

Table G.22. Regression Coefficient Estimates for the Relationships between the Nutritional Quality of SBP Breakfasts Prepared, as Measured by Total HEI-2010 Scores, and Key Characteristics of the School Food Environment

	Elementary Schools	Middle Schools	High Schools	All Schools
Wellness Policies and Practices				
SFA Has Standards for School Meals that Exceed Federal Standards	-0.3 (0.6)	-0.9 (0.7)	-0.2 (0.7)	-0.4 (0.5)
SFA Has Plan for Informing Public About Wellness Policy Content and Implementation	0.2 (0.8)	0.1 (0.8)	0.1 (0.7)	0.3 (0.6)
School Has School-Level Wellness Policy in Addition to District Wellness Policy	0.1 (0.9)	0.7 (0.8)	0.1 (0.8)	0.1 (0.6)
SFA Wellness Policy Includes Nutrition Promotion	2.0 (1.1)	0.5 (0.9)	-1.1 (0.9)	0.8 (0.9)
School Conducted a Nutrition Education Activity in the Classroom or Foodservice Area	0.9 (0.6)	0.7 (0.7)	0.7 (0.6)	0.8 (0.4)
Competitive Foods				
School Sells Foods Other than Milk on an A la Carte Basis	1.0 (0.7)	-0.2 (0.8)	0.6 (1.1)	0.7 (0.5)
School Sells Foods and Beverages in Vending Machine	-0.3 (1.3)	-1.0 (0.6)	-0.2 (0.8)	-0.4 (0.7)
Meal Service Practices				
Length of Breakfast Period				
Less than 25 minutes (<i>reference category</i>)	--0--	--0--	--0--	--0--
25 to 39 minutes	1.4 (0.8)	0.0 (0.8)	0.4 (0.8)	1.0 (0.5)
40 minutes or more	0.3 (0.8)	0.3 (0.9)	1.9 (1.0)	0.6 (0.5)
First Bus Arrives before or at Same Time as Breakfast	1.4 (0.8)	-1.7* (0.9)	0.5 (0.9)	0.7 (0.6)
Last Bus Arrives before or at Same Time as Breakfast	-0.8 (0.9)	0.8 (1.2)	0.5 (1.0)	-0.3 (0.7)
Institutional and Demographic Characteristics of Schools and SFAs				
SFA Size				
Fewer than 2,500 students (<i>reference category</i>)	--0--	--0--	--0--	--0--
2,500 to 9,999 students	-0.1 (0.8)	0.8 (1.1)	2.7* (1.2)	0.6 (0.7)
10,000 or more students	0.1 (0.9)	1.4 (1.2)	3.2* (1.3)	0.6 (0.8)

	Elementary Schools	Middle Schools	High Schools	All Schools
School Size				
Fewer than 500 students (<i>reference category</i>)	--0--	--0--	--0--	--0--
500 to 999 students	0.9 (0.6)	0.5 (0.9)	-1.5 (1.1)	0.5 (0.5)
1,000 or more students	‡	0.9 (1.3)	-2.0 (1.1)	0.4 (0.7)
FNS Region				
Mid-Atlantic (<i>reference category</i>)	--0--	--0--	--0--	--0--
Northeast	-1.3 (1.2)	0.4 (1.6)	-0.8 (1.3)	-1.2 (1.0)
Southeast	-2.6* (1.2)	-1.0 (1.1)	-1.6 (1.2)	-2.1* (1.0)
Midwest	0.1 (1.1)	3.0* (1.2)	1.4 (1.3)	0.6 (0.9)
Southwest	-2.2* (1.1)	1.9 (1.1)	0.5 (1.2)	-1.1 (0.9)
Mountain Plains	-0.3 (1.3)	2.7 (1.4)	1.3 (1.3)	0.4 (1.1)
Western	1.1 (1.0)	4.6*** (1.1)	2.2 (1.1)	1.8* (0.9)
Urbanicity				
Urban (<i>reference category</i>)	--0--	--0--	--0--	--0--
Suburban	-1.2 (0.9)	0.1 (0.8)	-1.8 (1.2)	-1.3 (0.7)
Rural	-0.3 (1.0)	0.6 (1.0)	-2.1 (1.2)	-0.6 (0.8)
Share of Minority Students in SFA				
Less than 20 percent (<i>reference category</i>)	--0--	--0--	--0--	--0--
20 to 39 percent	1.0 (0.9)	-1.0 (0.9)	0.1 (1.0)	0.4 (0.7)
40 to 59 percent	-0.5 (1.1)	0.3 (1.0)	0.0 (1.1)	-0.2 (0.8)
60 to 79 percent	-0.8 (1.4)	-1.8 (1.3)	0.1 (1.2)	-0.8 (1.0)
80 to 100 percent	1.9 (1.3)	0.4 (1.2)	-0.5 (1.3)	1.1 (1.0)
Share of Students Approved for Free or Reduced-Price Meals				
Less than 40 percent (<i>reference category</i>)	--0--	--0--	--0--	--0--
40 percent or more	-0.6 (0.7)	0.2 (0.8)	0.0 (0.9)	-0.2 (0.5)
Number of Schools	415	352	344	1,111

Source: School Nutrition and Meal Cost Study, Menu Survey, School Food Authority Director Survey, School Nutrition Manager Survey, Principal Survey, Vending Machine and Other Sources of Foods and Beverages Checklist, A la Carte Checklist, and Cafeteria Observation Guide, school year 2014-2015. Coefficient estimates are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Relationship between characteristic and total HEI-2010 score is significantly different from zero at the ***0.001 level or * 0.05 level.

--0-- = Reference category. Coefficient estimates for mutually exclusive categories are relative to the reference category's total HEI score.

† Variable was excluded from the model due to low within-sample variation.

‡ Category was combined with the above category due to sparseness of observations.

HEI = Healthy Eating Index; FNS = Food and Nutrition Service; SBP = School Breakfast Program; SFA = school food authority.

Table G.23. Regression Coefficient Estimates for the Relationships between the Nutritional Quality of NSLP Lunches Prepared, as Measured by Total HEI-2010 Scores, and Institutional and Demographic Characteristics of Schools and SFAs

	Elementary Schools	Middle Schools	High Schools	All Schools
Institutional and Demographic Characteristics of Schools and SFAs				
SFA Size				
Fewer than 2,500 students (<i>reference category</i>)	--0--	--0--	--0--	--0--
2,500 to 9,999 students	0.5 (0.8)	-0.6 (0.9)	-0.5 (1.0)	0.2 (0.7)
10,000 or more students	-0.8 (0.9)	-1.4 (1.1)	-1.7 (1.1)	-0.9 (0.7)
School Size				
Fewer than 500 students (<i>reference category</i>)	--0--	--0--	--0--	--0--
500 to 999 students	0.0 (0.7)	0.1 (0.9)	-0.5 (0.9)	-0.2 (0.5)
1,000 or more students	‡	-0.1 (1.2)	-1.1 (1.0)	0.4 (0.6)
FNS Region				
Mid-Atlantic (<i>reference category</i>)	--0--	--0--	--0--	--0--
Northeast	0.7 (1.2)	0.5 (1.3)	-4.2** (1.3)	-0.2 (1.0)
Southeast	1.4 (1.1)	2.2 (1.3)	-0.8 (1.1)	1.1 (0.8)
Midwest	-0.3 (1.0)	-1.4 (1.2)	-2.0* (1.0)	-0.6 (0.8)
Southwest	0.4 (1.1)	1.2 (1.2)	0.3 (1.1)	0.7 (0.8)
Mountain Plains	1.2 (1.5)	-1.2 (1.6)	-3.1* (1.3)	-0.1 (1.2)
Western	2.6* (1.1)	3.4** (1.2)	2.3* (1.0)	2.7*** (0.8)
Urbanicity				
Urban (<i>reference category</i>)	--0--	--0--	--0--	--0--
Suburban	0.6 (0.9)	0.2 (0.8)	-2.5* (1.0)	0.2 (0.7)
Rural	0.5 (1.1)	1.2 (1.0)	-3.3** (1.2)	0.1 (0.8)

	Elementary Schools	Middle Schools	High Schools	All Schools
Share of Minority Students in SFA				
Less than 20 percent (<i>reference category</i>)	--0--	--0--	--0--	--0--
20 to 39 percent	2.2* (0.9)	-2.0* (0.8)	-0.7 (0.8)	0.8 (0.7)
40 to 59 percent	1.3 (1.1)	0.1 (1.0)	-0.1 (1.0)	0.8 (0.9)
60 to 79 percent	0.8 (1.2)	-0.8 (1.2)	-0.7 (1.1)	0.2 (0.9)
80 to 100 percent	1.1 (1.3)	-1.0 (1.4)	-1.3 (1.3)	0.3 (1.0)
Share of Students Approved for Free or Reduced-Price Meals				
Less than 40 percent (<i>reference category</i>)	--0--	--0--	--0--	--0--
40 percent or more	1.7* (0.8)	1.0 (0.9)	-0.7 (0.8)	1.1 (0.6)
Number of Schools	451	384	372	1,207

Source: School Nutrition and Meal Cost Study, Menu Survey, School Food Authority Director Survey, Common Core of Data (CCD) 2011-2012, 2011 U.S. Census Bureau's Small Area Income and Poverty Estimates school district file, and Food and Nutrition Service's SFA Verification Summary Report 2012-2013, school year 2014-2015. Coefficient estimates are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Relationship between characteristic and total HEI-2010 score is significantly different from zero at the ***0.001 level, ** 0.01 level, or * 0.05 level.

--0-- = Reference category. Coefficient estimates for mutually exclusive categories are relative to the reference category's total HEI score.

‡ Category was combined with the above category due to sparseness of observations.

HEI = Healthy Eating Index; FNS = Food and Nutrition Service; NSLP = National School Lunch Program; SFA = school food authority.

Table G.24. Regression Coefficient Estimates for the Relationships between the Nutritional Quality of SBP Breakfasts Prepared, as Measured by Total HEI-2010 Scores, and Institutional and Demographic Characteristics of Schools and SFAs

	Elementary Schools	Middle Schools	High Schools	All Schools
Institutional and Demographic Characteristics of Schools and SFAs				
SFA Size				
Fewer than 2,500 students (<i>reference category</i>)	--0--	--0--	--0--	--0--
2,500 to 9,999 students	0.2 (0.8)	0.7 (1.1)	2.6* (1.1)	0.8 (0.7)
10,000 or more students	0.3 (1.0)	1.0 (1.2)	3.0* (1.2)	0.8 (0.8)
School Size				
Fewer than 500 students (<i>reference category</i>)	--0--	--0--	--0--	--0--
500 to 999 students	0.9 (0.7)	0.8 (0.9)	-0.8 (1.0)	0.6 (0.5)
1,000 or more students	‡	0.9 (1.2)	-1.5 (1.0)	0.5 (0.7)
FNS Region				
Mid-Atlantic (<i>reference category</i>)	--0--	--0--	--0--	--0--
Northeast	-1.6 (1.2)	0.8 (1.5)	-0.5 (1.2)	-1.1 (1.0)
Southeast	-2.4* (1.1)	-0.8 (1.2)	-1.3 (1.2)	-1.8 (0.9)
Midwest	-0.7 (1.1)	2.9* (1.3)	1.0 (1.2)	0.3 (0.9)
Southwest	-2.3 (1.2)	1.8 (1.1)	0.6 (1.2)	-0.9 (0.9)
Mountain Plains	-0.3 (1.3)	2.2 (1.5)	0.8 (1.4)	0.4 (1.1)
Western	0.9 (1.0)	4.5*** (1.2)	2.1 (1.1)	1.8* (0.8)
Urbanicity				
Urban (<i>reference category</i>)	--0--	--0--	--0--	--0--
Suburban	-1.3 (0.9)	-0.5 (0.9)	-2.2 (1.2)	-1.4 (0.7)
Rural	-0.4 (1.0)	0.0 (1.1)	-2.2 (1.2)	-0.7 (0.8)

	Elementary Schools	Middle Schools	High Schools	All Schools
District's percentage of minority students				
Less than 20 percent (<i>reference category</i>)	--0--	--0--	--0--	--0--
20 to 39 percent	0.9 (0.9)	-1.1 (0.9)	0.1 (1.0)	0.4 (0.7)
40 to 59 percent	-0.3 (1.1)	0.7 (1.1)	-0.5 (1.0)	-0.2 (0.8)
60 to 79 percent	-0.8 (1.4)	-1.2 (1.3)	-0.2 (1.2)	-0.9 (1.0)
80 to 100 percent	1.4 (1.2)	0.3 (1.3)	-0.9 (1.2)	0.7 (1.0)
Share of Students Approved for Free or Reduced-Price Meals				
Less than 40 percent (<i>reference category</i>)	--0--	--0--	--0--	--0--
40 percent or more	-0.6 (0.7)	0.9 (0.8)	0.3 (0.9)	0.0 (0.6)
Number of Schools	415	352	344	1,111

Source: School Nutrition and Meal Cost Study, Menu Survey, School Food Authority Director Survey, Common Core of Data (CCD) 2011-2012, 2011 U.S. Census Bureau's Small Area Income and Poverty Estimates school district file, and Food and Nutrition Service's SFA Verification Summary Report 2012-2013, school year 2014-2015. Coefficient estimates are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Relationship between characteristic and total HEI-2010 score is significantly different from zero at the ***0.001 level or * 0.05 level.

--0-- = Reference category. Coefficient estimates for mutually exclusive categories are relative to the reference category's total HEI score.

‡ Category was combined with the above category due to sparseness of observations.

HEI = Healthy Eating Index; FNS = Food and Nutrition Service; SBP = School Breakfast Program; SFA = school food authority.

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APPENDIX H

METHODS USED FOR MULTIVARIATE MODELING OF FACTORS ASSOCIATED WITH THE NUTRITIONAL QUALITY OF SCHOOL MEALS

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TABLES

H.1 Exclusions from NSLP and SBP Regression Analyses H.7

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This appendix describes the methods used for the multivariate analyses presented in Chapter 5. These analyses cover research questions about the relationships between the nutritional quality of NSLP lunches and SBP breakfasts and key characteristics in four domains:

- Characteristics of school meals, including compliance of daily and weekly menus with selected NSLP and SBP nutrition standards
- Characteristics of school foodservice operations
- Characteristics of the school food environment
- Institutional and demographic characteristics of schools and SFAs.

A. General Modeling Approach

Multiple linear regression estimation was used to produce estimates of the relationships between the nutritional quality of school meals and key characteristics in the four domains listed above. Nutritional quality was measured using total HEI-2010 scores for meals prepared and separate analyses were conducted for NSLP lunches and SBP breakfasts. Single-equation regression models were used to estimate these relationships at the school level, taking the general form of:

$$(1) \quad Y_s = X'_s \beta + Z'_s \gamma + Q'_s \delta + \varepsilon_s,$$

where Y_s is the HEI-2010 total score for school s , X_s is a vector of institutional characteristics of school s and the school's SFA with coefficient β , Z_s is a vector of demographic characteristics of the school's students with coefficient γ , Q_s is a vector of key characteristics and factors within the domain of interest with δ as the corresponding coefficient, and ε_s is a random error term.

When estimating the relationships between the nutritional quality of school meals and key characteristics of the meals and schools in which the meals were prepared, it is important to control for other factors that may influence nutritional quality and also be correlated with various meal and school characteristics. For example, food purchasing behaviors, such as use of food purchasing cooperatives, may vary by FNS region, but regional differences in the quality and types of foods available for purchase may partially explain differences between schools in the nutritional quality of school meals. In this case, not controlling for regional differences would overestimate the strength of the relationship between use of food purchasing cooperatives and the nutritional quality of meals. For this reason, multivariate models that explored relationships between the nutritional quality of school meals and characteristics of the meals, school foodservice operations, and the school food environment included institutional and demographic characteristics not controlled by the SFA in vectors X_s and Z_s of equation (1), respectively. We note that when estimating the relationships between the nutritional quality of reimbursable meals and these particular characteristics, the form of the vector Q_s above is omitted.

All multivariate estimates are nationally representative of all public, non-charter schools offering the NSLP. Sample strata, clustering, and weighting were used to account for the

complex sampling design of the study in producing estimates, calculating standard errors, and testing for statistical significance. Although key variables of interest were drawn from multiple instruments, the primary sample used for multivariate analyses included the schools that completed the Menu Survey. This included 1,207 schools participating in the NSLP and a subset of 1,111 schools participating in the SBP.

Main results are reported in Chapter 5, which presents regression-adjusted mean total HEI-2010 scores that control for the institutional and demographic characteristics of each school and their SFA, as well as specific key characteristics. For each key characteristic, regression-adjusted mean scores are presented separately by subcategories of the characteristic. Statistical significance reported is for the difference between the regression-adjusted mean reported for that particular category of the characteristic and the regression-adjusted mean for the characteristic's reference category. For dichotomous variables, the reference category is the row for schools that do not exhibit the particular characteristic. For variables with more than two categories, the reference group is labeled in the leftmost column. Symbols for statistical significance are not reported for reference categories.

Current practice in rigorous policy analysis calls for attention to multiple comparison bias—the fact that when multiple hypotheses about associations between program features and outcomes are tested, the probability of finding significant associations by chance (known as false discovery) increases, which can lead to incorrect conclusions. Given the many relationships between the nutritional quality of school meals and key characteristics examined in Chapter 5, the findings from multivariate analyses should be considered exploratory and interpreted with caution.

Appendix G includes tabulations that present full results for regression coefficient estimates underlying each table in the main body of the report, along with their standard errors. Control variables in each model—for which regression-adjusted means are not reported in the main body—also have coefficient estimates and standard errors reported in appendix tables.

B. Variable Selection and Exclusion

For each of the four domains identified above, the initial set of characteristics considered for inclusion in multivariate analyses consisted of relevant variables gathered from the Menu Survey, Principal Survey, SNM Survey, Cafeteria Observation Guide, A la Carte Checklist, Vending Machine and Other Sources of Foods and Beverages Checklist, and SFA Director Survey (see Chapter 1). For the first domain (characteristics of school meals), the study team collaborated with FNS to identify the key measures compliance to be included in the analysis.

Continuous and categorical variables were then transformed to exhibit appropriate variation given the distribution of values across sample schools. For example, in 75 percent of sampled schools, all daily menus met the relaxed requirement that at least half of all grains must be whole grain-rich. For such cases, categorical variables were created to compare the large proportion of schools taking on one value (in this case, 100 percent of daily menus) with observations taking on lower or higher values. This produced categorical-specific samples large enough to detect meaningful differences in outcome variables between schools in different categories of independent variables. The approach used to exclude variables from the multivariate analyses is described in the sections below. Table H.1 provides a list of the variables that were excluded.

Table H.1. Exclusions from NSLP and SBP Regression Analyses

	Outcome	
	Mean Total HEI-2010 Score for NSLP Lunches	Mean Total HEI-2010 Score for SBP Breakfasts
Key Characteristics of NSLP Lunches and SBP Breakfasts		
School Offered Only Fat-Free or Low-Fat Milk	LV	LV
All Daily Menus Included Sweetened Cereal at Breakfast	†	HC
Characteristics of School Foodservice Operations		
School Is in SFA Certified for Additional 6-Cents Reimbursement	HC	†
Items on which SFA Received Training or Technical Assistance	HM	HM
Characteristics of the School Food Environment		
School Sells Foods and Beverages in School Store and/or Snack Bar	HM	HM
School Has an Open Campus Policy (<i>high schools only</i>)	HM	†
School Allows Students to Go out to Recess before the Official End of Their Lunch Period (<i>elementary schools only</i>)	HM	†
Institutional and Demographic Characteristics of Schools and SFAs		
Share of Minority Students in SFA	LV	LV

Note: Table presents variables that were initially considered for inclusion in each multivariate analysis, but were excluded due to low within-sample variation (LV), because they were highly correlated (HC) with another included variable that better explained variation in the outcome of interest, or because they had a high rate of missing values (HM), defined as 30 percent or more of observations in the estimation sample.

† = Variable was not considered for inclusion in the specific analysis.

HEI = Healthy Eating Index; NSLP = National School Lunch Program. SBP = School Breakfast Program; SFA = school food authority.

1. High Proportions of Missing Values

Multivariate analyses excluded variables originally missing values for at least 30 percent of the estimation sample. This includes both missing values stemming from non-response to a particular survey item and missing values reflecting partial overlap between schools in the Menu Survey sample and schools sampled for other instruments from which variables were drawn. Missing values in variables retained for analyses were handled in one of two ways, depending on the type of variable. For binary and discrete categorical variables, missing values were replaced with a value of zero and an indicator specific to the particular variable was constructed to flag observations with originally missing values. These indicators were included as variables in relevant multivariate analyses to control for unobservable factors associated with missing values that may also be correlated with the nutritional quality of school meals. For continuous variables, missing values were imputed using the sample-weighted mean among schools included in the analysis that were not originally missing values for the variable. This approach was used to

minimize any influence of imputed values on results, while retaining schools in the estimation sample if they were missing values for only a subset of variables.

2. No or Little Variation between Observations

Final models excluded dichotomous variables for which 95 percent or more of the sample was contained in one category. Similarly, categorical variables were excluded when 95 percent or more of the sample belonged to one category. When one or more categories contained 5 percent or less of the sample, the study team attempted to logically combine adjacent or similar categories to group more than 5 percent in each redefined category. For example, among the elementary school sample, less than 5 percent of schools correspond to the “large” school size category, with over 95 percent in the “medium” and “small” categories. Therefore, we combined the large and medium schools as one category of school sizes and used the resulting two categories as control variables for elementary school-specific analyses.

3. Highly Correlated Variables

Simultaneously including characteristics that are highly correlated in a linear regression can lead to issues of multicollinearity, resulting in models that cannot properly identify how these characteristics are related to the nutritional quality of school meals. To address this potential issue, we analyzed correlations for all pairwise combinations of independent variables originally considered for multivariate models. Beginning with pairs exhibiting the strongest correlations, we excluded the one variable from each having the weakest correlation with HEI-2010 total scores. This pairwise exclusion continued until no correlations greater than an absolute value of 0.7 remained among variables simultaneously included in a multivariate model.

APPENDIX I

CHAPTER 6 SUPPLEMENTAL TABLES

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TABLES

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Table I.1. Average Amounts of USDA Food Pattern Food Groups in NSLP Lunches Prepared and Served

	Elementary Schools	Middle Schools	High Schools	All Schools
Lunches Prepared				
Vegetables (cups)	0.68	0.68 ^{††}	0.82 ^{###}	0.71
Dark green (cups/week)	0.56	0.56	0.62	0.58
Red and orange (cups/week)	1.09	1.08 ^{††}	1.23 ^{###}	1.12
Legumes (cups/week) ^a	0.25	0.22	0.27	0.25
Starchy (cups/week)	0.72 ^{**}	0.85	0.91 ^{###}	0.79
Other (cups/week)	0.66	0.69 ^{††}	0.90 ^{###}	0.72
Fruits (cups)	0.72	0.72 ^{††}	0.87 ^{###}	0.75
Grains (oz)	2.22 ^{***}	2.38 ^{††}	2.56 ^{###}	2.33
Whole grains (oz)	1.37	1.45 [†]	1.56 ^{###}	1.43
Dairy (cups)	1.41	1.41	1.42	1.41
Protein Foods (oz) ^b	1.38	1.44 [†]	1.53 ^{###}	1.43
Oils (tsp)	1.64 ^{***}	1.88 [†]	2.06 ^{###}	1.78
Empty Calories	125	125 ^{††}	134 ^{##}	127
Calories from solid fats	51	52 [†]	57 ^{###}	52
Calories from added sugars	74	73 [†]	78	75
Percentage of empty calories from solid fats	38.9	40.2	40.7 [#]	39.6
Percentage of empty calories from added sugars	61.1	59.8	59.3 [#]	60.4
Lunches Served				
Vegetables (cups)	0.63	0.62 ^{††}	0.75 ^{###}	0.66
Dark green (cups/week)	0.51	0.51	0.57	0.52
Red and orange (cups/week)	1.00	0.97 ^{††}	1.11 [#]	1.02
Legumes (cups/week) ^a	0.23	0.19	0.23	0.22
Starchy (cups/week)	0.70 ^{**}	0.82	0.89 ^{###}	0.77
Other (cups/week)	0.60	0.61 ^{††}	0.81 ^{###}	0.65
Fruits (cups)	0.64	0.63 ^{††}	0.76 ^{###}	0.67
Grains (oz)	2.14 ^{***}	2.29 ^{††}	2.45 ^{###}	2.24
Whole grains (oz)	1.32	1.39 [†]	1.50 ^{###}	1.37
Dairy (cups)	1.29 ^{***}	1.18	1.19 ^{###}	1.25
Protein Foods (oz) ^b	1.33	1.38 [†]	1.46 ^{###}	1.37
Oils (tsp)	1.53 ^{***}	1.75 [†]	1.93 ^{###}	1.66
Empty Calories	116	112 [†]	120	116
Calories from solid fats	49	50 [†]	53 ^{##}	50
Calories from added sugars	67 ^{**}	62 [†]	67	66
Percentage of empty calories from solid fats	40.1 ^{**}	42.8	43.2 ^{###}	41.2
Percentage of empty calories from added sugars	59.9 ^{**}	57.2	56.8 ^{###}	58.8
Number of Schools	451	384	372	1,207

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: The USDA Food Pattern food groups are largely consistent with the meal components used in planning NSLP lunches, with two exceptions. In school meals: (1) fluid milk is considered a separate meal component, and (2) other dairy foods such as yogurt and cheese are counted as meat alternates. Fluid milk, yogurt, and cheese are counted under the dairy group in the USDA Food Patterns.

The fruits group includes both whole fruit (any fresh, canned, dried, or frozen fruit) and 100% fruit juice.

Averages for vegetable subgroups include only schools that provided menu information for five days.

^aIncludes legumes credited as a vegetable on the Menu Survey.

^bIncludes legumes credited as a meat alternate on the Menu Survey.

Difference between elementary and middle schools is significantly different from zero at the *** 0.001 level or ** 0.01 level.

Difference between middle and high schools is significantly different from zero at the ††† 0.001 level, †† 0.01 level, or † 0.05 level.

Difference between elementary and high schools is significantly different from zero at the #### 0.001 level, ## 0.01 level, or # 0.05 level.

cups = cup equivalents; oz = ounce equivalents; NSLP = National School Lunch Program; tsp = teaspoon.

Table I.2. Average Amounts of USDA Food Pattern Food Groups in NSLP Lunches *Prepared*, Relative to Reference USDA Food Patterns

	Elementary Schools			Middle Schools			High Schools		
	Recommended Amount ^a	Average Amount	Percentage of Recommendation ^b	Recommended Amount ^a	Average Amount	Percentage of Recommendation ^b	Recommended Amount ^a	Average Amount	Percentage of Recommendation ^b
Calorie Levels ^c	1,800			2,000			2,400		
Fruits (cups)	1.5	0.72	47.7	2.0	0.72	35.8	2.0	0.87	43.4
Vegetables (cups)	2.5	0.68	27.2	2.5	0.68	27.1	3.0	0.82	27.4
Dark green (cups/week)	1.5	0.56	37.6	1.5	0.56	37.2	2.0	0.62	31.2
Red and orange (cups/week)	5.5	1.09	19.8	5.5	1.08	19.6	6.0	1.23	20.5
Legumes (cups/week) ^d	1.5	0.25	16.5	1.5	0.22	14.9	2.0	0.27	13.4
Starchy (cups/week)	5.0	0.72	14.5	5.0	0.85	16.9	6.0	0.91	15.2
Other (cups/week)	4.0	0.66	16.4	4.0	0.69	17.2	5.0	0.90	18.0
Grains (oz)	6.0	2.22	37.0	6.0	2.38	39.7	8.0	2.56	32.0
Whole grains (oz)	3.0	1.37	45.8	3.0	1.45	48.4	4.0	1.56	39.1
Dairy (cups)	3.0	1.41	47.0	3.0	1.41	47.1	3.0	1.42	47.3
Protein Foods (oz) ^e	5.0	1.38	27.6	5.5	1.44	26.2	6.5	1.53	23.6
Oils (tsp)	5.0	1.64	32.7	6.0	1.88	31.4	7.0	2.06	29.4
Empty Calories	161	125	77.5	258	125	48.6	330	134	40.8
Calories from solid fats	n.a.	51	n.a.	n.a.	52	n.a.	n.a.	57	n.a.
Calories from added sugars	n.a.	74	n.a.	n.a.	73	n.a.	n.a.	78	n.a.
Number of Schools	451			384			372		

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: The USDA Food Pattern food groups are largely consistent with the meal components used in planning NSLP lunches, with two exceptions. In school meals: (1) fluid milk is considered a separate meal component, and (2) other dairy foods such as yogurt and cheese are counted as meat alternates. Fluid milk, yogurt, and cheese are counted under the dairy group in the USDA Food Patterns.

The fruits group includes both whole fruit (any fresh, canned, dried, or frozen fruit) and 100% fruit juice.

Averages for vegetable subgroups include only schools that provided menu information for five days.

^aRecommended daily amount of food from each group within a calorie level with the exception of the vegetable subgroups. Vegetable subgroups are recommended amounts per week.

^bPercentage of recommended amount from each group within calorie level.

^cUSDA Food Pattern recommendations assign individuals to a calorie level based on their sex, age, and activity level. To assess the potential contribution of school meals to USDA Food Pattern recommendations, we used Food Patterns for 1,800, 2,000, and 2,400 calories as reference standards for elementary, middle, and high schools, respectively.

^dIncludes legumes credited as a vegetable on the Menu Survey.

^eIncludes legumes credited as a meat alternate on the Menu Survey.

cups = cup equivalents; n.a. = not applicable; NSLP = National School Lunch Program; oz = ounce equivalents.

Table I.3. Average Amounts of USDA Food Pattern Food Groups in NSLP Lunches Served, Relative to Reference USDA Food Patterns

	Elementary Schools			Middle Schools			High Schools		
	Recommended Amount ^a	Average Amount	Percentage of Recommendation ^b	Recommended Amount ^a	Average Amount	Percentage of Recommendation ^b	Recommended Amount ^a	Average Amount	Percentage of Recommendation ^b
Calorie Levels ^c	1,800			2,000			2,400		
Fruits (cups)	1.5	0.64	42.9	2.0	0.63	31.3	2.0	0.76	38.2
Vegetables (cups)	2.5	0.63	25.3	2.5	0.62	24.8	3.0	0.75	25.1
Dark green (cups/week)	1.5	0.51	34.3	1.5	0.51	34.0	2.0	0.57	28.3
Red and orange (cups/week)	5.5	1.00	18.2	5.5	0.97	17.7	6.0	1.11	18.5
Legumes (cups/week) ^d	1.5	0.23	15.3	1.5	0.19	12.7	2.0	0.23	11.7
Starchy (cups/week)	5.0	0.70	14.1	5.0	0.82	16.5	6.0	0.89	14.9
Other (cups/week)	4.0	0.60	15.0	4.0	0.61	15.3	5.0	0.81	16.2
Grains (oz)	6.0	2.14	35.7	6.0	2.29	38.1	8.0	2.45	30.6
Whole grains (oz)	3.0	1.32	44.1	3.0	1.39	46.4	4.0	1.50	37.5
Dairy (cups)	3.0	1.29	43.0	3.0	1.18	39.5	3.0	1.19	39.5
Protein Foods (oz) ^e	5.0	1.33	26.6	5.5	1.38	25.0	6.5	1.46	22.5
Oils (tsp)	5.0	1.53	30.7	6.0	1.75	29.2	7.0	1.93	27.5
Empty Calories	161	116	72.3	258	112	43.3	330	120	36.4
Calories from solid fats	n.a.	49	n.a.	n.a.	50	n.a.	n.a.	53	n.a.
Calories from added sugars	n.a.	67	n.a.	n.a.	62	n.a.	n.a.	67	n.a.
Number of Schools	451			384			371		

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: The USDA Food Pattern food groups are largely consistent with the meal components used in planning NSLP lunches, with two exceptions. In school meals: (1) fluid milk is considered a separate meal component, and (2) other dairy foods such as yogurt and cheese are counted as meat alternates. Fluid milk, yogurt, and cheese are counted under the dairy group in the USDA Food Patterns.

The fruits group includes both whole fruit (any fresh, canned, dried, or frozen fruit) and 100% fruit juice.

Averages for vegetable subgroups include only schools that provided menu information for five days.

^aRecommended daily amount of food from each group within a calorie level with the exception of the vegetable subgroups. Vegetable subgroups are recommended amounts per week.

^bPercentage of recommended amount from each group within calorie level.

^cUSDA Food Pattern recommendations assign individuals to a calorie level based on their sex, age, and activity level. To assess the potential contribution of school meals to USDA Food Pattern recommendations, we used Food Patterns for 1,800, 2,000, and 2,400 calories as reference standards for elementary, middle, and high schools, respectively.

^dIncludes legumes credited as a vegetable on the Menu Survey.

^eIncludes legumes credited as a meat alternate on the Menu Survey.

cups = cup equivalents; n.a. = not applicable; NSLP = National School Lunch Program; oz = ounce equivalents.

Table I.4. Average Amounts of USDA Food Pattern Food Groups in SBP Breakfasts Prepared and Served

	Elementary Schools	Middle Schools	High Schools	All Schools
Breakfasts Prepared				
Vegetables (cups)	0.02	0.03	0.03	0.02
Dark green (cups/week)	0.00 ^	0.00 ^	0.00 ^	0.00 ^
Red and orange (cups/week)	0.05	0.06	0.06	0.05
Legumes (cups/week) ^a	0.00 ^	0.00	0.00 ^	0.00 ^
Starchy (cups/week)	0.03 [^]	0.09 ^	0.06 ^	0.05
Other (cups/week)	0.00	0.01 [†]	0.01 [#]	0.01
Fruits (cups)	0.95	0.96	1.02	0.97
Grains (oz)	1.68 ^{***}	1.88	1.94 ^{###}	1.78
Whole grains (oz)	1.00 ^{**}	1.13	1.19 ^{###}	1.07
Dairy (cups)	1.16 [*]	1.19	1.20 [#]	1.18
Protein Foods (oz) ^b	0.32 ^{***}	0.43	0.48 ^{###}	0.37
Oils (tsp)	0.67 ^{***}	0.81	0.80 ^{###}	0.72
Empty Calories	117 ^{***}	134	135 ^{###}	124
Calories from solid fats	33 ^{***}	41	43 ^{###}	36
Calories from added sugars	84 ^{**}	93	92 [#]	88
Percentage of empty calories from solid fats	28.7	30.6	31.4 [#]	29.7
Percentage of empty calories from added sugars	71.3	69.4	68.6 [#]	70.3
Breakfasts Served				
Vegetables (cups)	0.01	0.02	0.02	0.02
Dark green (cups/week)	0.00 ^	0.00 ^	0.00 ^	0.00 ^
Red and orange (cups/week)	0.04	0.05	0.05	0.04
Legumes (cups/week) ^a	0.00 ^	0.00	0.00 ^	0.00 ^
Starchy (cups/week)	0.03 [^]	0.09	0.06	0.04
Other (cups/week)	0.00	0.00 [†]	0.01 [#]	0.00
Fruits (cups)	0.80	0.78	0.83	0.81
Grains (oz)	1.54 ^{***}	1.69	1.73 ^{###}	1.61
Whole grains (oz)	0.91 ^{**}	1.00	1.07 ^{###}	0.96
Dairy (cups)	1.00 ^{**}	0.94	0.90 ^{###}	0.97
Protein Foods (oz) ^b	0.30 ^{***}	0.42	0.46 ^{###}	0.36
Oils (tsp)	0.62 ^{***}	0.74	0.72 ^{###}	0.66
Empty Calories	103 ^{**}	111	110 [#]	106
Calories from solid fats	30 ^{***}	36	38 ^{###}	33
Calories from added sugars	73	75	72	73
Percentage of empty calories from solid fats	29.7 ^{**}	32.7	34.3 ^{###}	31.2
Percentage of empty calories from added sugars	70.3 ^{**}	67.3	65.7 ^{###}	68.8
Number of Schools	415	352	344	1,111

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: The USDA Food Pattern food groups are largely consistent with the meal components used in planning SBP breakfasts, with two exceptions. In school meals: (1) fluid milk is considered a separate meal component, and (2) other dairy foods such as yogurt and cheese are counted as meat alternates. Fluid milk, yogurt, and cheese are counted under the dairy group in the USDA Food Patterns.

The fruits group includes both whole fruit (any fresh, canned, dried, or frozen fruit) and 100% fruit juice.

Averages for vegetable subgroups include only schools that provided menu information for five days.

^aIncludes legumes credited as a vegetable on the Menu Survey.

^bIncludes legumes credited as a meat alternate on the Menu Survey.

Difference between elementary and middle schools is significantly different from zero at the *** 0.001 level, ** 0.01 level, or * 0.05 level.

Difference between middle and high schools is significantly different from zero at the † 0.05 level.

Difference between elementary and high schools is significantly different from zero at the ### 0.001 level, ## 0.01 level, or # 0.05 level.

cups = cup equivalents; oz = ounce equivalents; SBP = School Breakfast Program; tsp = teaspoon.

^ Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1.

Table I.5. Average Amounts of USDA Food Pattern Food Groups in SBP Breakfasts *Prepared*, Relative to Reference USDA Food Patterns

	Elementary Schools			Middle Schools			High Schools		
	Recommended Amount ^a	Average Amount	Percentage of Recommendation ^b	Recommended Amount ^a	Average Amount	Percentage of Recommendation ^b	Recommended Amount ^a	Average Amount	Percentage of Recommendation ^b
Calorie Levels ^c	1,800			2,000			2,400		
Fruits (cups)	1.5	0.95	63.3	2.0	0.96	47.9	2.0	1.02	51.0
Vegetables (cups)	2.5	0.02	0.7	2.5	0.03	1.1	3.0	0.03	0.8
Dark green (cups/week)	1.5	0.00 [^]	0.0 [^]	1.5	0.00 [^]	0.1 [^]	2.0	0.00 [^]	0.1 [^]
Red and orange (cups/week)	5.5	0.05	0.9	5.5	0.06	1.0	6.0	0.06	0.9
Legumes (cups/week) ^d	1.5	0.00 [^]	0.0 [^]	1.5	0.00	0.0	2.0	0.00 [^]	0.0 [^]
Starchy (cups/week)	5.0	0.03 [^]	0.5 [^]	5.0	0.09 [^]	1.8 [^]	6.0	0.06 [^]	1.0 [^]
Other (cups/week)	4.0	0.00	0.1	4.0	0.01	0.1	5.0	0.01	0.2
Grains (oz)	6.0	1.68	28.1	6.0	1.88	31.4	8.0	1.94	24.3
Whole grains (oz)	3.0	1.00	33.4	3.0	1.13	37.5	4.0	1.19	29.8
Dairy (cups)	3.0	1.16	38.8	3.0	1.19	39.6	3.0	1.20	39.9
Protein Foods (oz) ^e	5.0	0.32	6.3	5.5	0.43	7.9	6.5	0.48	7.4
Oils (tsp)	5.0	0.67	13.4	6.0	0.81	13.5	7.0	0.80	11.4
Empty Calories	161	117	72.7	258	134	51.8	330	135	40.8
Calories from solid fats	n.a.	33	n.a.	n.a.	41	n.a.	n.a.	43	n.a.
Calories from added sugars	n.a.	84	n.a.	n.a.	93	n.a.	n.a.	92	n.a.
Number of Schools	415			352			344		

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: The USDA Food Pattern food groups are largely consistent with the meal components used in planning SBP breakfasts, with two exceptions. In school meals: (1) fluid milk is considered a separate meal component, and (2) other dairy foods such as yogurt and cheese are counted as meat alternates. Fluid milk, yogurt, and cheese are counted under the dairy group in the USDA Food Patterns.

The fruits group includes both whole fruit (any fresh, canned, dried, or frozen fruit) and 100% fruit juice.

Averages for vegetable subgroups include only schools that provided menu information for five days.

^aRecommended daily amount of food from each group within a calorie level with the exception of the vegetable subgroups. Vegetable subgroups are recommended amounts per week.

^bPercentage of recommended amount from each group within calorie level.

^cUSDA Food Pattern recommendations assign individuals to a calorie level based on their sex, age, and activity level. To assess the potential contribution of school meals to USDA Food Pattern recommendations, we used Food Patterns for 1,800, 2,000, and 2,400 calories as reference standards for elementary, middle, and high schools, respectively.

^dIncludes legumes credited as a vegetable on the Menu Survey.

^eIncludes legumes credited as a meat alternate on the Menu Survey.

cups = cup equivalents; n.a. = not applicable; oz = ounce equivalents; SBP = School Breakfast Program.

[^] Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1.

Table I.6. Average Amounts of USDA Food Pattern Food Groups in SBP Breakfasts *Served*, Relative to Reference USDA Food Patterns

	Elementary Schools			Middle Schools			High Schools		
	Recommended Amount ^a	Average Amount	Percentage of Recommendation ^b	Recommended Amount ^a	Average Amount	Percentage of Recommendation ^b	Recommended Amount ^a	Average Amount	Percentage of Recommendation ^b
Calorie Levels ^c	1,800			2,000			2,400		
Fruits (cups)	1.5	0.80	53.6	2.0	0.78	38.8	2.0	0.83	41.7
Vegetables (cups)	2.5	0.01	0.6	2.5	0.02	1.0	3.0	0.02	0.8
Dark green (cups/week)	1.5	0.00 [^]	0.0 [^]	1.5	0.00 [^]	0.0 [^]	2.0	0.00 [^]	0.0 [^]
Red and orange (cups/week)	5.5	0.04	0.8	5.5	0.05	0.8	6.0	0.05	0.8
Legumes (cups/week) ^d	1.5	0.00 [^]	0.0 [^]	1.5	0.00	0.0	2.0	0.00 [^]	0.0 [^]
Starchy (cups/week)	5.0	0.03 [^]	0.5 [^]	5.0	0.09	1.7	6.0	0.06	1.0
Other (cups/week)	4.0	0.00	0.1	4.0	0.00	0.1	5.0	0.01	0.2
Grains (oz)	6.0	1.54	25.6	6.0	1.69	28.1	8.0	1.73	21.7
Whole grains (oz)	3.0	0.91	30.3	3.0	1.00	33.4	4.0	1.07	26.7
Dairy (cups)	3.0	1.00	33.5	3.0	0.94	31.2	3.0	0.90	29.9
Protein Foods (oz) ^e	5.0	0.30	6.1	5.5	0.42	7.6	6.5	0.46	7.1
Oils (tsp)	5.0	0.62	12.4	6.0	0.74	12.3	7.0	0.72	10.3
Empty Calories	161	103	63.7	258	111	43.1	330	110	33.4
Calories from solid fats	n.a.	30	n.a.	n.a.	36	n.a.	n.a.	38	n.a.
Calories from added sugars	n.a.	73	n.a.	n.a.	75	n.a.	n.a.	72	n.a.
Number of Schools	414			352			344		

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: The USDA Food Pattern food groups are largely consistent with the meal components used in planning SBP breakfasts, with two exceptions. In school meals: (1) fluid milk is considered a separate meal component, and (2) other dairy foods such as yogurt and cheese are counted as meat alternates. Fluid milk, yogurt, and cheese are counted under the dairy group in the USDA Food Patterns.

The fruits group includes both whole fruit (any fresh, canned, dried, or frozen fruit) and 100% fruit juice.

Averages for vegetable subgroups include only schools that provided menu information for five days.

^aRecommended daily amount of food from each group within a calorie level with the exception of the vegetable subgroups. Vegetable subgroups are recommended amounts per week.

^bPercentage of recommended amount from each group within calorie level.

^cUSDA Food Pattern recommendations assign individuals to a calorie level based on their sex, age, and activity level. To assess the potential contribution of school meals to USDA Food Pattern recommendations, we used Food Patterns for 1,800, 2,000, and 2,400 calories as reference standards for elementary, middle, and high schools, respectively.

^dIncludes legumes credited as a vegetable on the Menu Survey.

^eIncludes legumes credited as a meat alternate on the Menu Survey.

cups = cup equivalents; n.a. = not applicable; oz = ounce equivalents; SBP = School Breakfast Program.

[^] Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1.

APPENDIX J

CHAPTER 8 SUPPLEMENTAL TABLES

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TABLES

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Table J.1. Average and Distribution of Calories and Nutrients in Afterschool Snacks Offered in All Schools

	Average	SE	Percentiles						
			5th	10th	25th	50th	75th	90th	95th
Calories	264	6.5	187	203	220	241	274	353	410
Macronutrients									
Total fat (g)	6	0.2	3	4	4	6	7	9	11
Saturated fat (g)	2	0.1	1	1	1	2	2	3	4
Monounsaturated fat (g)	2	0.1	1	1	1	2	2	3	4
Polyunsaturated fat (g)	2	0.1	1	1	1	1	2	3	4
Linoleic acid (g)	2	0.1	1	1	1	1	2	3	3
Alpha-linolenic acid (g)	0.1	0.01	0.0	0.0	0.1	0.1	0.2	0.2	0.3
Carbohydrate (g)	46	1.0	33	36	39	43	48	59	65
Protein (g)	9	0.5	3	3	6	8	11	14	17
Vitamins									
Vitamin A (mcg RAE)	117	8.4	1	4	58	115	165	214	245
Vitamin C (mg)	20	1.7	1	3	7	19	27	45	54
Vitamin D (mcg)	1.8	0.12	0.0	0.0	0.9	1.6	2.8	3.1	3.3
Vitamin E (mg AT)	0.8	0.06	0.2	0.3	0.4	0.6	1.1	1.4	1.8
Vitamin B ₆ (mg)	0.2	0.01	0.1	0.1	0.1	0.2	0.3	0.4	0.4
Vitamin B ₁₂ (mcg)	0.9	0.06	0.0	0.0	0.5	0.8	1.2	1.6	1.8
Folate (mcg)	46	2.5	14	20	29	39	56	82	89
Folate (mcg DFE)	62	4.0	18	24	34	49	80	118	127
Niacin (mg)	2	0.1	1	1	1	2	2	4	4
Riboflavin (mg)	0.4	0.02	0.1	0.1	0.3	0.4	0.6	0.6	0.7
Thiamin (mg)	0.2	0.01	0.1	0.1	0.1	0.2	0.2	0.3	0.4
Minerals									
Calcium (mg)	243	13.5	45	60	148	218	335	402	438
Iron (mg)	1.8	0.10	0.8	0.9	1.1	1.5	2.1	3.2	3.5
Magnesium (mg)	46	1.5	24	30	34	42	52	64	80
Phosphorus (mg)	228	11.0	68	89	147	209	300	340	428
Potassium (mg)	449	14.4	240	272	350	411	518	598	819
Sodium (mg)	264	13.6	131	148	188	218	271	345	574
Zinc (mg)	1.4	0.08	0.4	0.5	0.8	1.3	1.7	2.3	2.5
Other Dietary Components									
Cholesterol (mg)	9	0.9	0	1	4	7	12	18	24
Dietary fiber (g)	3	0.1	1	1	2	2	3	4	5

	Average	SE	Percentiles						
			5th	10th	25th	50th	75th	90th	95th
Percentage of Calories From:									
Total fat	19.8	0.52	11.6	14.2	16.7	19.6	22.6	26.7	28.6
Saturated fat	6.0	0.26	2.6	3.0	3.9	5.6	7.9	9.1	10.4
Monounsaturated fat	6.8	0.26	3.5	4.3	5.1	6.4	8.0	9.6	11.1
Polyunsaturated fat	5.6	0.25	2.4	2.7	3.6	5.1	7.1	8.8	10.2
Linoleic acid	5.1	0.24	2.1	2.4	3.2	4.7	6.5	8.2	9.5
Alpha-linolenic acid	0.4	0.02	0.1	0.2	0.3	0.4	0.5	0.8	0.9
Carbohydrate	70.5	0.80	57.0	59.0	65.4	71.5	75.8	78.9	81.7
Protein	12.5	0.51	4.8	5.6	8.8	12.8	16.2	19.1	21.0
Number of Schools	166								

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program and providing reimbursable afterschool snacks.

AT = alpha-tocopherol; DFE = dietary folate equivalents; RAE = retinol activity equivalents; SE = standard error.

Table J.2. Average and Distribution of Nutrients per 1,000 Calories in Afterschool Snacks Offered

	DRI-Based Target per 1,000 Calories				SE	Percentiles per 1,000 Calories						
	Elementary Schools	Middle Schools	High Schools	Average per 1,000 Calories		5th	10th	25th	50th	75th	90th	95th
Linoleic Acid (g)	5.5	5.5	5.6	6	0.3	2	3	4	6	7	10	11
Alpha-Linolenic Acid (g)	0.52	0.55	0.56	0.5	0.03	0.1	0.2	0.3	0.5	0.6	0.9	1.0
Protein (g)	25.3	49.7	40.6	31	1.2	12	14	23	32	40	48	49
Vitamin A (mcg RAE)	320	371	346	442	35.0	8	18	241	419	583	822	1,025
Vitamin C (mg)	40	46	49	81	7.2	4	12	25	71	103	186	225
Vitamin D (mcg)	n.a. ^a	n.a. ^a	n.a. ^a	6.4	0.41	0.0	0.1	3.7	6.6	8.8	11.3	12.9
Vitamin E (mg AT)	5.0	6.2	6.8	2.9	0.22	1.0	1.2	1.6	2.5	3.7	4.9	6.2
Thiamin (mg)	0.7	0.8	0.8	0.8	0.02	0.5	0.5	0.6	0.7	0.9	1.1	1.1
Riboflavin (mg)	0.8	0.9	0.8	1.5	0.06	0.5	0.6	1.2	1.5	1.9	2.3	2.4
Niacin (mg)	7.8	9.2	9.1	7.3	0.36	3.3	3.6	4.9	6.4	9.8	11.7	12.5
Vitamin B ₆ (mg)	0.7	0.8	0.8	0.8	0.04	0.3	0.4	0.5	0.7	1.1	1.3	1.4
Folate (mcg DFE)	227	260	256	237	14.7	62	94	147	206	288	401	504
Vitamin B ₁₂ (mcg)	2.0	2.0	2.0	3.2	0.21	0.0	0.2	2.0	3.0	4.7	5.6	6.0
Iron (mg)	5.7	8.0	7.4	6.8	0.35	3.3	3.9	4.6	5.7	7.9	11.0	12.8
Magnesium (mg)	120	151	184	173	3.6	112	131	152	174	192	210	233
Zinc (mg)	4.8	5.7	5.4	5.2	0.24	1.8	2.1	3.6	5.1	6.5	7.6	8.4
Calcium (mg)	553	677	601	903	45.0	200	273	675	878	1,161	1,427	1,535
Phosphorus (mg)	602	828	715	841	32.3	307	367	643	859	1,069	1,226	1,310
Potassium (mg)	2,255	2,343	2,175	1,688	36.4	1,141	1,205	1,472	1,671	1,913	2,112	2,275
Sodium (mg)	≤ 1,060	≤ 1,083	≤ 920	959	27.6	629	705	785	918	1,019	1,238	1,669
Dietary Fiber (g)	14.2	14.5	13.4	10	0.4	5	6	7	9	11	15	16
Cholesterol (mg)	< 160	< 148	< 120	32	2.5	1	3	14	27	44	61	82
Number of Schools	166											

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program and providing reimbursable afterschool snacks.

Notes: The DRI-based nutrient targets were developed by the Institute of Medicine (IOM 2010). Schools were not expected to meet these targets. The DRI-based nutrient targets shown in this table are per 1,000 calories.

^aThe IOM did not include a DRI-based nutrient target for vitamin D.

AT = alpha-tocopherol; DFE = dietary folate equivalents; DRI = Dietary Reference Intakes; IOM = Institute of Medicine; n.a. = not applicable; RAE = retinol activity equivalents; SE = standard error.

Table J.3. Average Amounts of USDA Food Pattern Food Groups in Afterschool Snacks Offered

	All Schools
Vegetables (cups)	0.03
Dark green (cups/week)	0.01 [^]
Red and orange (cups/week)	0.08 [^]
Legumes (cups/week) ^a	0.02 [^]
Starchy (cups/week)	0.01 [^]
Other (cups/week)	0.03 [^]
Fruits (cups)	0.53
Grains (oz)	1.02
Whole grains (oz)	0.44
Dairy (cups)	0.62
Protein Foods (oz)	0.15
Oils (tsp)	0.54
Empty Calories	52
Calories from solid fats	18
Calories from added sugars	34
Percentage of empty calories from solid fats	36.7
Percentage of empty calories from added sugars	55.9
Number of Schools	166

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program and providing reimbursable afterschool snacks.

Notes: The USDA Food Pattern food groups are largely consistent with the meal components used in planning afterschool snacks provided through the NSLP, with two exceptions. In afterschool snacks: (1) fluid milk is considered a separate meal component, and (2) other dairy foods such as yogurt and cheese are counted as meat alternates. Fluid milk, yogurt, and cheese are counted under the dairy group in the USDA Food Patterns.

The fruits group includes both whole fruit (any fresh, canned, dried, or frozen fruit) and 100% fruit juice.

Averages for vegetable subgroups include only schools that provided menu information for five days.

^aIncludes legumes offered as vegetables or included in combination entrees.

cups = cup equivalents; NSLP = National School Lunch Program; oz = ounce equivalents; tsp = teaspoon.

[^] Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1.

Table J.4. Average Amounts of USDA Food Pattern Food Groups in Afterschool Snacks Offered, Relative to Reference USDA Food Patterns

	Average Amount	Calorie Levels ^a					
		Elementary Schools 1,800		Middle Schools 2,000		High Schools 2,400	
		Recommended Amount ^b	Percentage of Recommendation ^c	Recommended Amount ^b	Percentage of Recommendation ^c	Recommended Amount ^b	Percentage of Recommendation ^c
Fruits (cups)	0.53	1.5	35.2	2.0	26.4	2.0	26.4
Vegetables (cups)	0.03	2.5	1.3	2.5	1.3	3.0	1.1
Dark green (cups/week)	0.01 [^]	1.5	0.6 [^]	1.5	0.6 [^]	2.0	0.5 [^]
Red and orange (cups/week)	0.08 [^]	5.5	1.4 [^]	5.5	1.4 [^]	6.0	1.3 [^]
Legumes (cups/week) ^d	0.02 [^]	1.5	1.2 [^]	1.5	1.2 [^]	2.0	0.9 [^]
Starchy (cups/week)	0.01 [^]	5.0	0.2 [^]	5.0	0.2 [^]	6.0	0.2 [^]
Other (cups/week)	0.03 [^]	4.0	0.9 [^]	4.0	0.9 [^]	5.0	0.7 [^]
Grains (oz)	1.02	6.0	17.1	6.0	17.1	8.0	12.8
Whole grains (oz)	0.44	3.0	14.8	3.0	14.8	4.0	11.1
Dairy (cups)	0.62	3.0	20.7	3.0	20.7	3.0	20.7
Protein Foods (oz)	0.15	5.0	3.1	5.5	2.8	6.5	2.4
Oils (tsp)	0.54	5.0	10.8	6.0	9.0	7.0	7.7
Empty Calories	52	161	32.6	258	20.3	330	15.9
Calories from solid fats	18	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Calories from added sugars	34	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Number of Schools	166						

Source: School Nutrition and Meal Cost Study, Menu Survey, school year 2014-2015. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program and providing reimbursable afterschool snacks.

Notes: The USDA Food Pattern food groups are largely consistent with the meal components used in planning afterschool snacks provided through the NSLP, with two exceptions. In afterschool snacks: (1) fluid milk is considered a separate meal component, and (2) other dairy foods such as yogurt and cheese are counted as meat alternates. Fluid milk, yogurt, and cheese are counted under the dairy group in the USDA Food Patterns.

The fruits group includes both whole fruit (any fresh, canned, dried, or frozen fruit) and 100% fruit juice.

Averages for vegetable subgroups include only schools that provided menu information for five days.

^aUSDA Food Pattern recommendations assign individuals to a calorie level based on their sex, age, and activity level. To assess the potential contribution of school meals to USDA Food Pattern recommendations, we compared average amounts to the recommendations in the Food Patterns for 1,800, 2,000, and 2,400 calories as reference standards for elementary, middle, and high schools, respectively.

^bRecommended daily amount of food from each group within a calorie level with the exception of the vegetable subgroups. Vegetable subgroups are recommended amounts per week.

^cPercentage of recommended amount from each group within calorie level.

^dIncludes legumes offered as vegetables or included in combination entrees.

cups = cup equivalents; n.a. = not applicable; NSLP = National School Lunch Program; oz = ounce equivalents.

[^] Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1.

APPENDIX K

CHAPTER 9 SUPPLEMENTAL TABLES

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Table K.1. Healthy Eating Index-2010 Scores for NSLP Lunches Served in SY 2009-2010 and SY 2014-2015, Expressed as a Percentage of Maximum Scores

HEI-2010 Component	Elementary Schools		Middle Schools		High Schools		All Schools	
	SY 2009– 2010 (SNDA-IV)	SY 2014– 2015 (SNMCS)	SY 2009– 2010 (SNDA-IV)	SY 2014– 2015 (SNMCS)	SY 2009– 2010 (SNDA-IV)	SY 2014– 2015 (SNMCS)	SY 2009– 2010 (SNDA-IV)	SY 2014– 2015 (SNMCS)
Adequacy Components (higher score indicates higher concentration in NSLP lunches)								
Total Fruit	79.1	95.4***	73.6	91.9***	73.3	95.4***	76.9	94.8***
Whole Fruit	94.1	98.6***	87.0	96.9***	87.3	97.3***	91.5	98.0***
Total Vegetables	74.0	81.3***	75.0	80.7***	79.5	85.0**	75.3	82.0***
Greens and Beans	19.3	71.3***	22.6	69.5***	24.7	74.1***	21.0	71.6***
Whole Grains	25.4	95.3***	24.4	95.9***	21.8	94.8***	24.5	95.3***
Dairy	99.8	100.0	99.3	99.2	97.8	98.1	99.3	99.4
Total Protein Foods	84.0	90.0***	83.5	90.8***	83.2	91.0***	83.8	90.4***
Seafood and Plant Proteins	52.2	49.4	44.3	41.3	42.7	41.2	48.9	46.1
Fatty Acids	52.9	60.5***	54.5	65.8***	60.8	69.1**	54.8	63.4***
Moderation Components (higher score indicates lower concentration in NSLP lunches)								
Refined Grains	50.3	96.3***	39.4	94.7***	40.2	95.1***	46.3	95.8***
Sodium	11.6	30.4***	8.5	24.9***	7.0	19.7***	10.1	27.0***
Empty Calories	71.7	95.5***	73.7	96.9***	75.6	97.2***	72.9	96.1***
Total Score	58.5	81.6***	56.7	81.0***	57.4	81.3***	57.9	81.5***
Number of Schools	317	451	285	384	278	371	880	1,206

Source: Data for school year 2009–2010 are from the School Nutrition Dietary Assessment Study-IV Menu Survey. Data for school year 2014–2015 are from the School Nutrition and Meal Cost Study Menu Survey. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Note: Higher HEI scores reflect higher nutritional quality.

Difference between SY 2009-2010 and SY 2014-2015 is significantly different from zero at the *** 0.001 level or ** 0.01 level.

HEI = Healthy Eating Index; NSLP = National School Lunch Program; SNMCS = School Nutrition and Meal Cost Study; SNDA = School Nutrition Dietary Assessment Study; SY = school year.

Table K.2. Mean Healthy Eating Index-2010 Scores for NSLP Lunches Served in SY 2009-2010 and SY 2014-2015

HEI-2010 Component	Elementary Schools		Middle Schools		High Schools		All Schools	
	SY 2009– 2010 (SNDA-IV)	SY 2014– 2015 (SNMCS)	SY 2009– 2010 (SNDA-IV)	SY 2014– 2015 (SNMCS)	SY 2009– 2010 (SNDA-IV)	SY 2014– 2015 (SNMCS)	SY 2009– 2010 (SNDA-IV)	SY 2014– 2015 (SNMCS)
Adequacy Components (higher score indicates higher concentration in NSLP lunches)								
Total Fruit	4.0	4.8***	3.7	4.6***	3.7	4.8***	3.8	4.7***
Whole Fruit	4.7	4.9***	4.4	4.8***	4.4	4.9***	4.6	4.9***
Total Vegetables	3.7	4.1***	3.7	4.0***	4.0	4.2**	3.8	4.1***
Greens and Beans	1.0	3.6***	1.1	3.5***	1.2	3.7***	1.0	3.6***
Whole Grains	2.5	9.5***	2.4	9.6***	2.2	9.5***	2.5	9.5***
Dairy	10.0	10.0	9.9	9.9	9.8	9.8	9.9	9.9
Total Protein Foods	4.2	4.5***	4.2	4.5***	4.2	4.5***	4.2	4.5***
Seafood and Plant Proteins	2.6	2.5	2.2	2.1	2.1	2.1	2.4	2.3
Fatty Acids	5.3	6.0***	5.5	6.6***	6.1	6.9**	5.5	6.3***
Moderation Components (higher score indicates lower concentration in NSLP lunches)								
Refined Grains	5.0	9.6***	3.9	9.5***	4.0	9.5***	4.6	9.6***
Sodium	1.2	3.0***	0.8	2.5***	0.7	2.0***	1.0	2.7***
Empty Calories	14.3	19.1***	14.7	19.4***	15.1	19.4***	14.6	19.2***
Total Score	58.5	81.6***	56.7	81.0***	57.4	81.3***	57.9	81.5***
Number of Schools	317	451	285	384	278	371	880	1,206

Source: Data for school year 2009–2010 are from the School Nutrition Dietary Assessment Study-IV Menu Survey. Data for school year 2014–2015 are from the School Nutrition and Meal Cost Study Menu Survey. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: Component scores may not sum to the total score due to rounding. Higher HEI scores reflect higher nutritional quality.

Difference between SY 2009-2010 and SY 2014-2015 is significantly different from zero at the *** 0.001 level or ** 0.01 level.

HEI = Healthy Eating Index; NSLP = National School Lunch Program; SNMCS = School Nutrition and Meal Cost Study; SNDA = School Nutrition Dietary Assessment Study; SY = school year.

Table K.3. Changes in the Average Calorie and Nutrient Content of NSLP Lunches Served between SY 2009–2010 and SY 2014–2015

	SY 2009–2010 (SNDA-IV)		SY 2014–2015 (SNMCS)		Difference (SY 2014–2015 – SY 2009–2010)	
	Average	SE	Average	SE	Average	SE
Elementary Schools						
Calories	661	6.5	603	4.4	-58***	7.9
Percentage of Calories from Total Fat	31.5	0.29	26.3	0.19	-5.2***	0.35
Percentage of Calories from Saturated Fat	10.1	0.10	8.4	0.07	-1.7***	0.12
Linoleic Acid (g)	5	0.1	4	0.1	-1***	0.1
Alpha-Linolenic Acid (g)	0.6	0.02	0.5	0.01	-0.1**	0.02
Protein (g)	28	0.2	28	0.2	0	0.3
Vitamin A (mcg RAE)	279	4.2	310	5.5	31***	7.0
Vitamin C (mg)	23	0.8	30	0.7	7***	1.1
Vitamin E (mg AT)	2.3	0.04	2.2	0.03	-0.1	0.05
Thiamin (mg)	0.5	0.01	0.5	0.00	0.0	0.01
Riboflavin (mg)	0.8	0.01	0.8	0.01	0.0*	0.01
Niacin (mg)	6	0.1	6	0.1	0	0.1
Vitamin B ₆ (mg)	0.5	0.01	0.6	0.01	0.1***	0.02
Folate (mcg DFE)	130	1.6	111	1.5	-19***	2.2
Vitamin B ₁₂ (mcg)	1.6	0.02	1.8	0.03	0.2***	0.04
Iron (mg)	4.2	0.04	3.9	0.04	-0.3***	0.05
Magnesium (mg)	96	0.9	119	0.9	23***	1.3
Zinc (mg)	3.6	0.04	4.0	0.04	0.4***	0.05
Calcium (mg)	481	4.9	495	4.6	14*	6.7
Phosphorus (mg)	543	4.6	578	4.0	35***	6.1
Potassium (mg)	1,018	9.9	1,110	9.0	92***	13.4
Sodium (mg)	1,324	17.3	1,057	12.1	-267***	21.1
Dietary Fiber (g)	6	0.1	9	0.1	3***	0.1
Cholesterol (mg)	54	0.9	50	0.8	-4**	1.2
Number of Schools	317		451			
Middle Schools						
Calories	683	9.4	607	7.0	-76***	11.7
Percentage of Calories from Total Fat	32.4	0.39	27.5	0.24	-4.9***	0.46
Percentage of Calories from Saturated Fat	10.2	0.12	8.5	0.08	-1.7***	0.14
Linoleic Acid (g)	5	0.2	5	0.1	0	0.2
Alpha-Linolenic Acid (g)	0.6	0.02	0.6	0.02	0.0	0.03
Protein (g)	29	0.3	28	0.3	-1*	0.4
Vitamin A (mcg RAE)	255	4.1	275	6.5	20*	7.7
Vitamin C (mg)	23	1.0	30	0.9	7***	1.4
Vitamin E (mg AT)	2.3	0.06	2.2	0.04	-0.1	0.07
Thiamin (mg)	0.5	0.01	0.5	0.01	0.0	0.01
Riboflavin (mg)	0.8	0.01	0.7	0.01	-0.1***	0.01
Niacin (mg)	6	0.1	6	0.1	0**	0.1
Vitamin B ₆ (mg)	0.5	0.01	0.6	0.01	0.1***	0.02
Folate (mcg DFE)	139	2.0	110	1.9	-29***	2.8
Vitamin B ₁₂ (mcg)	1.6	0.03	1.7	0.03	0.1**	0.04
Iron (mg)	4.4	0.06	4.0	0.05	-0.4***	0.08
Magnesium (mg)	95	1.3	116	1.3	21***	1.9
Zinc (mg)	3.7	0.06	4.0	0.04	0.3***	0.07
Calcium (mg)	470	6.4	462	5.8	-8	8.7
Phosphorus (mg)	529	6.6	561	5.6	32***	8.6
Potassium (mg)	1,003	12.9	1,071	12.3	68***	17.8
Sodium (mg)	1,392	22.2	1,101	18.4	-291***	28.8
Dietary Fiber (g)	6	0.1	9	0.1	3***	0.2
Cholesterol (mg)	54	0.9	52	1.3	-2	1.6
Number of Schools	285		384			

	SY 2009–2010 (SNDA-IV)		SY 2014–2015 (SNMCS)		Difference (SY 2014–2015 – SY 2009–2010)	
	Average	SE	Average	SE	Average	SE
High Schools						
Calories	730	10.7	663	8.4	-67***	13.6
Percentage of Calories from Total Fat	33.5	0.34	27.3	0.26	-6.2***	0.43
Percentage of Calories from Saturated Fat	10.3	0.10	8.3	0.09	-2.0***	0.13
Linoleic Acid (g)	6	0.2	5	0.1	-1*	0.2
Alpha-Linolenic Acid (g)	0.8	0.02	0.7	0.02	-0.1***	0.03
Protein (g)	30	0.4	30	0.3	0	0.5
Vitamin A (mcg RAE)	273	5.9	309	10.6	36**	12.1
Vitamin C (mg)	25	1.0	36	1.0	11***	1.4
Vitamin E (mg AT)	2.6	0.07	2.5	0.05	-0.1	0.09
Thiamin (mg)	0.5	0.01	0.5	0.01	0.0*	0.01
Riboflavin (mg)	0.8	0.01	0.8	0.01	0.0*	0.02
Niacin (mg)	7	0.1	7	0.1	0	0.1
Vitamin B ₆ (mg)	0.5	0.01	0.6	0.01	0.1***	0.02
Folate (mcg DFE)	148	2.2	120	2.6	-28***	3.4
Vitamin B ₁₂ (mcg)	1.7	0.06	1.8	0.05	0.1	0.08
Iron (mg)	4.7	0.06	4.3	0.06	-0.4***	0.09
Magnesium (mg)	100	1.5	125	1.4	25***	2.0
Zinc (mg)	3.8	0.06	4.2	0.05	0.4***	0.08
Calcium (mg)	489	8.5	479	7.5	-10	11.3
Phosphorus (mg)	550	8.2	590	6.3	40***	10.3
Potassium (mg)	1,067	21.4	1,168	15.3	101***	26.3
Sodium (mg)	1,515	25.4	1,236	19.0	-279***	31.7
Dietary Fiber (g)	7	0.1	10	0.2	3***	0.2
Cholesterol (mg)	58	1.2	55	1.6	-3	2.0
Number of Schools	278		371			
All Schools						
Calories	679	5.8	617	4.4	-62***	7.3
Percentage of Calories from Total Fat	32.1	0.24	26.7	0.16	-5.4***	0.29
Percentage of Calories from Saturated Fat	10.1	0.08	8.4	0.06	-1.7***	0.10
Linoleic Acid (g)	5	0.1	5	0.1	0	0.1
Alpha-Linolenic Acid (g)	0.6	0.01	0.6	0.01	0.0*	0.02
Protein (g)	29	0.2	28	0.2	-1*	0.3
Vitamin A (mcg RAE)	273	3.2	303	4.9	30***	5.9
Vitamin C (mg)	23	0.6	31	0.6	8***	0.9
Vitamin E (mg AT)	2.4	0.04	2.3	0.03	-0.1*	0.05
Thiamin (mg)	0.5	0.01	0.5	0.00	0.0	0.01
Riboflavin (mg)	0.8	0.01	0.8	0.01	0.0**	0.01
Niacin (mg)	6	0.1	6	0.1	0**	0.1
Vitamin B ₆ (mg)	0.5	0.00	0.6	0.01	0.1***	0.01
Folate (mcg DFE)	136	1.3	113	1.4	-23***	1.9
Vitamin B ₁₂ (mcg)	1.6	0.02	1.8	0.03	0.2***	0.04
Iron (mg)	4.3	0.04	4.0	0.03	-0.3***	0.05
Magnesium (mg)	97	0.8	120	0.8	23***	1.2
Zinc (mg)	3.7	0.04	4.1	0.03	0.4***	0.05
Calcium (mg)	481	3.9	485	4.1	4	5.7
Phosphorus (mg)	536	3.9	578	3.6	42***	5.3
Potassium (mg)	1,025	9.0	1,116	8.3	91***	12.2
Sodium (mg)	1,375	15.0	1,105	11.5	-270***	18.9
Dietary Fiber (g)	6	0.1	9	0.1	3***	0.1
Cholesterol (mg)	55	0.7	52	0.9	-3**	1.1
Number of Schools	880		1,206			

Source: Data for school year 2009–2010 are from the School Nutrition Dietary Assessment Study-IV Menu Survey. Data for school year 2014–2015 are from the School Nutrition and Meal Cost Study Menu Survey. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Difference between SY 2009-2010 and SY 2014-2015 is significantly different from zero at the *** 0.001 level, ** 0.01 level, or * 0.05 level.

AT= alpha-tocopherol; DFE = dietary folate equivalents; NSLP = National School Lunch Program; RAE = retinol activity equivalents; SE = standard error; SNMCS = School Nutrition and Meal Cost Study; SNDA = School Nutrition Dietary Assessment Study; SY = school year.

Table K.4. Healthy Eating Index-2010 Scores for SBP Breakfasts Served in SY 2009-2010 and SY 2014-2015, Expressed as a Percentage of Maximum Scores

HEI-2010 Component	Elementary Schools		Middle Schools		High Schools		All Schools	
	SY 2009– 2010 (SNDA-IV)	SY 2014– 2015 (SNMCS)	SY 2009– 2010 (SNDA-IV)	SY 2014– 2015 (SNMCS)	SY 2009– 2010 (SNDA-IV)	SY 2014– 2015 (SNMCS)	SY 2009– 2010 (SNDA-IV)	SY 2014– 2015 (SNMCS)
Adequacy Components (higher score indicates higher concentration in SBP breakfasts)								
Total Fruit	95.2	100.0***	93.5	99.8***	95.1	99.8***	94.9	99.9***
Whole Fruit	52.1	90.7***	45.7	85.6***	47.7	89.2***	50.0	89.4***
Total Vegetables	2.9	2.7	4.5	4.3	5.0	4.3	3.6	3.3
Greens and Beans	0.0^	0.0^	0.1^	0.1^	0.1^	0.1^	0.0^	0.1^
Whole Grains	43.6	95.6***	28.6	96.3***	29.5	95.1***	38.0	95.6***
Dairy	99.8	99.6	97.3	98.5	96.7	97.9	98.7	99.0
Total Protein Foods	31.2	27.5	40.7	36.7	39.8	40.4	34.7	32.0
Seafood and Plant Proteins	12.6	12.2	15.8	14.1	14.8	16.1	13.6	13.4
Fatty Acids	33.2	45.4***	40.9	45.5	40.6	45.0	36.1	45.3***
Moderation Components (higher score indicates lower concentration in SBP breakfasts)								
Refined Grains	51.3	95.5***	36.1	94.3***	32.1	94.7***	44.6	95.1***
Sodium	74.8	94.5***	67.8	91.3***	66.8	89.4***	71.9	92.8***
Empty Calories	55.1	83.7***	51.1	81.1***	52.9	81.7***	53.9	82.8***
Total Score	51.0	71.5***	47.3	70.8***	47.3	71.1***	49.6	71.3***
Number of Schools	282	414	263	352	257	344	802	1,110

Source: Data for school year 2009–2010 are from the School Nutrition Dietary Assessment Study-IV Menu Survey. Data for school year 2014–2015 are from the School Nutrition and Meal Cost Study Menu Survey. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Note: Higher HEI scores reflect higher nutritional quality.

Difference between SY 2009-2010 and SY 2014-2015 is significantly different from zero at the *** 0.001 level.

HEI = Healthy Eating Index; SBP = School Breakfast Program; SNMCS = School Nutrition and Meal Cost Study; SNDA = School Nutrition Dietary Assessment Study; SY = school year.

^ Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1.

Table K.5. Mean Healthy Eating Index-2010 Scores for SBP Breakfasts Served in SY 2009-2010 and SY 2014-2015

HEI-2010 Component	Elementary Schools		Middle Schools		High Schools		All Schools	
	SY 2009– 2010 (SNDA-IV)	SY 2014– 2015 (SNMCS)	SY 2009– 2010 (SNDA-IV)	SY 2014– 2015 (SNMCS)	SY 2009– 2010 (SNDA-IV)	SY 2014– 2015 (SNMCS)	SY 2009– 2010 (SNDA-IV)	SY 2014– 2015 (SNMCS)
Adequacy Components (higher score indicates higher concentration in SBP breakfasts)								
Total Fruit	4.8	5.0***	4.7	5.0***	4.8	5.0***	4.7	5.0***
Whole Fruit	2.6	4.5***	2.3	4.3***	2.4	4.5***	2.5	4.5***
Total Vegetables	0.1	0.1	0.2	0.2	0.3	0.2	0.2	0.2
Greens and Beans	0.0^	0.0 ^	0.0^	0.0 ^	0.0^	0.0 ^	0.0^	0.0 ^
Whole Grains	4.4	9.6***	2.9	9.6***	3.0	9.5***	3.8	9.6***
Dairy	10.0	10.0	9.7	9.8	9.7	9.8	9.9	9.9
Total Protein Foods	1.6	1.4	2.0	1.8	2.0	2.0	1.7	1.6
Seafood and Plant Proteins	0.6	0.6	0.8	0.7	0.7	0.8	0.7	0.7
Fatty Acids	3.3	4.5***	4.1	4.6	4.1	4.5	3.6	4.5***
Moderation Components (higher score indicates lower concentration in SBP breakfasts)								
Refined Grains	5.1	9.5***	3.6	9.4***	3.2	9.5***	4.5	9.5***
Sodium	7.5	9.5***	6.8	9.1***	6.7	8.9***	7.2	9.3***
Empty Calories	11.0	16.7***	10.2	16.2***	10.6	16.3***	10.8	16.6***
Total Score	51.0	71.5***	47.3	70.8***	47.3	71.1***	49.6	71.3***
Number of Schools	282	414	263	352	257	344	802	1,110

Source: Data for school year 2009–2010 are from the School Nutrition Dietary Assessment Study-IV Menu Survey. Data for school year 2014–2015 are from the School Nutrition and Meal Cost Study Menu Survey. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Notes: Component scores may not sum to the total score due to rounding. Higher HEI scores reflect higher nutritional quality.

Difference between SY 2009-2010 and SY 2014-2015 is significantly different from zero at the *** 0.001 level.

HEI = Healthy Eating Index; SBP = School Breakfast Program; SNMCS = School Nutrition and Meal Cost Study; SNDA = School Nutrition Dietary Assessment Study; SY = school year.

^ Point estimate is considered less precise than estimates that are not flagged because the sample size is small or the coefficient of variation is large. The rules used in flagging estimates are described in Chapter 1.

Table K.6. Changes in the Average Calorie and Nutrient Content of SBP Breakfasts Served between SY 2009–2010 and SY 2014–2015

	SY 2009–2010 (SNDA-IV)		SY 2014–2015 (SNMCS)		Difference (SY 2014–2015 – SY 2009–2010)	
	Average	SE	Average	SE	Average	SE
Elementary Schools						
Calories	434	5.7	432	4.0	-2	7.0
Percentage of Calories from Total Fat	23.8	0.33	18.3	0.21	-5.5***	0.39
Percentage of Calories from Saturated Fat	8.6	0.15	6.4	0.10	-2.2***	0.18
Linoleic Acid (g)	2	0.0	2	0.0	0***	0.0
Alpha-Linolenic Acid (g)	0.2	0.00	0.2	0.00	0.0***	0.00
Protein (g)	15	0.2	15	0.2	0	0.3
Vitamin A (mcg RAE)	248	5.4	225	4.2	-23***	6.9
Vitamin C (mg)	28	0.8	34	0.7	6***	1.1
Vitamin E (mg AT)	0.9	0.03	1.0	0.03	0.1*	0.04
Thiamin (mg)	0.5	0.01	0.4	0.01	-0.1***	0.01
Riboflavin (mg)	0.8	0.01	0.8	0.01	0.0	0.01
Niacin (mg)	5	0.1	5	0.1	0**	0.1
Vitamin B ₆ (mg)	0.5	0.01	0.5	0.01	0.0	0.02
Folate (mcg DFE)	163	4.7	148	4.3	-15*	6.3
Vitamin B ₁₂ (mcg)	1.9	0.04	1.8	0.03	-0.1	0.05
Iron (mg)	4.5	0.11	4.1	0.10	-0.4**	0.15
Magnesium (mg)	59	0.9	76	0.8	17***	1.2
Zinc (mg)	3.0	0.07	3.1	0.06	0.1	0.09
Calcium (mg)	382	6.0	410	4.7	28***	7.6
Phosphorus (mg)	378	5.7	386	4.0	8	7.0
Potassium (mg)	660	9.4	747	8.3	87***	12.6
Sodium (mg)	569	11.1	454	7.3	-115***	13.3
Dietary Fiber (g)	3	0.1	5	0.1	2***	0.1
Cholesterol (mg)	44	1.6	33	1.3	-11***	2.1
Number of Schools	282		414			
Middle Schools						
Calories	503	20.0	447	5.2	-56**	20.7
Percentage of Calories from Total Fat	26.0	0.40	20.5	0.27	-5.5***	0.48
Percentage of Calories from Saturated Fat	8.9	0.17	7.1	0.12	-1.8***	0.21
Linoleic Acid (g)	3	0.3	2	0.0	-1	0.3
Alpha-Linolenic Acid (g)	0.2	0.02	0.3	0.01	0.1***	0.02
Protein (g)	17	0.6	15	0.2	-2**	0.6
Vitamin A (mcg RAE)	244	10.0	193	4.8	-51***	11.1
Vitamin C (mg)	32	1.4	34	0.9	2	1.7
Vitamin E (mg AT)	1.2	0.09	1.0	0.03	-0.2	0.10
Thiamin (mg)	0.5	0.02	0.4	0.01	-0.1***	0.02
Riboflavin (mg)	0.8	0.03	0.7	0.01	-0.1*	0.03
Niacin (mg)	5	0.2	4	0.1	-1**	0.2
Vitamin B ₆ (mg)	0.5	0.02	0.5	0.01	0.0	0.02
Folate (mcg DFE)	158	7.3	128	4.6	-30***	8.6
Vitamin B ₁₂ (mcg)	1.7	0.07	1.6	0.04	-0.1	0.08
Iron (mg)	4.5	0.16	3.6	0.10	-0.9***	0.19
Magnesium (mg)	63	2.7	76	0.9	13***	2.9
Zinc (mg)	2.9	0.11	2.9	0.07	0.0	0.13
Calcium (mg)	390	15.8	393	6.3	3	17.0
Phosphorus (mg)	414	14.8	381	5.2	-33*	15.7
Potassium (mg)	706	25.7	728	10.1	22	27.6
Sodium (mg)	687	23.5	494	9.1	-193***	25.2
Dietary Fiber (g)	3	0.2	5	0.1	2***	0.2
Cholesterol (mg)	54	3.4	38	1.7	-16***	3.8
Number of Schools	263		352			

	SY 2009–2010 (SNDA-IV)		SY 2014–2015 (SNMCS)		Difference (SY 2014–2015 – SY 2009–2010)	
	Average	SE	Average	SE	Average	SE
High Schools						
Calories	504	9.1	449	6.7	-55***	11.3
Percentage of Calories from Total Fat	26.6	0.40	20.8	0.28	-5.8***	0.49
Percentage of Calories from Saturated Fat	9.1	0.16	7.3	0.13	-1.8***	0.20
Linoleic Acid (g)	4	0.1	3	0.1	-2***	0.1
Alpha-Linolenic Acid (g)	0.4	0.01	0.3	0.01	-0.1***	0.01
Protein (g)	13	0.2	15	0.3	2***	0.3
Vitamin A (mcg RAE)	237	6.0	184	5.3	-53***	8.0
Vitamin C (mg)	33	1.3	35	1.1	2	1.7
Vitamin E (mg AT)	1.1	0.03	1.1	0.04	0.0	0.05
Thiamin (mg)	0.5	0.01	0.4	0.01	-0.1***	0.01
Riboflavin (mg)	0.8	0.02	0.7	0.01	-0.1***	0.02
Niacin (mg)	5	0.2	4	0.1	-1***	0.2
Vitamin B ₆ (mg)	0.5	0.01	0.5	0.01	0.0*	0.02
Folate (mcg DFE)	160	5.9	124	4.0	-36***	7.1
Vitamin B ₁₂ (mcg)	1.6	0.05	1.5	0.04	-0.1*	0.06
Iron (mg)	4.6	0.13	3.5	0.08	-1.1***	0.15
Magnesium (mg)	62	1.1	76	1.2	14***	1.6
Zinc (mg)	2.9	0.09	2.7	0.06	-0.2	0.11
Calcium (mg)	373	7.9	388	9.6	15	12.5
Phosphorus (mg)	402	8.5	379	7.3	-23*	11.2
Potassium (mg)	699	12.8	729	13.2	30	18.4
Sodium (mg)	703	19.9	507	10.9	-196***	22.7
Dietary Fiber (g)	3	0.1	5	0.1	2***	0.1
Cholesterol (mg)	56	2.9	43	2.3	-13***	3.7
Number of Schools	257		344			
All Schools						
Calories	461	5.8	438	3.5	-23***	6.8
Percentage of Calories from Total Fat	24.8	0.27	19.2	0.18	-5.6***	0.32
Percentage of Calories from Saturated Fat	8.7	0.12	6.7	0.08	-2.0***	0.14
Linoleic Acid (g)	2	0.1	2	0.0	0**	0.1
Alpha-Linolenic Acid (g)	0.2	0.01	0.3	0.00	0.1***	0.01
Protein (g)	16	0.2	15	0.2	-1***	0.3
Vitamin A (mcg RAE)	245	4.2	210	3.5	-35***	5.4
Vitamin C (mg)	30	0.7	34	0.6	4***	0.9
Vitamin E (mg AT)	1.0	0.03	1.0	0.03	0.0	0.04
Thiamin (mg)	0.5	0.01	0.4	0.00	-0.1***	0.01
Riboflavin (mg)	0.8	0.01	0.8	0.01	0.0***	0.01
Niacin (mg)	5	0.1	4	0.1	-1***	0.1
Vitamin B ₆ (mg)	0.5	0.01	0.5	0.01	0.0	0.01
Folate (mcg DFE)	162	3.8	139	3.3	-23***	5.0
Vitamin B ₁₂ (mcg)	1.8	0.03	1.7	0.03	-0.1*	0.04
Iron (mg)	4.5	0.09	3.9	0.07	-0.6***	0.12
Magnesium (mg)	61	0.8	76	0.7	15***	1.1
Zinc (mg)	2.9	0.06	3.0	0.05	0.1	0.08
Calcium (mg)	382	5.3	402	4.7	20**	7.1
Phosphorus (mg)	389	5.2	384	3.7	-5	6.4
Potassium (mg)	676	8.4	740	7.2	64***	11.1
Sodium (mg)	618	10.6	473	6.6	-145***	12.5
Dietary Fiber (g)	3	0.1	5	0.1	2***	0.1
Cholesterol (mg)	48	1.7	36	1.2	-12***	2.1
Number of Schools	802		1,110			

Source: Data for school year 2009–2010 are from the School Nutrition Dietary Assessment Study-IV Menu Survey. Data for school year 2014–2015 are from the School Nutrition and Meal Cost Study Menu Survey. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program.

Difference between SY 2009-2010 and SY 2014-2015 is significantly different from zero at the *** 0.001 level, ** 0.01 level, or * 0.05 level.

AT= alpha-tocopherol; DFE = dietary folate equivalents; SBP = School Breakfast Program; RAE = retinol activity equivalents; SE = standard error; SNMCS = School Nutrition and Meal Cost Study; SNDA = School Nutrition Dietary Assessment Study; SY = school year.

Table K.7. Changes in the Average Calorie and Nutrient Content of Afterschool Snacks Offered between SY 2009–2010 and SY 2014–2015

	SY 2009–2010 (SNDA-IV)		SY 2014–2015 (SNMCS)		Difference (SY 2014–2015 – SY 2009–2010)	
	Average	SE	Average	SE	Average	SE
All Schools						
Calories	264	6.1	264	6.5	0	8.9
Percentage of Calories from Total Fat	23.2	0.72	19.8	0.52	-3.4***	0.89
Percentage of Calories from Saturated Fat	7.6	0.22	6.0	0.26	-1.6***	0.34
Linoleic Acid (g)	1	0.1	2	0.1	1***	0.1
Alpha-Linolenic Acid (g)	0.1	0.01	0.1	0.01	0.0**	0.01
Protein (g)	8	0.4	9	0.5	1	0.6
Vitamin A (mcg RAE)	120	7.1	117	8.4	-3	11.0
Vitamin C (mg)	18	1.5	20	1.7	2	2.3
Vitamin E (mg AT)	0.7	0.06	0.8	0.06	0.1	0.08
Thiamin (mg)	0.2	0.01	0.2	0.01	0.0	0.01
Riboflavin (mg)	0.4	0.02	0.4	0.02	0.0	0.03
Niacin (mg)	2	0.1	2	0.1	0	0.2
Vitamin B ₆ (mg)	0.2	0.01	0.2	0.01	0.0	0.02
Folate (mcg DFE)	68	4.7	62	4.0	-6	6.2
Vitamin B ₁₂ (mcg)	0.9	0.06	0.9	0.06	0.0	0.08
Iron (mg)	1.8	0.09	1.8	0.10	0.0	0.13
Magnesium (mg)	40	1.4	46	1.5	6**	2.0
Zinc (mg)	1.4	0.09	1.4	0.08	0.0	0.12
Calcium (mg)	221	11.8	243	13.5	22	17.9
Phosphorus (mg)	217	9.8	228	11.0	11	14.7
Potassium (mg)	430	13.2	449	14.4	19	19.6
Sodium (mg)	283	12.4	264	13.6	-19	18.4
Dietary Fiber (g)	2	0.1	3	0.1	1***	0.2
Cholesterol (mg)	10	1.0	9	0.9	-1	1.3
Number of Schools	172		166			

Source: Data for school year 2009–2010 are from the School Nutrition Dietary Assessment Study-IV Menu Survey. Data for school year 2014–2015 are from the School Nutrition and Meal Cost Study Menu Survey. Tabulations are weighted to be nationally representative of all public, non-charter schools offering the National School Lunch Program and providing reimbursable afterschool snacks.

Difference between SY 2009–2010 and SY 2014–2015 is significantly different from zero at the *** 0.001 level or ** 0.01 level.

AT= alpha-tocopherol; DFE = dietary folate equivalents; RAE = retinol activity equivalents; SE = standard error; SNMCS = School Nutrition and Meal Cost Study; SNDA = School Nutrition Dietary Assessment Study; SY = school year.

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