CHAPTER 10
FOOD AND NUTRIENT CONTENT OF AFTERSCHOOL SNACKS

Since 1998, schools that participate in the NSLP have been eligible to receive cash reimbursement for snacks served in afterschool programs. To be eligible for Federal reimbursement, snacks must be provided in afterschool programs that provide children with regularly scheduled educational or enrichment activities in a supervised environment. In addition, snacks must meet specific food-based requirements and must be served free or at a reduced price to children from low-income families.[1,2] SNDA-IV is the first study to collect data from a national sample of schools providing reimbursable afterschool snacks.

Nationally, 27 percent of schools that participate in the NSLP provide afterschool snacks (see Chapter 2, Table 2.1). Elementary schools participate at higher rates than middle or high schools (33, 23, and 13 percent, respectively). In this chapter, we describe the afterschool snacks *offered* to students through the NSLP—the types of foods included in snacks and their average calorie, nutrient, and food group content.[3] All of the findings are based on data reported by FSMs. A total of 876 respondents completed the FSM survey; of these, 219 reported that their school provided reimbursable afterschool snacks through the NSLP. FSMs who reported providing afterschool snacks were asked to answer two questions about program operations and to complete a menu survey for afterschool snacks for five consecutive school days in the spring of SY 2009–2010 (January–June 2010).[4,5] A total of 172 FSMs completed the afterschool snack menu survey.

Findings are reported for all schools combined rather than by school type. We took this approach for several reasons: (1) our samples of middle and high schools providing afterschool snacks are small; (2) NSLP regulations do not specify different portion sizes or nutrition goals for snacks served to students of different ages; and (3) the age profile of students who consume afterschool snacks is not necessarily the same as the age profile of students in the schools that provide the afterschool snacks.

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[1] See http://www.fns.usda.gov/cnd/afterschool/AfterschoolFactSheet.pdf.

[2] Eligibility for free and reduced-price snacks can be based on determinations made for individual children for the NSLP (via application or direct certification) or on area eligibility.

[3] Data reported on the calorie, nutrient, and food group content of afterschool snacks reflect the average snacks *offered* to students (as opposed to average snacks *served*). We use the italics here, as well as in table and figure titles, to clarify this issue for the reader. However, we do not italicize the term in the body of the chapter because there is no need to differentiate results for analyses of snacks *offered* and snacks *served*. The calorie, nutrient, and food group content of afterschool snacks *served* was not estimated.

[4] The five-day period was the same for the afterschool snack menu survey and the main menu survey (which provided the detailed data used to assess calorie, nutrient and food group content of NSLP lunches and SBP breakfasts).

[5] A detailed description of the protocols used in collecting and processing menu survey data is provided in Volume II of this report.

A. Summary of Findings

- A majority (69 percent) of schools that provided reimbursable afterschool snacks provided snacks on a daily basis, either by dropping the snacks off or making arrangements for afterschool program staff to pick up the snacks.
- More than one-quarter (27 percent) of schools that provided reimbursable afterschool snacks served 25 or fewer snacks per day, on average. More than half (57 percent) of schools that provided afterschool snacks averaged no more than 50 snacks per day. Seventeen percent of schools operated substantially larger snack programs, providing more than 100 snacks on an average day.
- Overall, students were offered few choices in afterschool snacks. When a meal component was included in a menu, there was generally only one choice from that group. Milk was an exception—25 percent of daily snack menus offered a choice of milks.
- Of the four food groups that are allowable components of afterschool snacks, the grain/bread group was offered most frequently. Three-quarters of all snack menus included a grain/bread item and 4 percent of snack menus included a grain as part of a combination entree, such as a sandwich or pizza.
- Milk was the next most frequently offered food group in afterschool snacks. Six of 10 daily snack menus included some type of milk. About half (51 percent) of daily snack menus include fruit or 100% fruit juice. Meat/meat alternates were offered infrequently and vegetables were rarely offered.
- On average, afterschool snacks offered to students during a typical week in SY 2009–2010 provided 14 and 11 percent of the 1989 REAs for children in grades K–3 and 4–12, respectively. Average amounts of 1989 RDAs for SMI target nutrients ranged from 15 to 19 percent for iron to 35 to 40 percent for vitamin C.
- Relative to their calorie content, afterschool snacks offered to students provided appreciable amounts of fruit (21 to 27 percent of recommended daily amounts) and dairy foods (22 percent of recommended daily amounts), as well as total grains (13 to 17 percent of recommended daily amounts).
- Afterschool snacks provided smaller amounts of whole grains and oils (5 to 7 percent of recommended daily amounts) and only marginal amounts of vegetables and protein foods (1 to 2 percent of recommended daily amounts).
- Afterschool snacks were high in calories from SoFAS. On average, snacks provided almost half (47 percent) of the maximum limit of calories from SoFAS recommended in the USDA Food Pattern for an 1,800-calorie diet and roughly one-quarter (23 to 29 percent) of the maximum limit recommended in USDA Food Patterns for 2,400- and 2,000- calorie diets, respectively.
- The top 5 contributors to SoFAS calories in afterschool snacks were crackers and pretzels (30 percent), 1% flavored milk (10 percent), cookies, cakes and brownies (10 percent), flavored skim/nonfat milk (9 percent), and unflavored 1% milk (5 percent).

B. School Participation and Key Characteristics of Program Operations

Nationally, 27 percent of schools that participate in the NSLP provide reimbursable afterschool snacks. Elementary schools participate at higher rates than middle or high schools (33, 23, and 13 percent, respectively) (see Chapter 2, Table 2.1). Schools that provide afterschool snacks do not necessarily serve an afterschool program that is located in the same building or that serves their students. Schools may provide afterschool snacks to programs run by other schools or entities within their school district.[6]

FNS is interested in obtaining additional information about how school foodservice personnel obtain daily counts of snacks served (which are used to claim Federal reimbursement), and about how school foodservice programs interact with afterschool programs to provide snacks. For this reason, the FSM survey asked respondents to describe the methods used to determine the number of reimbursable snacks served each day and the frequency with which snacks were delivered to or picked up by afterschool programs. Findings are summarized in Table 10.1.

Table 10.1. Methods Used to Count Afterschool Snacks and the Frequency of Snack Distribution

	Percentage of Schools
Methods Used to Determine the Number of Reimbursable Snacks Served Each Day:	
Attendance sheets maintained by afterschool program	41.1
Afterschool program enrollment	15.9
Number of snacks requested by afterschool program	15.8
Compare returned leftovers to the number of snacks provided the day before	3.4
Other program records	2.6
Missing	21.1
How Frequently Snacks Are Picked Up by or Delivered to Afterschool Program Staff:	
Daily	69.0
Weekly	7.6
Other[a]	10.4
2 to 4 times per week	10.0
Missing	12.9
Number of Schools	**219**

Source: School Nutrition Dietary Assessment-IV, Foodservice Manager Survey, school year 2009–2010. Tabulations prepared by Mathematica Policy Research are weighted to be representative of all public schools offering the National School Lunch Program and providing reimbursable afterschool snacks.

Note: Table includes only schools that reported providing reimbursable afterschool snacks.

[a] Monthly was a response option in the survey, but only one school reported this frequency; this school is included in the Other category in this table.

[6] To receive Federal reimbursement, snacks must be served in afterschool programs that are sponsored or operated by school districts that participate in the NSLP.

More than 20 percent of FSMs that reported providing reimbursable afterschool snacks did not respond to the question about how the number of reimbursable snacks is determined. The most common practice, reported for 41 percent of schools that reported providing afterschool snacks, was the use of attendance sheets maintained by staff from the afterschool program (Table 10.1). Sixteen percent of schools reported basing snack counts on afterschool program enrollment and an equal proportion reported that they rely on requests from afterschool program personnel about the number of snacks needed. A small percentage of schools (3 percent each) reported that snack counts are based on a comparison of snacks provided and snacks left over or some other program records.

Most schools (69 percent) that provided snacks to afterschool programs did so on a daily basis, either by dropping the snacks off or making arrangements for afterschool program staff to pick up the snacks (Table 10.1). Ten percent of schools provided snacks to afterschool programs less than once a day but more often than once per week (this might be related to the number of days the afterschool program operates), and 8 percent of schools provided snacks on a weekly basis. Information about the frequency of snack drop-off or pick-up was missing for 13 percent of schools that reported providing afterschool snacks.

To gain additional perspective on how frequently schools provide afterschool snacks, we compared the number of days snacks were reported in the snack menu survey with the number of days meals were reported in the main menu survey.[7] Most schools (65 percent) that provided afterschool snacks reported snacks every day of the menu survey (Table 10.2). This is consistent with the finding that 69 percent of schools that provided afterschool snacks reported providing snacks to afterschool programs every day (Table 10.1). More than one-quarter (28 percent) of schools that provided afterschool snacks reported providing snacks three or four days during the school week; 5 percent reported providing snacks two days during the week; and 3 percent reported providing snacks only one day during the week (Table 10.2). Schools that did not provide afterschool snacks every day of the menu survey might serve programs that do not operate every day. It is also possible that snacks were not reported because of other circumstances that affected afterschool program operations, such as weather-related closures, or because FSMs did not provide complete data for afterschool snacks.

Among schools that provide reimbursable afterschool snacks, there was considerable variation in the number of snacks served per day, ranging from a low of 2 to a high of 475 (Table 10.3). The median number of snacks served per day was 41 and the average was 62. More than one-quarter (27 percent) of schools that provided afterschool snacks served 25 or fewer snacks per day, on average. More than half (57 percent) of schools that provided afterschool snacks averaged no more than 50 snacks per day. Seventeen percent of schools operated substantially larger snack programs, providing more than 100 snacks on an average day.

[7] Most schools completed the main menu survey for five days. However, because of holidays and other school closures, some schools provided menu data for four days. A very small number provided data for three days.

Table 10.2. Number of Days Afterschool Snacks Were Reported During Menu Survey Week

Number of Days per Week	Percentage of Schools
Every Day[a]	64.5
4 Days	13.8
3 Days	14.1
2 Days	4.9
1 Day	2.7
Number of Schools	**172**

Source: School Nutrition Dietary Assessment-IV, Afterschool Snack Menu Survey, school year 2009–2010. Tabulations prepared by Mathematica Policy Research are weighted to be representative of all public schools offering the National School Lunch Program and providing reimbursable afterschool snacks.

Note: Table includes only schools that reported providing reimbursable afterschool snacks and completed the afterschool snack menu survey.

[a] Every day means that snacks were reported for each day the school participated in the main menu survey. For the other categories, afterschool snacks were not reported for one of more of the days included in the main menu survey.

Table 10.3. Number of Reimbursable Afterschool Snacks Served per Day

Minimum	2
Maximum	475
Median	41
Average	62
Range (Snacks per Day)	Percentage of Schools
2 – 25	27.0
26 – 50	29.9
51 – 75	9.7
76 – 100	16.1
More than 100	17.3
Number of Schools	**171**

Source: School Nutrition Dietary Assessment Study-IV, Afterschool Snack Menu Survey, school year 2009–2010. Tabulations prepared by Mathematica Policy Research are weighted to be representative of all public schools offering the National School Lunch Program and providing reimbursable afterschool snacks.

Note: Table includes only schools that reported providing reimbursable afterschool snacks and completed the afterschool snack menu survey. One school did not provide information on the number of reimbursable snacks served.

C. Foods Offered in Reimbursable Afterschool Snacks

To be eligible for Federal reimbursement, afterschool snacks are required to include at least two of the following four components: (1) a serving of fluid milk; (2) a serving of fruit, vegetables, or 100% fruit or vegetable juice; (3) a serving of meat or meat alternate; (4) a serving of whole grain or enriched bread or cereal.[8] In this section, we describe the characteristics of foods offered in

[8] See http://www.fns.usda.gov/cnd/afterschool/AfterschoolFactSheet.pdf.

afterschool snacks. We examine the extent to which students were allowed to make choices in selecting their snacks and we present information about the types of food that were offered most frequently.

1. Amount of Choice and Variety Offered to Students

We looked at the number of choices offered in daily snack menus within the four meal component groups that can be part of a reimbursable snack: fluid milk; fruit, vegetables, or 100% juice; meat/meat alternates (including combination entree items, such as sandwiches or pizza); and grains/breads. We also included a category for desserts. Most of the dessert items were grain-based (cookies and cakes) and could have been counted toward the grains/breads requirement in schools using enhanced food-based menu planning for NSLP meals.

Overall, students were offered few choices in afterschool snacks (Table 10.4). When a meal component was included in a menu, there was generally only one item from that group. Milk was an exception—25 percent of daily snack menus offered a choice of milks. Less than 10 percent of daily snack menus included more than one type of fruit, vegetable, or 100% juice. These menus often included a choice between two different types of juice, but there were also menus that included both fruit and 100% juice and children were expected to take both items.

Among schools that provided afterschool snacks every day, there was little variety over the course of the week in the items offered within a group. The median number of different items offered over the course of a week was 0 or 1 for all components except bread/grains. A median of 3 different grain/bread items were offered over the course of a week.

Table 10.4. Choice and Variety in Afterschool Snacks

	Percentage of Daily Snack Menus
Number of Types of Milk Offered per Day	
None	40
1	35
2	18
3 or more	7
Median number of different items per week[a]	1
Number of Fruits/Vegetables/100% Juices Offered per Day	
None	47
1	45
2	6
3 or more	<3
Median number of different items per week[a]	1
Number of Meats/Meat Alternates/Combination Entrees Offered per Day	
None	85
1 or more	15
Median number of different items per week[a]	0
Number of Separate Grains/Breads Offered per Day	
None	25
1	74
2 or more	2
Median number of different items per week[a]	3
Number of Desserts Offered per Day	
None	92
1	8
Median number of different items per week[a]	0
Number of Daily Menus	**717**
Number of Schools	**172**

Source: School Nutrition Dietary Assessment Study-IV, Afterschool Snack Menu Survey, school year 2009–2010. Tabulations prepared by Mathematica Policy Research are weighted to be representative of all public schools offering the National School Lunch Program and providing reimbursable afterschool snacks.

Note: Table includes only schools that reported providing reimbursable afterschool snacks and completed the afterschool snack menu survey.

[a]Includes only schools that provided menu information for five days.

<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.

2. Types and Frequency of Foods Offered

We assigned all foods reported in afterschool snack menus to one of seven major food groups—milk; vegetables; fruit or 100% fruit juice; combination entrees; grains/breads; meats/meat alternates; and other menu items (for example, cookies and cakes or snack foods, such as popcorn or potato chips). Within these broad food groups, we further classified foods into subgroups based on characteristics that affect nutrient content (such as ingredients and preparation methods).[9]

Table 10.5 presents information on the foods and food groups offered in at least 2 percent of daily afterschool snack menus. Key findings from this analysis include the following:

- Of the four food groups that are allowable components of afterschool snacks, the grain/bread group was offered most frequently. Three-quarters of all snack menus included a grain/bread item and 4 percent of snack menus included a grain as part of a combination entree, such as a sandwich or pizza.
- The specific type of grain/bread item offered most frequently was crackers and pretzels (mainly crackers). Half of all daily snack menus included some type of cracker or pretzels. Other grain/bread foods were offered much less frequently. Only cold cereal and corn/tortilla chips were included in more than 5 percent of daily snack menus.
- Milk was the next most frequently offered food group in snack menus. Six of 10 daily snack menus included some type of milk. Unflavored milk was somewhat more common than flavored milk (45 percent of daily menus versus 37 percent). In both cases, most of the milk offered was 1% or skim/nonfat. Only 12 percent of daily snack menus included unflavored 2% milk and none included whole milk.
- About half (51 percent) of daily snack menus included fruit or 100% fruit juice. Fruit juice was more commonly offered than either fresh fruit or canned fruit (36 percent of daily snack menus versus 14 and 3 percent, respectively).
- Vegetables were rarely offered in afterschool snacks. Only 2 percent of daily menus included vegetables, and these were mainly carrots.
- Meat and meat alternates were offered infrequently in afterschool snacks. Only 11 percent of daily snack menus included a separate meat alternate and 4 percent of menus included a meat/meat alternate as part of a combination entree. Cheese, included in 7 percent of daily menus, was the meat alternate that was most commonly offered as a separate menu item.
- Twelve percent of snack menus included an item that was not clearly one of the required components. These included cookies, cakes and brownies (7 percent of daily menus) and snack foods, such as popcorn and potato chips (not including plain corn/tortilla chips) (2 percent of daily menus). Schools that offered cookies, cakes and brownies might have considered them as a creditable grain/bread offering.

[9] See Appendix Table C.1 for a complete list of major and minor food groups.

Table 10.5. Foods Offered in Afterschool Snacks

	Percentage of Daily Snack Menus
Milk	60
Unflavored	45
1% fat	30
2% fat	12
Skim or nonfat	7
Flavored	37
1% fat	20
Skim or nonfat	20
Vegetables	2
Vegetables, raw (mainly carrots)	2
Fruits and 100% Fruit Juices	51
100% fruit juice	36
Noncitrus juice	28
Apple	13
Blend	11
Grape	5
Citrus juice (mainly orange)	10
Fresh fruit	14
Apple	6
Banana	4
Orange	3
Canned fruit	3
Combination Entrees	4
Peanut butter sandwiches	2
Other combination entrees	<3
Separate Grains/Breads	75
Crackers and pretzels	50
Cold cereal	7
Sweetened	5
Unsweetened	2
Corn/tortilla chips	6
Muffins (excludes English muffins), sweet/quick breads	4
Grain and fruit cereal bars, granola bars	4
Pastries (mainly cinnamon buns)	3
Meats/Meat Alternates	11
Cheese	7
Nuts, nut butters, seeds, nut mixtures	<3
Yogurt, low-fat or fat-free	2
Other Menu Items	12
Cookies, cakes, and brownies	7
Snack foods (popcorn, potato chips)	2
Number of Daily Menus	**717**
Number of Schools	**172**

Source: School Nutrition Dietary Assessment Study-IV, Afterschool Snack Menu Survey, school year 2009–2010. Tabulations prepared by Mathematica Policy Research are weighted to be representative of all public schools offering the National School Lunch Program and providing reimbursable afterschool snacks.

Notes: Table includes only schools that reported providing reimbursable afterschool snacks and completed the afterschool snack menu survey.

Table includes only food groups offered in at least two percent of afterschool snack menus.

Table 10.5 (*continued*)

<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.

D. Calorie and Nutrient Content of Afterschool Snacks Offered

The calorie and nutrient content of the average afterschool snack offered is based on a simple average of all foods offered to students. The analytic approach is the same as the approach used to estimate the calorie and nutrient content of NSLP lunches and SBP breakfasts as offered (see Appendix D). Estimates assume that a snack includes one serving of each type of food (component) offered. In the relatively rare cases where snacks included more than one choice for a particular component—for example two different milk choices—equal weight was given to each option.

At the time this report was prepared, there were no nutrient-based requirements for afterschool snacks and, thus, no benchmarks to use in assessing their average nutrient content. To provide some perspective on the relative calorie and nutrient content of afterschool snacks, we translated average calories and nutrients into average percentages of the 1989 REA/RDAs. The nutrition standards for NSLP and SBP meals that were in effect at the time this report was prepared—the SMI standards—were based on the 1989 RDAs. In assessing afterschool snacks, we made one adjustment to the approach used in assessing NSLP and SBP meals. Because afterschool snacks are not necessarily consumed by the students enrolled in the schools where the snacks were prepared, we did not want to base the RDA comparisons on the school-specific standards used to assess NSLP lunches and SBP breakfasts. For example, we did not want to compare snacks that might have been served to elementary school children to RDAs that reflect the calorie and nutrient needs of high-school-age children. For this reason, we compared afterschool snacks to the 1989 RDAs that underlie the SMI nutrition standards for children in grades K–3 and grades 4–12 in schools that used traditional food-based menu planning.[10] We also translated average amounts of sodium, cholesterol, and dietary fiber into percentages of the daily limits recommended in the 2010 *Dietary Guidelines* (USDA and HHS 2010).

1. Calories and Target Nutrients

On average, afterschool snacks offered to students during a typical week in SY 2009–2010 provided 264 calories (Table 10.6).[11] This is equivalent to 14 and 11 percent of the 1989 REAs for children in grades K–3 and 4–12, respectively. Afterschool snacks provided substantially larger shares of the 1989 RDAs for some of the SMI target nutrients. For example, the average vitamin C content of 18 mg was equivalent to 40 percent of the 1989 RDA for grades K–3 and 35 percent of the 1989 RDA for grades 4–12. The frequent inclusion of 100% juice (most of which is naturally rich in or fortified with vitamin C) likely contributed to the high vitamin C content of afterschool snacks. The relative contribution of afterschool snacks to the 1989 RDAs was lowest in both grade groups for iron (15 to 19 percent).

[10] See 7 CFR Ch.11, 210.10, page 24.

[11] Detailed data on the calorie and nutrient content of afterschool snacks offered, including standard errors, percentile distributions, and concentrations of nutrients per 1,000 calories are provided in Appendix Tables J.1 to J.3.

Table 10.6. Average Calorie and Nutrient Content of Afterschool Snacks Offered, Relative to 1989 *Recommended Energy and Dietary Allowances* and 2010 *Dietary Guidelines for Americans*

	Average Amount	Average Percentage of 1989 *Recommended Energy/Dietary Allowances*[a]	
		Grades K–3	Grades 4–12
Calories	264	14	11
Protein (g)	8	31	19
Vitamin A (mcg RE)	134	22	15
Vitamin C (mg)	18	40	35
Calcium (mg)	221	28	20
Iron (mg)	2	19	15
		Average Percentage of 2010 *Dietary Guidelines* Recommendations[b]	
Cholesterol (mg)	10	3	
Sodium (mg)	283	12	
Dietary Fiber (g/1,000 calories)	7	50	
Number of Schools		**172**	

Source: School Nutrition Dietary Assessment Study-IV, Afterschool Snack Menu Survey, school year 2009–2010. Tabulations prepared by Mathematica Policy Research are weighted to be representative of all public schools offering the National School Lunch Program and providing reimbursable afterschool snacks.

Note: Table includes only schools that reported providing reimbursable afterschool snacks and completed the afterschool snack menu survey.

[a] Based on minimum calorie and nutrient levels defined in National School Lunch Program regulations for traditional food-based menu planning for grades K-3 and 4-12 (see 7 CFR Ch.11, 210.10, page 24).

[b] For cholesterol and sodium, the benchmarks are the recommended daily limits of 300 mg and 2,300 mg, respectively. For dietary fiber, the benchmark is 14 g per 1,000 calories.

RE = Retinol equivalents.

2. Total Fat and Saturated Fat

The average afterschool snack provided 23.2 percent of calories from fat (Appendix Table J.1). This amount of fat is consistent with the SMI standard for NSLP and SBP meals (no more than 30 percent of calories), but is not consistent with the range of fat intake recommended in the 2010 *Dietary Guidelines* for school-age children (25 to 35 percent of calories). On average, saturated fat provided 7.6 percent of the calories in afterschool snacks (Appendix Table J.1). This is consistent with both the SMI standard for NSLP and SBP meals and the 2010 *Dietary Guidelines* recommendation for saturated fat (less than 10 percent of calories).

3. Cholesterol, Sodium, and Dietary Fiber

Relative to 2010 *Dietary Guidelines* recommendations, the average afterschool snack contributed 3 percent of the recommended daily limit of cholesterol (10 mg versus 300 mg) and 12 percent of the recommended daily limit of sodium (283 mg versus 2,300 mg) (Table 10.6). The concentration of fiber in the average afterschool snack was half the recommended level (7 g per 1,000 calories versus 14 g per 1,000 calories).

E. Potential Contribution of Afterschool Snacks to Recommended USDA Food Patterns

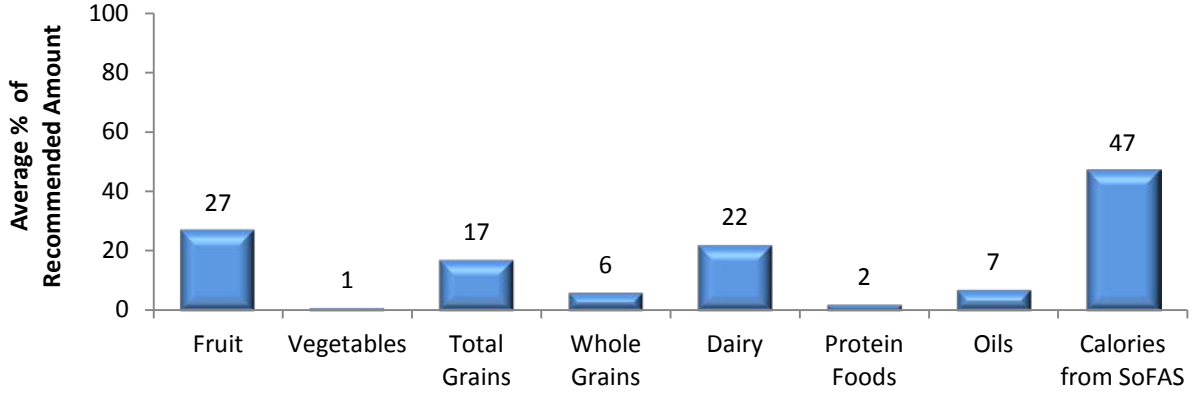
In this section, we describe the average food group content of afterschool snacks offered to students in SY 2009–2010 and compare these average amounts with USDA Food Patterns for 1,800-, 2,000-, and 2,400-calorie diets. These are the calorie levels used by the IOM in developing recommendations for revised nutrition standards for school meals (IOM 2010). USDA Food Pattern recommendations for these three calorie levels are summarized in Chapter 8, Table 8.1.[12]

Figures 10.1 to 10.3 show the relative contributions of afterschool snacks to recommended daily amounts of USDA Food Pattern food groups. In reviewing these data, it is useful to bear in mind that, at 264 calories, the average afterschool snack provides 11 to 15 percent of the calories in these reference Food Patterns (this varies slightly from the range presented in Table 10.6 and discussed in the preceding section because the reference calorie levels used in Table 10.6 are the 1989 REAs for children in grades K-3 and 4-12). Relative to their calorie content, average afterschool snacks provided appreciable amounts of fruit (which includes 100% fruit juice) (21 to 27 percent of recommended daily amounts), dairy foods (22 percent of recommended daily amounts), and total grains (13 to 17 percent of recommended daily amounts). Average afterschool snacks provided smaller amounts of whole grains and oils (5 to 7 percent of recommended daily amounts) and only marginal amounts of vegetables and protein foods (1 to 2 percent of recommended daily amounts).

Relative to their calorie and food group content, average afterschool snacks were high in calories from SoFAS. On average, afterschool snacks provided almost half (47 percent) of the recommended daily limit of SoFAS calories included in the 1,800 calorie Food Pattern and roughly one-quarter of the SoFAS calories included in the 2,000 calorie and 2,400 calorie Food Patterns (29 and 23 percent, respectively).

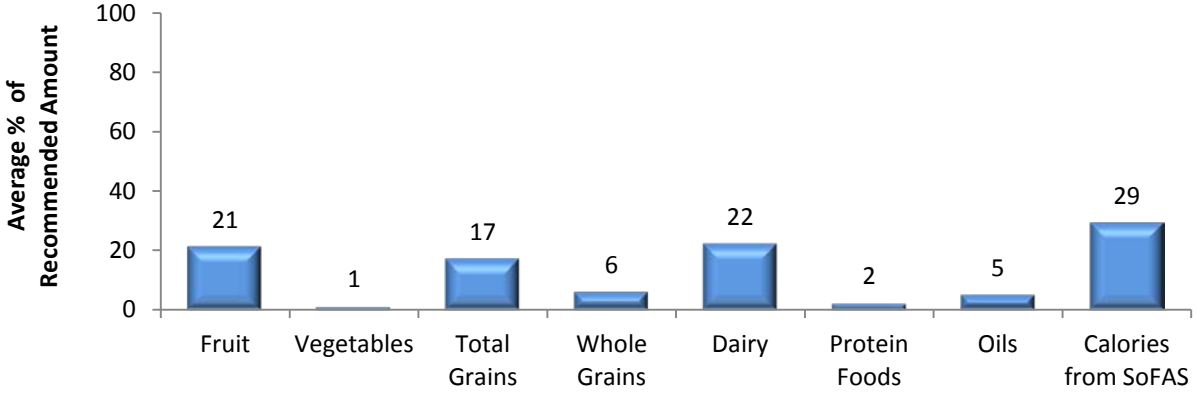
[12] Appendix Tables J.4 and J.5 provide comparisons with other calorie levels that might be applicable to specific subgroups of students. In addition, Appendix Table J.6 presents data on concentrations of USDA Food Pattern food groups per 1,000 calories.

Figure 10.1. Average Amounts of Food Groups in Afterschool Snacks *Offered*, Relative to 1,800 Calorie USDA Food Pattern



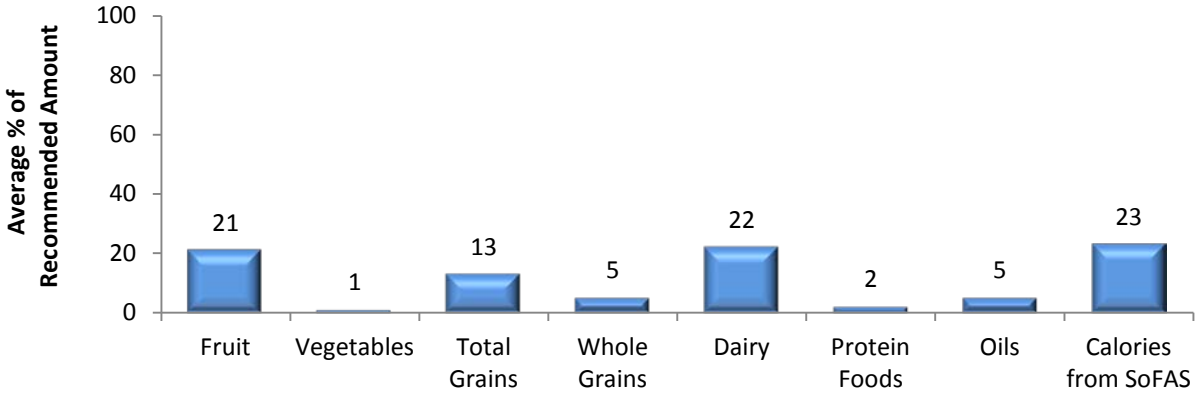
Note: In developing recommendations for revised nutrition standards for school meals, the Institute of Medicine (2010) used 1,800 calories as the standard for elementary schools.

Figure 10.2. Average Amounts of Food Groups in Afterschool Snacks *Offered*, Relative to 2,000 Calorie USDA Food Pattern



Note: In developing recommendations for revised nutrition standards for school meals, the Institute of Medicine (2010) used 2,000 calories as the standard for middle schools.

Figure 10.3. Average Amounts of Food Groups in Afterschool Snacks *Offered*, Relative to 2,400 Calorie USDA Food Pattern



Note: In developing recommendations for revised nutrition standards for school meals, the Institute of Medicine (2010) used 2,400 calories as the standard for high schools.

Sources of Solid Fats and Added Sugars

Table 10.7 displays the leading sources of SoFAS calories, solid fats, and added sugars in average afterschool snacks offered to students. The relative contribution of a food/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 offered (Subar et al. 1998). For this reason, foods that are offered frequently may make more substantial contributions to solid fats and added sugars than might be expected based on nutrient content alone. Similarly, foods that are concentrated sources of solid fats and added sugars may make more substantial contributions than might be anticipated based on the frequency with which these items were offered.

The top five contributors to SoFAS calories in afterschool snacks were crackers and pretzels (30 percent), 1% flavored milk (10 percent), cookies, cakes and brownies (10 percent), flavored skim/nonfat milk (9 percent), and unflavored 1% milk (5 percent). Together, these five foods accounted for 64 percent of the SoFAS calories in afterschool snacks.

More than half (55 percent) of the SoFAS calories in the average afterschool snack came from solid fats and 45 percent came from added sugars (data not shown in table). Leading sources of solid fats in afterschool snacks were crackers and pretzels (37 percent), followed by 1% unflavored milk (10 percent), cheese (10 percent), cookies, cakes and brownies (9 percent), and 2 % unflavored milk (7 percent).

Crackers and pretzels were also the leading source of added sugars in average afterschool snacks (21 percent). Together, flavored skim/nonfat and 1% milks contributed more than one-third (34 percent) of the added sugars in afterschool snacks. Cookies, cakes and brownies (11 percent), and cold cereal (6 percent) round out the list of the 5 top contributors of added sugars in afterschool snacks. More detailed results on the sources of SoFAS calories, solid fats, and added sugars in afterschool snacks are presented in Appendix Tables J.7 through J.9.

Table 10.7. Food Sources of Solid Fats and Added Sugars in Afterschool Snacks Offered

Major Food Groups	Percentage Contribution to Average Amount Offered	Top 10 Minor Food Groups	Percentage Contribution to Average Amount Offered
Calories from Solid Fats and Added Sugars			
Breads/Grains	45.5	Crackers and pretzels	29.6
Milk	28.8	1% milk, flavored	10.4
Desserts	10.7	Cookies, cakes, brownies	10.1
Meat/Meat Alternate	7.6	Skim or nonfat milk, flavored	9.1
Combination Entrees	3.8	1% milk, unflavored	5.4
Fruit	1.6	Cheese	5.2
Accompaniments	1.3	Sweet rolls, donuts, toaster pastries	5.2
Other	0.7	Grain/fruit cereal bars, granola bars	3.8
Vegetables	0.0	2% milk, unflavored	3.7
		Muffins, sweet/quick breads	3.2
Solid Fats			
Breads/Grains	48.2	Crackers and pretzels	36.7
Milk	24.5	1% milk, unflavored	10.1
Meat/Meat Alternate	10.5	Cheese	9.7
Desserts	9.6	Cookies, cakes, brownies	9.4
Combination Entrees	4.5	2% milk, unflavored	6.8
Accompaniments	2.1	1% milk, flavored	6.0
Other	0.6	Sweet rolls, donuts, toaster pastries	5.3
Fruit	0.1	Grain/fruit cereal bars, granola bars	2.6
Vegetables	0.0	Muffins, sweet/quick breads	1.8
		Skim or nonfat milk, flavored	1.4
Added Sugars			
Breads/Grains	42.4	Crackers and pretzels	21.2
Milk	33.9	Skim or nonfat milk, flavored	18.2
Desserts	12.0	1% milk, flavored	15.4
Meat/Meat Alternate	4.2	Cookies, cakes, brownies	11.0
Fruit	3.3	Cold cereal	5.5
Combination Entrees	2.9	Grain/fruit cereal bars, granola bars	5.3
Other	0.9	Sweet rolls, donuts, toaster pastries	5.0
Accompaniments	0.4	Muffins, sweet/quick breads	4.9
Vegetables	0.0	Yogurt	4.1
		Peanut butter sandwiches	2.1

Source: School Nutrition Dietary Assessment Study-IV, Afterschool Snack Menu Survey, school year 2009–2010. Tabulations prepared by Mathematica Policy Research are weighted to be representative of all public schools offering the National School Lunch Program and providing reimbursable afterschool snacks.

Notes: Table includes only schools that reported providing reimbursable afterschool snacks and completed the afterschool snack menu survey.

See Appendix Table C.1 for a detailed listing of food items included in each major food group.

CHAPTER 11
CHANGES IN SCHOOL MEALS SINCE THE IMPLEMENTATION OF THE SCHOOL MEALS INITIATIVE

SNDA-IV is the fourth in a series of studies that have monitored the nutrient content of NSLP and SBP meals using similar approaches. Over the years, the SNDA studies have made important contributions to school nutrition policy. Perhaps most noteworthy is the impact of findings from SNDA-I, which was conducted in SY 1991–1992, that NSLP lunches were not consistent with *Dietary Guidelines for Americans* recommendations for total fat, saturated fat, and sodium (Burghardt et al. 1993).[1]

This finding was the impetus for historic changes in the school meal programs, culminating in the Healthy Meals for Healthy Americans Act (PL 104-448), which was passed in 1994 and required, for the first time, that NSLP and SBP meals be consistent with the *Dietary Guidelines*. In addition, in 1995 USDA launched the SMI, a comprehensive, nationwide initiative to improve the nutritional quality of school meals. The SMI set new nutrition standards for school meals, including a requirement that meals be consistent with the 1995 *Dietary Guidelines* recommendations for total fat and saturated fat. The SMI standards also encouraged schools to reduce levels of sodium and increase dietary fiber in NSLP and SBP meals, but did not set specific quantitative targets for these nutrients. Finally, the SMI standards required that NSLP lunches and SBP breakfasts provide one-third and one-quarter, respectively, of the 1989 RDAs for calories,[2] protein, vitamins A and C, calcium, and iron.

More recently, the IOM, at USDA's request, used data from SNDA-III to help develop recommendations for updating the nutrient- and food-based requirements that govern school meals (IOM 2010). Based on the IOM recommendations, USDA issued a proposed rule for new nutrition standards for school meals in January 2011.[3] After a period of public comment, the updated and final rule was issued in January 2012.[4] The final rule requires that schools begin implementing the new requirements in SY 2012–2013.

Three SNDA studies have been conducted since the SMI was enacted—SNDA-II in SY 1998–1999, SNDA-III in SY 2004–2005, and SNDA-IV in SY 2009–2010. The SNDA-II and SNDA-III studies found that most schools met the SMI standards for the RDA nutrients as well as the standards for total fat and saturated fat in SBP breakfasts. In addition, these studies documented steady progress toward meeting the goals for total fat and saturated fat in NSLP lunches, but found that substantial proportions of schools continued to provide NSLP lunches that, on average, exceeded relevant SMI standards.

In this chapter, we update the picture of how school meals have changed since the implementation of the SMI by incorporating data from the SNDA-IV study. The SNDA-IV data

[1] At the time, program regulations did not require that school meals be consistent with the *Dietary Guidelines*.

[2] The reference standard for calories is the 1989 *Recommended Energy Allowance* (REA).

[3] *Federal Register,* vol. 76, no. 9, Thursday, January 13, 2011, Proposed Rules.

[4] *Federal Register,* vol. 77, no. 17, Thursday, January 26, 2012, Rules and Regulations.

were collected almost 15 years after the SMI regulations went into effect and some 3 years after all school districts participating in the NSLP were required to have a comprehensive wellness policy. Thus, this is a timely juncture for updated information on the nutrient content of school meals.

We focus mainly on comparisons of the nutrient content of average NSLP and SBP meals *served* as measured in SNDA-II, SNDA-III, and SNDA-IV. We cannot include SNDA-I in these comparisons because SNDA-I did not estimate the nutrient content of meals *served*. (This concept was introduced as part of the SMI). However, we do incorporate data from SNDA-I for one measure that was comparable across the four studies—the availability of low-fat NSLP lunches. We note that most of the findings on trends in the nutrient content of school meals are reported for elementary and secondary schools (middle and high schools combined). This is necessary because the SNDA-II study did not report findings separately for middle and high schools.

In addition to data on nutrient content, we present data on selected characteristics of school foodservice programs that might influence nutrient content, for example, the foods offered to students in reimbursable meals and the approaches used to plan menus. We also describe changes in selected characteristics of school foodservice operations and school food environments. Most of these comparisons are limited to data from SNDA-III and SNDA-IV because the data elements were either not collected in SNDA-I and SNDA-II or the survey questions were not comparable.

A. Summary of Findings

NSLP Lunches

- In SYs 2009–2010 and 2004–2005, similar proportions of elementary and secondary schools *served* NSLP lunches that met SMI standards for calories and most target nutrients.

- However, between SYs 1998–1999 and 2009–2010, there was a significant drop in the proportion of elementary schools *serving* NSLP lunches that met the SMI standard for calories (68 versus 49 percent). A parallel drop was not observed among secondary schools. At all three points in time, secondary schools were considerably less likely than elementary schools to *serve* lunches that met the SMI standard for calories.

- Both elementary and secondary schools have made steady progress in meeting the SMI standards for total fat since SY 1998–1999. Both types of schools were significantly more likely to *serve* average NSLP lunches that met the SMI standard for the percentage of calories from fat in SY 2009–2010 than in SY 2004–2005 or SY 1998–1999.

- Between SYs 2004–2005 and 2009–2010, the proportion of schools meeting the SMI standard for total fat increased by 50 percent among elementary schools (from 26 to 39 percent) and more than doubled among secondary schools (from 12 to 27 percent).

- Similar progress was made over time in meeting the SMI standard for saturated fat in NSLP lunches *served*. More than half (53 percent) of elementary schools and nearly half (46 percent) of secondary schools met the SMI standard for saturated fat in SY 2009–2010. This is an increase of about 20 percentage points, relative to SY 2004–2005.

- NSLP lunches continue to be high in sodium. At all three points in time, essentially no schools *served* NSLP lunches that, on average, met the *Dietary Guidelines*-based sodium standard that has been used in all the SNDA studies.

- Between SY 2004–2005 and SY 2009–2010, there was no change in the percentage of schools that *served* average NSLP lunches that met all of the SMI standards. At both points in time, about 7 percent of all schools *served* such lunches.
- The SNDA-II study documented a dramatic increase between SY 1991–1992 and SY 1998–1999 in the share of public schools in which students had the opportunity to select low-fat lunches—lunches that, over the course of a week, met the SMI standard for total fat (no more than 30 percent of calories). Data from SNDA-III indicated that this trend continued in SY 2004–2005 among elementary schools, but not among secondary schools. SNDA-IV found no appreciable change between SYs 2004–2005 and 2009–2010 in the proportion of elementary schools *offering* low-fat lunch options that met the SMI standard for total fat. Among secondary schools, the proportion of schools *offering* the opportunity to select low-fat lunches that met the SMI standard increased significantly, from 86 to 92 percent.
- Schools decreased their use of whole and 2% milk in NSLP lunches and increased the availability of 1% and skim/nonfat milk. The percentage of daily lunch menus that included unflavored whole milk decreased from about 30 percent in SY 2004–2005 to less than 5 percent in SY 2009–2010. Over the same period, the percentage of daily lunch menus that included unflavored 1% milk increased from 44 to 54 percent (varies by school type) to 70 to 74 percent.
- A greater proportion of high schools offered side salad bars at least once per week in SY 2009–2010 than in SY 2004–2005 (21 versus 10 percent), and a smaller proportion offered entree salad bars at least once per week (14 versus 27 percent).

SBP Breakfasts

- Significantly fewer elementary schools met the SMI standard for calories in SY 2009–2010 than in SY 2004–2005 (23 versus 36 percent). A parallel drop was noted for secondary schools, but the difference between SYs was not statistically significant. At all three points in time, secondary schools were considerably less likely than elementary schools to *serve* breakfasts that met the SMI standard for calories.
- Meeting the SMI standard for breakfast calories has been a long-standing challenge. In SY 1998–1999 only about 20 percent of elementary schools and less than 10 percent of secondary schools *served* SBP breakfasts that met the SMI standard for calories. These percentages increased in SY 2004–2005 (significantly so for elementary schools), but less than 40 percent for elementary schools and less than one-quarter for secondary schools *served* breakfasts that met the SMI standard for calories. In SY 2009–2010, only 23 percent of elementary schools and 13 percent of secondary schools *served* such breakfasts.
- Compared with SY 2004–2005, SBP breakfasts *served* in SY 2009–2010 in both elementary and secondary schools were generally as likely to satisfy the SMI standards for protein, vitamins A and C, calcium, and iron.
- The proportion of schools meeting SMI standards for total fat and saturated fat has always been larger for SBP breakfasts than for NSLP lunches (on average, breakfasts provide fewer calories from fat and saturated fat than lunches). Between SYs 2004–2005 and 2009–2010, there was no significant change in the proportion of elementary schools that *served* breakfasts that satisfied the SMI standards for total fat and saturated fat or in

the proportion of secondary schools that satisfied the SMI standard for saturated fat. However, the proportion of secondary schools that met the SMI standard for total fat increased significantly over this period (from 67 to 80 percent).

- Between SY 2004–2005 and SY 2009–2010, the percentage of schools that *served* average SBP breakfasts that met all of the SMI standards decreased from 20 percent to 11 percent. This pattern is consistent with a decrease in the percentage of schools that met the SMI standard for minimum calories.
- As in NSLP lunches, schools decreased their use of whole and 2% milk in SBP breakfasts between SYs 2004–2005 and 2009–2010, and increased the availability of 1% and skim/nonfat milk.

B. Overview of Data Sources and Methods

1. Data Sources

The primary source of data for the findings presented in this chapter is menu surveys that were completed by FSMs in schools participating in the SNDA-II, SNDA-III, and SNDA-IV studies. No new analysis of data from the previous SNDA studies was conducted, so we obtained the available information from tables presented in the SNDA-III (Gordon et al. 2007) and SNDA-II (Fox et al. 2001) final reports and in a paper by Crepinsek et al. (2009). As a result, comparisons are limited to the outcomes and subgroups reported in these publications. In some cases, SNDA-IV data for middle and high schools were combined to produce estimates for all secondary schools, to be consistent with the approach used in SNDA-II.

All three SNDA studies used comparable methods to collect and analyze menu survey data (see Appendix D and Volume II). In addition, during the design and implementation of SNDA-III and SNDA-IV, every attempt was made to minimize the potential effects of differences in sample selection, data collection, and data analysis, relative to SNDA-II. For example, the sample frames for the three studies included only public schools participating in the NSLP, and sampling methods used similar clustering and stratification. Nonetheless, differences in coding procedures and in the nutrient analysis software and databases used in the three studies could have contributed to the observed differences (or lack thereof) reported here. Food and nutrient databases change over time as new foods enter and outdated foods leave the market, and as scientific understanding of nutrient values improves. Despite efforts to limit them, differences in data collection procedures (particularly between SNDA-II and the later studies) might also have influenced our findings.[5]

[5] Although the basic format of the menu survey did not change, two enhancements to the survey forms were implemented for SNDA-III and SNDA-IV: (1) commonly offered items within the meal component categories were preprinted on the menu survey forms to reduce respondent burden and decrease the chances that offered foods would be omitted, and (2) columns were added to allow flexibility in reporting data used to determine the number of portions of each menu item served to students in USDA-reimbursable meals. In addition, both SNDA-III and SNDA-IV used a larger default portion size for self-serve salad dressing than used in SNDA-II (two tablespoons versus three-quarters of a tablespoon) to better reflect the average portion consumed by school-age children. Exploratory analyses conducted in SNDA-III showed that the change in this default portion size had a minimal effect on nutrient estimates and did not affect overall findings.

Data on selected characteristics of school foodservice operations and school food environments were obtained from surveys completed by SFA directors, FSMs, and principals. In most cases, these comparisons are limited to data from SNDA-III and SNDA-IV because the data elements were either not collected in SNDA-II or the survey questions were not comparable.

2. Analytic Approach

Comparisons of the nutrient content of school meals over time focus primarily on estimates of meals *as served*. As described in Chapters 5 and 7 and Appendix D, estimates of the calorie and nutrient content of the average NSLP lunch or SBP breakfast *served* take into account the number and types of foods selected by students. This approach to estimating nutrient content is referred to as a weighted analysis because the nutrients in each menu item are weighted by the proportion of students eating lunch that took that item, and then totaled across all menu items. Daily values for the average meal *served* are then averaged across the week to determine the overall school average.

We focus on meals *served* for several reasons. First, a comparison of the average nutrient content of NSLP and SBP meals *served* with SMI standards was the primary focus of SNDA-II. In addition, despite the availability of waivers through much of the period covered by the three studies, program regulations required that a weighted nutrient analysis be used by State agencies for SMI reviews and by schools planning menus with a nutrient-based system. Finally, the standard errors required for comparisons with SNDA-IV data were available in published results from the SNDA-II and SNDA-III studies for meals *served* but not for meals *offered* in all cases. One consequence of the focus on meals *served* is that we cannot include SNDA-I in our comparisons. SNDA-I did not estimate the nutrient content of meals *served*—the focus on the nutrient content of meals *served* was introduced as part of the SMI to provide a more accurate assessment of the potential contribution of school meals to children's dietary intakes. However, we do incorporate data from SNDA-I for one measure that was comparable across the four studies—the availability of low-fat NSLP lunches.

The statistical significance of differences in meals *served* in SY 2009–2010 (SNDA-IV) and those *served* in SYs 2004–2005 and 1998–1999 (SNDA-III and SNDA-II, respectively) was computed for selected comparisons. For comparisons of the percentages of schools meeting standards, we used two-tailed *t*-tests.[6] When comparing differences in the distribution of food groups contributing to calorie or nutrient content, we used chi-squared tests. By applying a test to the full distribution, false detection of statistically significant differences was less likely than in a series of *t*-tests applied to each category. The differences discussed in the text are statistically significant at least at the .05 level.

To maintain comparability with the previous SNDA studies, the rules used in other chapters to flag potentially unreliable point estimates in findings from the nutrient analysis were not applied in this chapter. Thus, some point estimates reported as >97 or <3 in Chapters 5 and 7 (NSLP and SBP meals, respectively) are reported in this chapter as values between 97 and 100 and 0 and 3, respectively. See Chapter 1 for details on the rules used to flag estimates.

[6] For some comparisons, standard errors were not available. In these situations, the standard errors were estimated using the formula $\sigma = \sqrt{p(1-p)d_{eff} / N}$, where σ is the estimated standard error, p is the proportion of schools, d_{eff} is a design effect, and N is the number of schools in the sample. Based on observed design effects for a variety of outcomes in the SNDA-III analysis, we approximate $d_{eff} = 1.5$, near the average of the observed values.

Comparisons of the average nutrient content of meals *offered* in SNDA-III and SNDA-IV are provided in Appendix Tables K.1 and K.14 through K.16, but are not discussed in the text. The same basic approach has been used to estimate the nutrient content of NSLP lunches *offered* in all four of the SNDA studies. However, the methodology has been updated over time to reflect changes in program regulations and local school foodservice practices. For SNDA-II, the update reflected the greater emphasis on fruits, vegetables, and grains in the enhanced food-based menu-planning system that was implemented under the SMI. For SNDA-III, the methodology was modified to take into account differences in the required structure of menus planned under the nutrient standard menu- planning system (NSMP). For SNDA-IV, we updated the methodology to more accurately account for the number of fruits and vegetables schools allow students to include in their lunches (see Appendix D). To assess the magnitude and implications of this difference in estimation technique for comparisons with findings from SNDA-III, we completed all analyses of lunches *offered* using both the SNDA-III method and the SNDA-IV method. Because differences between the two sets of results were small, we present results based on the SNDA-IV method in this report.[7]

3. Standards Used to Assess Nutrient Content

During the time period considered in our analysis (SY 1998–1999 to SY 2009–2010), schools were required to *offer* and *serve* meals that were consistent with the SMI nutrition standards (see Chapter 5, Table 5.1 and Chapter 7, Table 7.1). Thus, we present data on the proportions of schools that met these standards at each point in time. We also present data on the proportions of schools that met benchmarks for cholesterol and sodium recommended in a 1989 report of the National Research Council (NRC), because those were the most current standards at the time of SNDA-II and SNDA-III (NRC 1989).[8] Changes in the dietary fiber content of schools meals could be measured only for the period between SNDA-III and SNDA-IV, because the current recommendation for dietary fiber (14 g/1,000 calories) was not in use at the time of SNDA-II. It was not used in published SNDA-III reports either, but was applied to SNDA-III data in a paper by Crepinsek et al. (2009). For easy reference, figures and tables cite or show the standards that were used in the analysis.

C. Trends in the Nutrient Content of NSLP Lunches

To assess changes in the nutrient content of NSLP lunches over time, we compared the proportion of schools that *served* lunches that were consistent with SMI standards and related nutrition benchmarks in SY 2009–2010 (SNDA-IV), SY 2004–2005 (SNDA-III) and SY 1998–1999 (SNDA-II). Nutrition standards for schools meals were the same throughout this period—the SMI standards—and FNS policy was intended to maintain or increase the proportion of schools that met these standards.

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[7] Appendix Table K.1a presents the same data as Appendix Table K.1, but uses the SNDA-III method for estimating fruits and vegetables. Average calories and nutrients associated with fruits and vegetables are slightly lower throughout this version of the table. However, differences between the two sets of results are quite small and do not change any substantive findings.

[8] Previous chapters used the 2010 *Dietary Guidelines* recommendation of less than 2,300 mg per day as the basis for the sodium standard. However, for comparability with SNDA-II and SNDA-III, this analysis uses the older 2,400 mg upper limit.

1. Calories and Target Nutrients in NSLP Lunches

a. Calories

There were no statistically significant differences in the proportions of elementary or secondary schools *serving* NSLP lunches that satisfied the SMI standard for calories between SY 2004–2005 and SY 2009–2010 (Figure 11.1).[9] However, between SY 1998–1999 and SY 2009–2010, there was a significant drop in the proportion of elementary schools *serving* lunches that met the SMI standard for minimum calories (68 versus 49 percent). A parallel drop was not observed among secondary schools. At all three points in time, secondary schools were considerably less likely than elementary schools to *serve* lunches that met the SMI standard for calories.

As noted in Chapter 5, new requirements for NSLP lunches, which took effect in SY 2012–2013, define both minimum and maximum calorie levels.[10] Readers can get some perspective on how average NSLP lunches in SY 2009–2010 compare with these calorie ranges by examining the percentile distributions presented in Appendix Tables E.9 to E.11 (also see the discussion in Chapter 5).

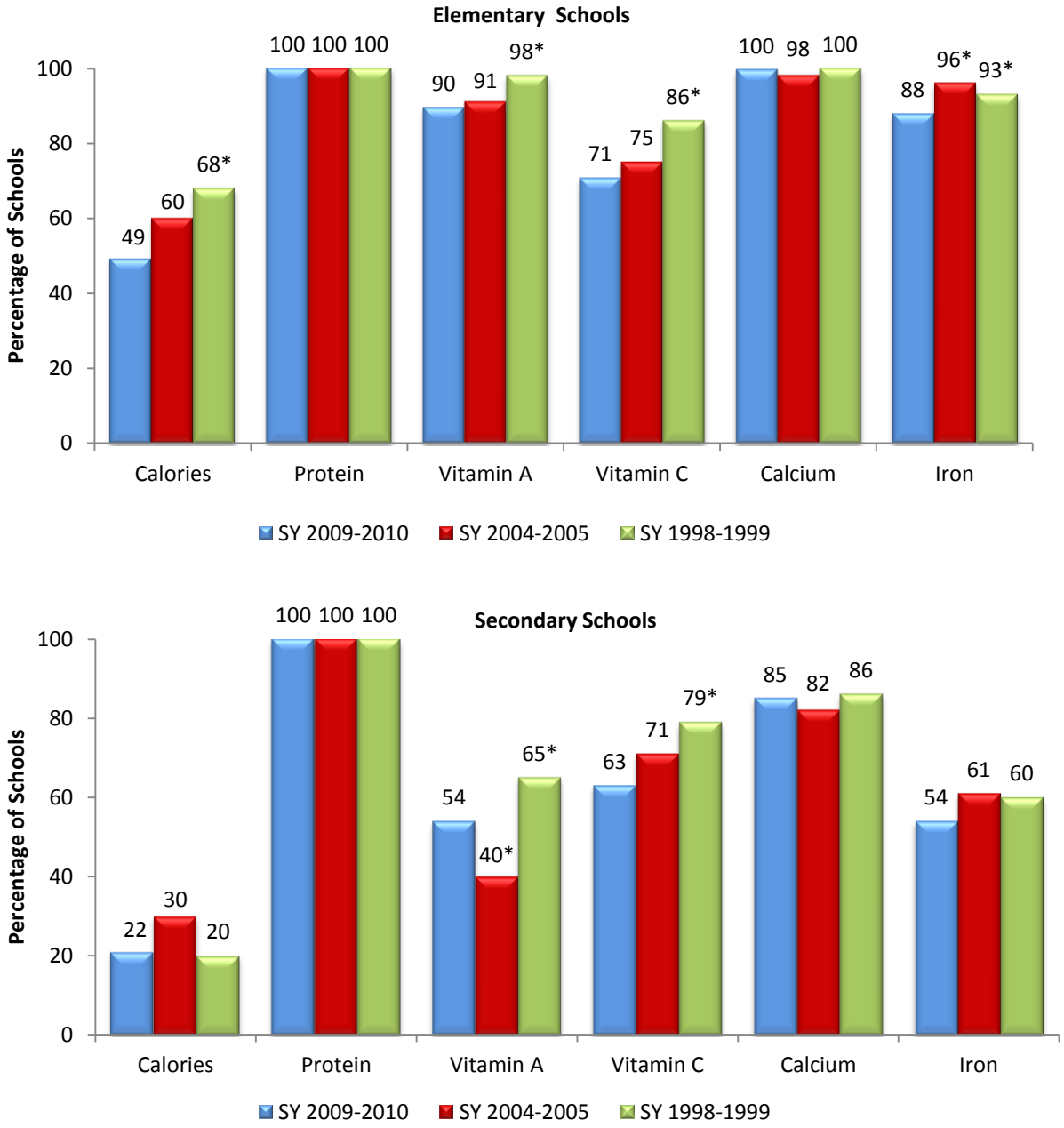
b. Target Nutrients

With two exceptions, NSLP lunches *served* in SY 2009–2010 were generally as likely as lunches *served* in SY 2004–2005 to satisfy the SMI standards for protein, vitamins A and C, calcium, and iron (Figure 11.1). The two exceptions are that elementary schools were less likely to *serve* lunches that met the SMI standard for iron in SY 2009–2010 than in SY 2004–2005 (88 versus 96 percent), and secondary schools were more likely to *serve* lunches that met the SMI standard for vitamin A (54 versus 40 percent). Between SY 1998–1999 and SY 2009–2010, there was a significant drop in the proportion of elementary schools *serving* lunches that met the SMI standards for vitamins A and C and iron. The proportion of secondary schools meeting the SMI standards for Vitamins A and C also decreased significantly over this period. At both points in time, most schools met the relevant standards; however the proportions were notably lower for secondary schools.

[9] Detailed data on the calorie and nutrient content of NSLP lunches *served* over time are presented in Appendix Tables K.2 and K.3. Table K.4 presents the detailed data that underlie Figure 11.1, including standard errors.

[10] *Federal Register,* vol.77, no.17, Thursday, January 26, 2012, Rules and Regulations.

Figure 11.1. Proportion of Schools *Serving* National School Lunch Program Lunches that Satisfied SMI Standards for Calories and Target Nutrients



Notes: The SMI standards are one-third of the 1989 *Recommended Energy/Dietary Allowances*.

For consistency with SNDA-III (SY 2004–2005) and SNDA-II (SY 1998–1999), percentages flagged as >97 in Chapter 5, based on statistical reporting standards applied in SNDA-IV (see Chapter 1), are not flagged in this figure.

* Proportion is significantly different from SY 2009-2010 at the .05 level.

SMI = School Meals Initiative for Healthy Children; SY = school year.

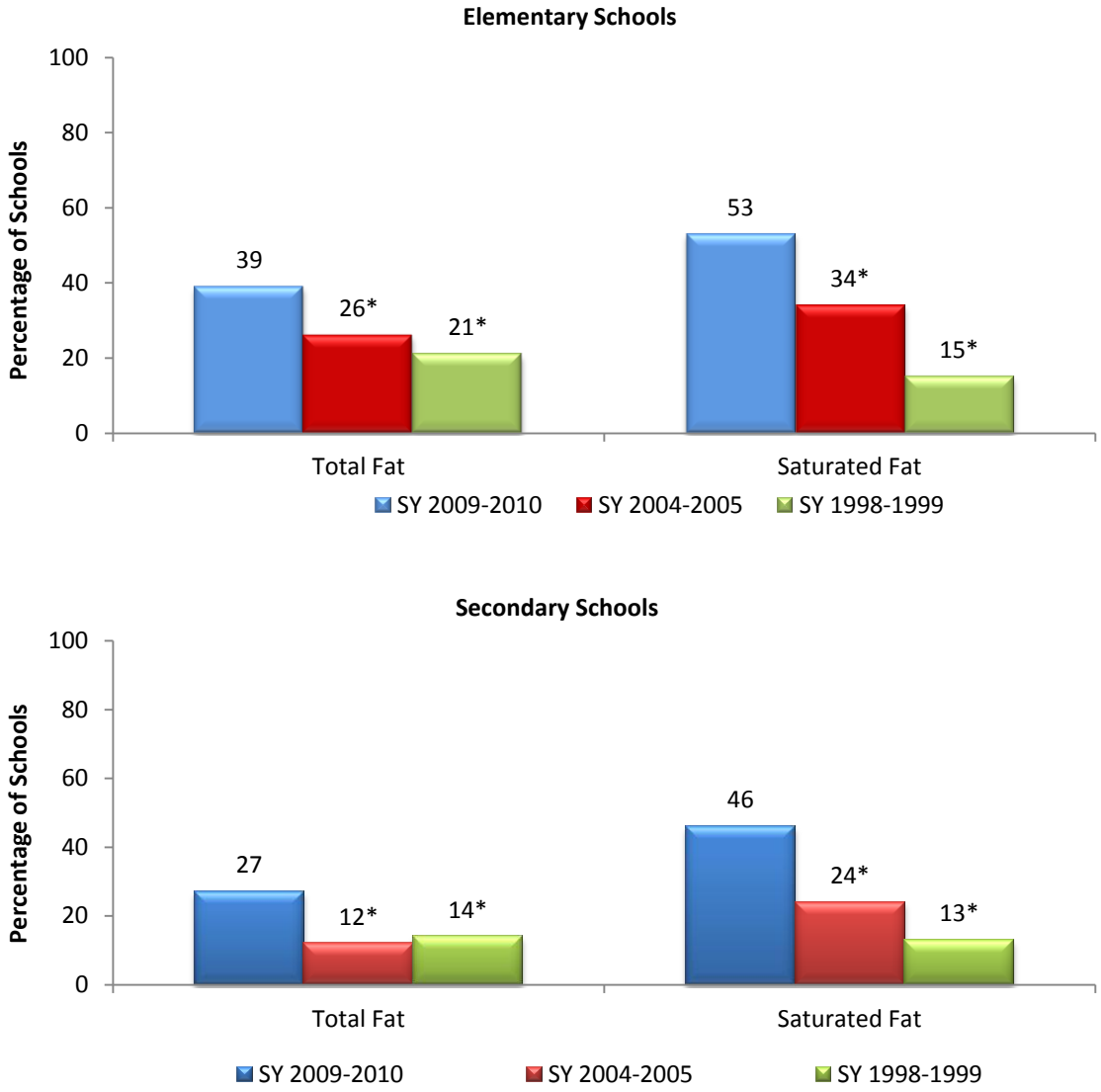
2. Total Fat and Saturated Fat in NSLP Lunches

Both elementary and secondary schools have made steady progress in meeting the SMI standards for total fat and saturated fat since SY 1998–1999. Both types of schools were significantly more likely to *serve* an average NSLP lunch that met the SMI standard for the percentage of calories from fat in SY 2009–2010 than in 2004–2005 or SY 1998–1999 (Figure 11.2).[11] Although the decrease since SY 2004–2005 in the average percentage of calories from fat in lunches *served* was modest (1.4 percentage points for elementary schools and 2.5 percentage points for secondary schools; Table K.3), the proportion of schools meeting the SMI standard for total fat increased by more than 50 percent among elementary schools (from 26 to 39 percent) and more than doubled among secondary schools (from 12 to 27 percent). In addition, schools that did not meet the SMI standard for total fat moved closer to meeting this target (Table K.5). This change continued progress begun between SY 1998–1999 and SY 2004–2005, as shown in Figure 11.2.

Similar progress was made over time in meeting the SMI standard for calories from saturated fat. Although the average percentage of calories from saturated fat decreased by less than 1 percentage point between SY 2004–2005 and SY 2009–2010 (Table K.3), more than half (53 percent) of elementary schools and nearly half (46 percent) of secondary schools met the SMI standard for saturated fat in SY 2009–2010 (Figure 11.2). This marks an increase of about 20 percentage points in the proportion of elementary and secondary schools that met the saturated fat standard. Again, schools that did not meet the SMI standard for saturated fat moved closer to meeting this target (Table K.5).

[11] The detailed data that underlie Figure 11.2, including standard errors, are presented in Appendix Table K.4.

Figure 11.2. Percentage of Schools *Serving* National School Lunch Program Lunches that Satisfied SMI Standards for Total Fat and Saturated Fat



Note: The SMI standard for total fat is no more than 30 percent of calories. The SMI standard for saturated fat is less than 10 percent of calories.

* Proportion is significantly different from SY 2009–2010 at the .05 level.

SMI = School Meals Initiative for Healthy Children; SY = school year.

3. Cholesterol and Sodium in NSLP Lunches

As discussed previously in this report, schools participating in the NSLP were not required under SMI to *serve* lunches that met specific quantitative standards for cholesterol or sodium but were encouraged to keep levels of these dietary components low in planned menus. Findings from SNDA-IV indicate that, in SY 2009–2010, virtually all schools *served* NSLP lunches with acceptable

levels of cholesterol (Table K.4). The average amount of cholesterol in lunches *served* in SYs 1998–1999 and 2004–2005 was already well below the benchmark of no more than 100 mg.[12] Statistically significant reductions in average cholesterol levels were noted for both elementary and secondary schools over time (Table K.2); however, these differences had little appreciable effect on the proportion of schools *serving* NSLP lunches that met the NRC-based standard for cholesterol.

The picture for sodium is quite different, as essentially no schools at any time point *served* NSLP lunches that were consistent with the recommended maximum level of sodium (0 to 1 percent in all years; Table K.4).[13] The average sodium content of elementary and secondary school lunches did not change significantly between SYs 2004–2005 and 2009–2010 (1,278 and 1,324 mg, respectively, for elementary schools and 1,470 and 1,458 mg, respectively, for secondary schools) (Table K.3). However, for both elementary and secondary schools, the average sodium content of lunches *served* in SY 2009–2010 was significantly higher than lunches *served* in SY 1998–1999 (Table K.2).[14] Average sodium content at both points in time was well above the recommended maximum, so these differences did not affect the proportion of schools that *served* meals that were consistent with the recommendation. Schools have not made notable progress toward meeting the sodium target over time. At all three points in time, fewer than 1 in 10 elementary or secondary schools *served* lunches with an average sodium content that was within 200 mg of the benchmark used in this analysis (Table K.5). High sodium intakes are a problem for most subgroups of the U.S. population (IOM 2010).

4. Percentage of Schools Meeting All of the SMI Standards

In addition to assessing the extent to which schools satisfied individual SMI standards, SNDA-III estimated the percentage of schools that *served* NSLP lunches that, on average, met *all* of the SMI standards. We repeated this analysis for SNDA-IV (and also looked at the percentage of schools that met other combinations of nutrition standards; see Chapter 5). Results showed that there was no significant change between SYs 2004–2005 and 2009–2010 in the percentage of schools that met all of the SMI standards. At both points in time, about 7 percent of all schools *served* average NSLP lunches that met all of the SMI standards (Gordon et al. 2007, Table VI.6 and Appendix Table E.7). At both points in time, elementary schools were significantly more likely than middle or high schools to *serve* average NSLP lunches that met all of the SMI standards.

5. Availability of Low-Fat Lunches

Increasing students' access to lower-fat meals, especially lower-fat lunches, has been a particular focus of efforts to improve the nutritional quality of school meals over time. Even among schools in which the *average* NSLP lunch is not consistent with the goal for total fat content, students may be

[12] The benchmark for cholesterol represents one-third of NRC's 1989 recommended daily limit of 300 mg per day. The 2010 *Dietary Guidelines* continues to recommend 300 mg as a daily maximum for cholesterol intake.

[13] As noted earlier in this chapter, we use one-third of the older 2,400 mg daily upper limit for comparability with SNDA-II and SNDA-III.

[14] It is possible that sodium content was somewhat overestimated in SNDA-III and SNDA-IV because the nutrient analysis protocols did not include entry of individual recipes for all schools (see Volume II). However, it is unlikely that this overestimation, if present, affected the overall finding that average NSLP lunches *served* were high in sodium, relative to the recommendation. See Chapter 5, footnote 14.

able to select lunches that meet this standard if low-fat menu items are available. In comparing the availability of low-fat lunches over time, we extend the comparison to include data from SNDA-I (SY 1991–1992). SNDA-I was the first study to look at this issue and, because the analysis is based on lunches *offered*, all four SNDA studies used a comparable analytic approach.

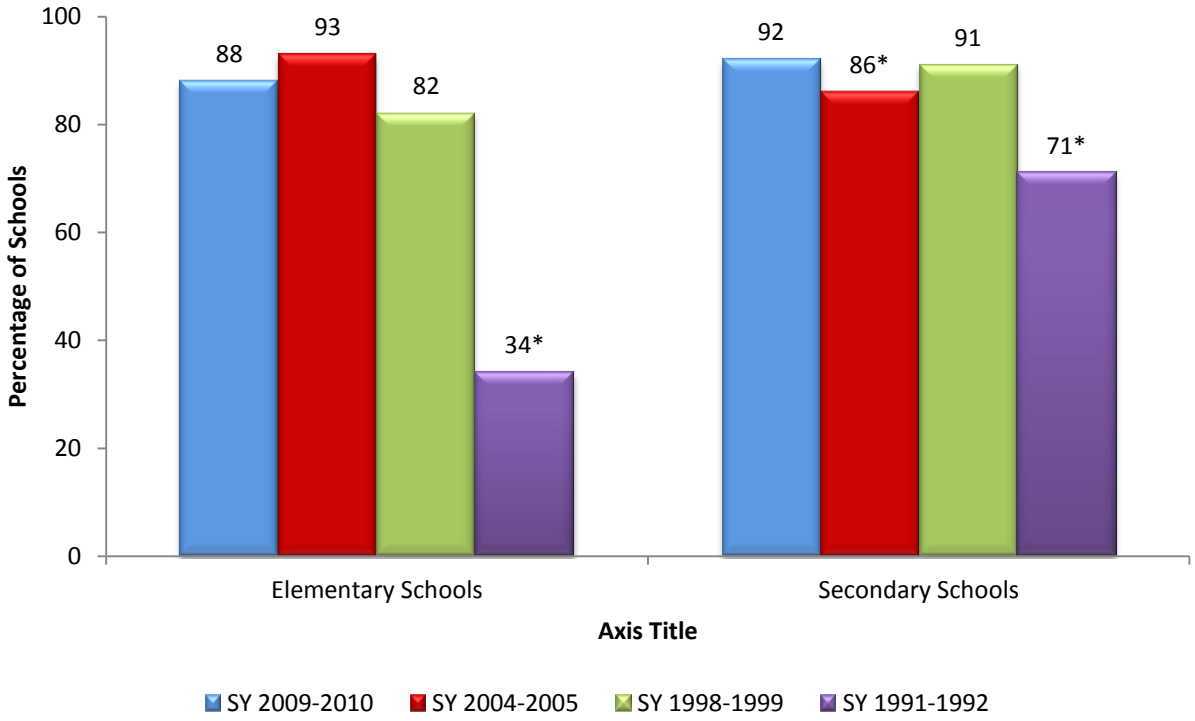
The methodology used in this analysis is similar to that used to estimate the nutrient content of lunches *offered* (see Appendix D). The lowest-percent-fat lunch was constructed for each school by determining the lowest-fat menu items offered (based on the percentage of calories from total fat) in each of the main meal components that comprise a reimbursable lunch under food-based menu planning. Thus, the lowest-percent-fat lunch for a given day consisted of the lowest-percent-fat milk option, the lowest-percent-fat entree (meat/bread combination) or meat/meat alternate option, the lowest-percent-fat grain/bread option (if offered), and the two lowest-percent-fat fruit/vegetable options.[15] The analysis included linked toppings and condiments, but excluded desserts and other optional menu items. Nutrient totals for the daily lowest-percent-fat options were then averaged across the week to determine the average calorie and nutrient content of the lowest-percent-fat lunches *offered* by each school. The methodology differs slightly from the comparable analysis presented in Chapter 6. The analyses in Chapter 6 incorporated the modified approach used in SNDA-IV to estimate the fruit and vegetable content of lunches *offered* (see previous discussion and Appendix D). To maintain comparability, the analyses presented here are based on the methodology that has been used since the SNDA-I study, which assumes two average servings of fruits and vegetables for all schools.

The SNDA-II study documented a dramatic increase between SYs 1991–1992 and 1998–1999 in the share of public schools in which students had the opportunity to select low-fat lunches (Figure 11.3). Low-fat lunches were defined as those that, over the course of a week, provided no more than 30 percent of calories from total fat. (This is the same as the SMI standard for total fat.) Data from SNDA-III indicated that this trend continued in SY 2004–2005 among elementary schools (although the relative increase was smaller), but not among secondary schools. Data from SNDA-IV show that there was no appreciable change between SY 2004–2005 and SY 2009–2010 in the proportion of elementary schools *offering* low-fat lunch options that met the goal for total fat. The point estimate for SY 2009–2010 is slightly lower, relative to SY 2004–2005; however, the difference is not statistically significant. Among secondary schools, the proportion of schools *offering* the opportunity to select low-fat lunches that met the SMI standard increased significantly from SY 2004–2005 to SY 2009–2010 (from 86 to 92 percent).[16]

[15] The lowest-percent-fat meal also satisfied the minimum requirement for fluid milk, an entree, and at least one side item under NSMP.

[16] Appendix Tables K.6 and K.7 provide detailed information on the distributions of total fat, saturated fat, carbohydrate, cholesterol, and sodium content of the lowest-percent-fat lunches *offered* at each point in time.

Figure 11.3. Percentage of Schools *Offering* Students the Opportunity to Select a National School Lunch Program Lunch that Satisfied the Goal for Total Fat



Note: The goal for total fat in all SYs was no more than 30 percent of calories.

* Proportion is significantly different from SY 2009–2010 at the .05 level.

SY = school year.

One concern in modifying school meals to reduce their fat content is the possibility that other nutrients will be adversely affected. Table 11.1 shows that the average calorie content of the lowest-fat lunches has consistently fallen below the SMI minimum standards for calories for both elementary and secondary schools. However, with few exceptions (none for elementary schools since SY 1991–1992), these meals have consistently met all other nutrition standards except sodium. Although the lowest-percent-fat lunches *offered* in SY 2009–2010 were high in sodium, relative to the recommendation, they were substantially lower in sodium (approximately 21 to 26 percent lower) than the average lunches *offered* in SY 2009–2010 overall (see Chapter 5; Table 5.3).

Table 11.1. Average Calorie and Nutrient Content of Lowest-Percent-Fat Lunches *Offered* in SY 2009–2010, SY 2004–2005, SY 1998–1999, and SY 1991–1992

		Average Amount			
	Standard	SY 2009–2010 (SNDA-IV)	SY 2004–2005 (SNDA-III)	SY 1998–1999 (SNDA-II)	SY 1991–1992 (SNDA-I)
Elementary Schools					
Calories	664	615	631	576	645
Protein (g)	10	28	28	28	29
Vitamin A (mcg RE)	224	263	304	458	388
Vitamin C (mg)	15	25	33	35	29
Calcium (mg)	286	515	519	460	466
Iron (mg)	3.5	4.1	4.4	4.0	4.1
Percentage of Calories from					
Total fat (%)	≤30	23.0	23.4	25.0	31.8
Saturated fat (%)	<10	7.7	8.2	9.2	12.6
Carbohydrate (%)	>55	60.4	60.1	57.3	51.3
Cholesterol (mg)	<100	46	48	50	68
Sodium (mg)	<800	1,105	1,089	992	1,323
Number of Schools		**318**	**145**	**389**	**260**
Secondary Schools					
Calories	825	668	675	591	693
Protein (g)	16	31	30	29	32
Vitamin A (mcg RE)	300	262	312	425	341
Vitamin C (mg)	18	33	35	44	39
Calcium (mg)	400	526	518	474	476
Iron (mg)	4.5	4.8	4.8	4.2	4.7
Percentage of Calories from					
Total fat (%)	≤30	20.7	22.4	21.8	27.0
Saturated fat (%)	<10	7.0	7.5	8.1	10.5
Carbohydrate (%)	>55	62.4	61.2	59.8	55.7
Cholesterol (mg)	<100	48	51	49	65
Sodium (mg)	<800	1,223	1,202	1,071	1,436
Number of Schools		**566**	**252**	**677**	**234**

Sources: School Nutrition Dietary Assessment Study–IV, Menu Survey, school year 2009–2010 (tabulations prepared by Mathematica Policy Research are weighted to be representative of all public schools offering the National School Lunch Program); School Nutrition Dietary Assessment Study–III, Menu Survey, school year 2004–2005; School Nutrition Dietary Assessment Study–II, Menu Survey, school year 1998–1999; and School Nutrition Dietary Assessment Study–I, menu data for public elementary schools, school year 1991–1992 (Gordon et al. 2007, Table VIII.8).

Note: Standards for calories and target nutrients are based on minimum SMI standards for grades K–6 (elementary schools) and 7–12 (secondary schools).

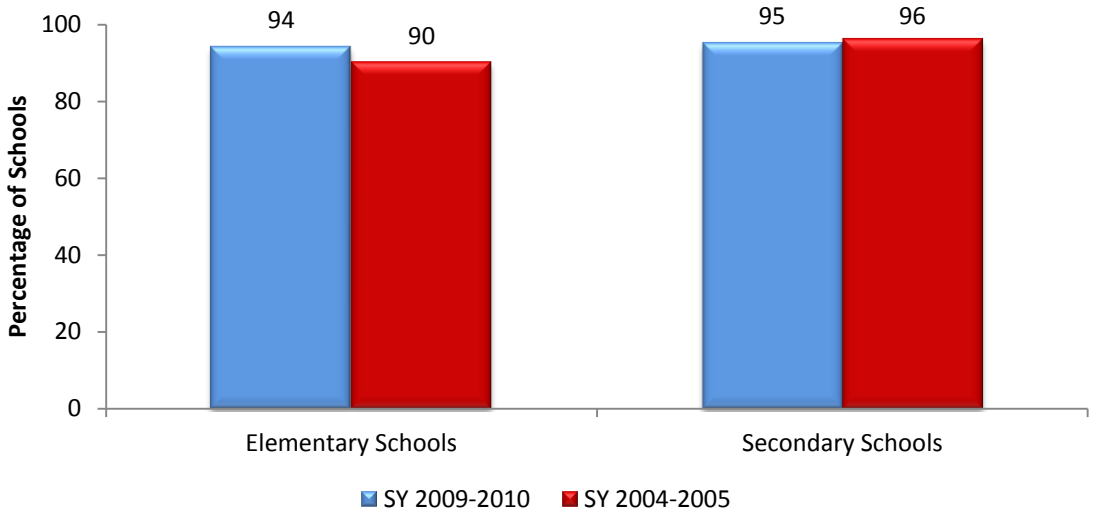
RE = Retinol equivalents; SY = school year.

Despite the fact that lunches that were consistent with the SMI standard for total fat were available in the vast majority of schools in SY 2009–2010, data on the nutrient content of NSLP lunches *served* indicate that most students did not select these options. The average NSLP lunch *served* in 61 percent of elementary schools and 70 to 77 percent of secondary schools (middle and high schools) provided more than 30 percent of calories from total fat (see Chapter 5, Figure 5.12).

6. Availability of Low-Saturated-Fat Lunches

SNDA-III extended the assessment of the availability of low-fat lunch options to include the availability of lunches that met the SMI standard for saturated fat (less than 10 percent of calories). SNDA-III found that, in SY 2004–2005, the vast majority of schools (90 percent of elementary schools and 96 percent of secondary schools) *offered* students the opportunity to select lunches that met the SMI standard for saturated fat (Figure 11.4). SNDA-IV data indicate that this pattern has essentially held up over time. The proportions of schools *offering* the opportunity to select lunches low in saturated fat was essentially unchanged in SY 2009–20010 (some of the point estimates changed, but differences between school years were not statistically significant).[17]

Figure 11.4. Percentage of Schools *Offering* Students the Opportunity to Select a National School Lunch Program Lunch that Satisfied the SMI Standard for Saturated Fat



Notes: The SMI standard for saturated fat is less than 10 percent of calories.

Data for SY 1998–1999 and SY 1991–1992 are not available. This analysis was conducted for the first time in SNDA-III (SY 2004–2005).

* Proportion is significantly different from SY 2009–2010 at the .05 level.

SMI = School Meals Initiative for Healthy Children; SY = school year.

Like the lowest-percent-fat lunches, the average calorie content of the lowest-percent-saturated-fat lunches *offered* in elementary and secondary schools in SY 2009–2010 was below the SMI

[17] Appendix Tables K.8 and K.9 provide detailed information on the distributions of total fat, saturated fat, carbohydrate, cholesterol, and sodium content of the lowest-percent-saturated-fat lunches *offered* at each point in time.

standard for minimum calories (Table 11.2). However, with only one exception (vitamin A in secondary schools), these meals met SMI minimum standards and other recommendations for all nutrients except sodium. Although high in sodium, relative to the recommendation, the lowest-percent-saturated-fat lunches *offered* in SY 2009–2010 were substantially lower in sodium (approximately 25 to 30 percent lower) than the overall lunches *offered* (see Chapter 5; Table 5.3).

Table 11.2. Average Calorie and Nutrient Content of Lowest-Percent-Saturated-Fat Lunches *Offered* in SY 2009-2010 and SY 2004-2005

		Average Amount		
	Standard	SY 2009-2010 (SNDA-IV)	SY 2004-2005 (SNDA-III)	Difference (SY 2009-2010 - SY 2004-2005)
Elementary Schools				
Calories	664	623	641	-18
Protein (g)	10	27	27	0
Vitamin A (mcg RE)	224	248	290	-42
Vitamin C (mg)	15	27	35	-8
Calcium (mg)	286	467	483	-16
Iron (mg)	3.5	4.0	4.3	-0.3
Percentage of Calories from				
Total fat (%)	≤30	25.1	25.3	-0.2
Saturated fat (%)	<10	7.0	7.6	-0.6
Carbohydrate (%)	>55	59	59	0
Cholesterol (mg)	<100	41	45	-4
Sodium (mg)	<800	1,045	1,034	11
Number of Schools		**318**	**145**	
Secondary Schools				
Calories	825	664	674	-10
Protein (g)	16	30	29	1
Vitamin A (mcg RE)	300	245	300	-55
Vitamin C (mg)	18	36	38	-2
Calcium (mg)	400	466	472	-6
Iron (mg)	4.5	4.5	4.6	-0.1
Percentage of Calories from				
Total fat (%)	≤30	22.8	24.2	-1.4
Saturated fat (%)	<10	6.1	6.9	-0.8
Carbohydrate (%)	>55	61	60	1
Cholesterol (mg)	<100	48	52	-4
Sodium (mg)	<800	1,156	1,103	53
Number of Schools		**566**	**252**	

Sources: School Nutrition Dietary Assessment Study-IV, Menu Survey, school year 2009-2010 and School Nutrition Dietary Assessment Study-III, Menu Survey, school year 2004-2005 (Gordon et al. 2007, Table VIII.10). Tabulations prepared by Mathematica Policy Research are weighted to be representative of all public schools offering the National School Lunch Program.

Notes: Data for SY 1998-1999 and SY 1991-1992 are not available. This analysis was conducted for the first time in SNDA-III (SY 2004-2005).

Standards for calories and target nutrients are based on SMI standards for grades K-6 (elementary schools) and 7-12 (secondary schools).

RE = Retinol equivalents; SY = school year.

Despite the fact that low-saturated-fat options were available in the vast majority of schools in SY 2009–2010, data on the nutrient content of NSLP lunches *served* indicate that most students do not select these options. The average NSLP lunch *served* in close to half (47 percent) of elementary schools and more than half (54 percent) of secondary schools (middle and high schools) provided 10 percent or more of calories from saturated fat (see Chapter 5, Figure 5.12).

D. Trends in the Food Content of NSLP Lunches

Differences in the calorie and nutrient content of average NSLP lunches since the implementation of the SMI reflect changes in menus, both in the ways foods are presented and in the specific foods offered. Changes in the types of foods offered likely contributed to the differences in nutrient content reported in the preceding section, as well as to changes in the leading food sources of nutrients, which are described later in this section. It is important to recognize, however, that other factors not directly measured in either study likely contributed to the observed differences. For example, schools could have changed portion sizes or used comparable foods that were different in nutrient content, such as lower-fat versions of popular meat/meat alternates and combination entree items.

In this section, we describe key differences in the foods offered in NSLP lunches in SY 2004–2005 (SNDA-III) and 2009–2010 (SNDA-IV). Data are reported separately for elementary, middle, and high schools because this is how data were reported the SNDA-III final report. SNDA-II data are not included in these comparisons because fully comparable data are not available in published reports.

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

There were no significant differences between SY 2009–2010 and SY 2004–2005 in the use of food bars or salad bars as a whole, but there were some changes in the types of salad bars offered (Table 11.3). Specifically, in high schools, side salad bars were offered in more schools and on more days of the week in SY 2009–2010 than in SY 2004–2005. The percentage of high schools offering side salad bars at least once per week increased from 10 to 21 percent, and the percentage offering a side salad bar every day increased from 7 to 16 percent (both of these differences were statistically significant). Elementary and middle schools generally moved in the same direction, but the differences for these schools were not statistically significant. In addition, both elementary and high schools were less likely to offer entree salad bars in SY 2009–2010, relative to SY 2004–2005. Among elementary schools, the percentage of schools that offered an entree salad bar at least once per week decreased by 70 percent (from 10 to 3 percent). Among high schools, the percentage offering an entree salad bar at least once per week fell by about half (from 27 to 14 percent). The increased availability of side salad bars might be a reflection of menu planners trying to encourage greater consumption of vegetables.

2. Types and Frequency of Foods Offered in NSLP Lunches

School menu planners also made changes in the types of foods offered. Among the major food groups analyzed (see Chapter 4), there were declines in the percentage of daily lunch menus that included separate bread or grain items, and in the percentage that included other foods (food that were not part of a required meal component) (top panel of Table 11.4). These other menu items were largely desserts. These patterns, although not statistically significant, were similar across all three types of schools. This change could be related to a shift over time to the traditional food-based menu-planning system from the enhanced food-based system, which requires additional servings of

bread/grains over the course of a week, and the nutrient-based system, which sometimes includes additional bread/grains or other (noncreditable) food items in order to meet calorie and nutrient standards. (See the discussion of changes in menu-planning systems over time in Section G of this chapter.)

Other, and statistically significant, differences noted for the major food groups include a decrease in the proportion of daily elementary school lunch menus that included fruit or 100% fruit juice (from 94 to 86 percent) and a decrease in the proportion of daily high school menus that included vegetables (from 99 to 93 percent).[18] It is not clear what is driving the difference in the proportion of elementary menus with fruit or 100% juice. However, it appears that a decrease in the use of 100% fruit juice is a contributing factor. The proportion of daily elementary school lunch menus that included 100% juice was lower in SY 2009–2010 than SY 2004–2005 (26 versus 31 percent), and the proportions of daily lunch menus that included different types of fruit (canned, fresh, frozen) were generally comparable or higher in SY 2009–2010, relative to SY 2004–2005 (lower panel of Table 11.4).

Menu-planning guidance from FNS has long encouraged schools to offer low-fat and skim/nonfat milks as a way of controlling the amount of fat in school meals. This is also a long-standing recommendation of the *Dietary Guidelines*. The evidence suggests that school foodservice staff are taking this message to heart. There was a significant drop in the availability of whole and 2% milk in daily NSLP lunch menus between SYs 2004–2005 and 2009–2010 (Table 11.4). Availability of whole milk declined substantially between SY 1998–1999, when schools were required to offer whole milk, and SY 2004–2005, when whole milk was offered in about 30 percent of school meals (data not shown in table; see Gordon et al. 2007 and Fox et al. 2001). Between SYs 2004–2005 and 2009–2010, the availability of unflavored whole milk in NSLP lunches dropped in all three types of schools from 29 to 32 percent of daily lunch menus to less than 5 percent of daily lunch menus, respectively (lower panel of Table 11.4). In addition, the percentage of daily menus offering 2% unflavored milk dropped by at least 20 percentage points in all three types of schools, from 52 to 56 percent in SY 2004–2005 to 28 to 34 percent in SY 2009–2010.

[18] NSLP regulations in place at the time SNDA-III and SNDA-IV data were collected required that schools using food-based menu planning offer two fruit *and/or* vegetables servings per day. Nutrient-based menu planning includes no requirements related to fruits and vegetables.

Table 11.3. Percentage of Schools that Offered Self-Serve Food Bars in National School Lunch Program Lunches in SY 2009–2010 and SY 2004–2005

	Percentage of Schools					
	Elementary Schools		Middle Schools		High Schools	
	SY 2009 – 2010 (SNDA-IV)	SY 2004 – 2005 (SNDA-III)	SY 2009 – 2010 (SNDA-IV)	SY 2004 – 2005 (SNDA-III)	SY 2009 – 2010 (SNDA-IV)	SY 2004 – 2005 (SNDA-III)
Any Self-Serve Food Bar						
At least once per week	21	20	33	30	41	47
Every day	16	13	24	21	30	28
Any Salad Bar						
At least once per week	19	19	26	23	33	37
Every day	15	13	17	18	22	18
Side Salad Bar						
At least once per week	17	10	19	17	21	10*
Every day	13	9	13	13	16	7*
Salad Bar as Entrée						
At least once per week	3	10*	8	10	14	27*
Every day	2	4	5	4	7	11
Sandwich/Deli Bar						
At least once per week	2	1	12	8	13	13
Every day	1	1	8	5	9	11
Other Entree Food Bars[a]						
At least once per week	2	1	10	7	14	11
Every day	0	1	3	3	2	5
Number of Schools	**318**	**145**	**287**	**126**	**279**	**126**

Sources: School Nutrition Dietary Assessment Study-IV, Menu Survey, school year 2009–2010 and School Nutrition Dietary Assessment Study-III, Menu Survey, school year 2004–2005 (Gordon et al. 2007, Table V.2). Tabulations prepared by Mathematica Policy Research are weighted to be representative of all public schools offering the National School Lunch Program.

Notes: For consistency with SNDA-III (SY 2004–2005), percentages flagged as <3 in Chapter 4, based on statistical reporting standards applied in SNDA-IV (see Chapter 1), are not flagged in this table.

Data for SY 1998–1999 (SNDA-II) are not included because fully comparable data are not available in published reports.

[a]Includes baked potato bars, nacho and taco bars, and Italian/pasta bars.

* Proportion is significantly different from SY 2009–2010 at the .05 level.

SY = school year.

Table 11.4. Foods Offered in National School Lunch Program Lunches in SY 2009–2010 and SY 2004–2005

	Percentage of Daily Lunch Menus					
	Elementary Schools		Middle Schools		High Schools	
	SY 2009 – 2010 (SNDA-IV)	SY 2004 – 2005 (SNDA-III)	SY 2009 – 2010 (SNDA-IV)	SY 2004 – 2005 (SNDA-III)	SY 2009 – 2010 (SNDA-IV)	SY 2004 – 2005 (SNDA-III)
Milk	99[a]	100	100	100	100	100
Vegetables	95	95	96	97	93	99*
Fruits and 100% Fruit Juices	86	94*	91	91	92	95
Combination Entrees	92	91	95	97	96	94
Separate Grains/Breads[b]	59	66	69	71	67	72
Meats/Meat Alternates[c]	42	47	46	45	44	51
Other Menu Items	30	37	36	41	36	47
Number of Daily Menus	**1,529**	**699**	**1,370**	**609**	**1,331**	**607**
Number of Schools	**318**	**145**	**287**	**126**	**279**	**126**
Milk						
Unflavored						
1% fat	74	53*	74	54*	70	44*
Skim or nonfat	47	29*	52	34*	43	37
2% fat	28	52*	34	54*	34	56*
Whole	4	30*	2	32*	4	29*
Flavored						
1% fat	63	68	65	65	63	60
Skim or nonfat	39	30	39	28	40	35
2% fat	2	8*	4	12*	5	11
Whole	0	0	0	2	1	0
Vegetables	95	95	96	97	93	99*
Vegetables, cooked	74	75	81	84	78	87
Starchy vegetables	45	49	57	64	61	72
French fries/similar potato products	18	21	31	40	39	45
Corn	15	14	16	17	18	23
White potatoes	12	14	17	15	17	21
Green peas	5	6	6	7	6	4
Other vegetables	24	18	26	16	27	19
String beans	14	15	14	12	15	16
Mixtures and blends	8	2*	10	2*	10	1*
Legumes	9	8	11	12	10	13
Dark green vegetables (mainly broccoli)	8	6	9	8	10	5
Orange vegetables (mainly carrots)	6	5	7	4	5	5

Table 11.4 *(continued)*

	Percentage of Daily Lunch Menus					
	Elementary Schools		Middle Schools		High Schools	
	SY 2009 – 2010 (SNDA-IV)	SY 2004 – 2005 (SNDA-III)	SY 2009 – 2010 (SNDA-IV)	SY 2004 – 2005 (SNDA-III)	SY 2009 – 2010 (SNDA-IV)	SY 2004 – 2005 (SNDA-III)
Vegetables, raw	57	54	62	59	65	59
Other vegetables	46	42	53	53	57	53
Side salads	23	25	30	32	35	36
Side salad bars	14	9	16	16	19	9*
Mixtures	5	4	7	5	7	6
Orange vegetables (carrots)	20	17	20	14	17	14
Fruits and 100% Fruit Juices	86	94*	91	91	92	95
Canned fruit[d]	57	59	62	61	64	73
Peaches	18	17	24	22	24	28
Pears	13	14	18	17	17	19
Fruit cocktail	15	14	15	18	18	17
Applesauce unsweetened	14	9	15	10	13	10
Pineapple	11	15	12	13	14	20
Applesauce sweetened	4	5	5	5	5	3
Mandarin oranges	5	1*	4	2	4	3
Fresh fruit	56	48	63	55	66	53*
Apple	33	29	44	45	53	43
Orange	24	17	33	27	41	29
Banana	14	11	17	18	22	13
Pear	6	4	9	4	11	3*
100% Fruit Juice	26	32	32	29	26	31
Apple juice	17	17	18	14	17	16
Orange juice	18	21	18	21	14	26*
Frozen Fruit[e]	4	5	5	3	3	2
Combination Entrees	92	91	95	97	96	94
Sandwiches with plain meat or poultry	25	25	34	32	42	36
Entree salads (chef's salads)	25	18	36	36	41	33
Pizza without meat	14	14	32	23	36	23*
Pizza with meat	11	12	34	35	36	40
Peanut butter sandwiches	30	28	24	30	26	15*
Sandwiches with breaded/fried meat, poultry, or fish	10	9	32	30	42	32
Mexican-style entrees (burritos, tacos, nachos)	17	18	26	26	27	28
Hamburgers, similar beef/pork sandwiches	11	15	27	30	27	19
Cheeseburgers, similar beef/pork sandwiches	9	8	28	32	35	32
Mixtures with meat, grain and/or vegetables (spaghetti, lasagna, macaroni and cheese)	14	11	18	13	17	13
Hot dog, corn dog, similar sausage sandwiches	12	15	19	21	14	20

Table 11.4 *(continued)*

	Percentage of Daily Lunch Menus					
	Elementary Schools		Middle Schools		High Schools	
	SY 2009 – 2010 (SNDA-IV)	SY 2004 – 2005 (SNDA-III)	SY 2009 – 2010 (SNDA-IV)	SY 2004 – 2005 (SNDA-III)	SY 2009 – 2010 (SNDA-IV)	SY 2004 – 2005 (SNDA-III)
Self-serve salad bars and other food bars	4	7	17	16	21	27
Sandwiches with cheese only	10	9	7	7	9	2*
Bag lunches and preplated meals	9	4	8	9	6	5
Pizza pocket, pizza sticks, calzone (with or without meat)	5	5	9	8	11	7
Sandwiches with mayonnaise-based poultry or tuna salads	4	6	6	11	12	8
Other mixtures with meat, and/or vegetables (chili, chicken parmesan, stir-fry without rice)	4	6	7	11	9	8
Number of Daily Menus	**1,529**	**699**	**1,370**	**609**	**1,331**	**607**
Number of Schools	**318**	**145**	**287**	**126**	**279**	**126**

Source: School Nutrition Dietary Assessment Study-IV, Menu Survey, school year 2009–2010 and School Nutrition Dietary Assessment Study-III, Menu Survey, school year 2004–2005 (Gordon et al. 2007, Table V.4). Tabulations prepared by Mathematica Policy Research are weighted to be representative of all public schools offering the National School Lunch Program.

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

For consistency with SNDA-III (SY 2004–2005), percentages flagged as >97 in Chapter 4, based on statistical reporting standards applied in SNDA-IV (see Chapter 1), are not flagged in this table.

Data for SY 1998–1999 (SNDA-II) are not included because fully comparable data are not available in published reports.

[a] One elementary school offered a preplated meal every day. The meal included fluid milk, but the milk was not coded separately.
[b] Grains and breads not included in combination entrees or served solely with a specific menu item.
[c] Meats and meat alternates not included in combination entrees.
[d] With the exception of applesauce, the majority of canned fruit was sweetened.
[e] Includes frozen strawberries, blueberries, and peaches.

* Proportion is significantly different from SY 2009–2010 at the .05 level.

SY = school year.

3. Food Sources of Calories and Nutrients in Lunches *Offered*

Both SNDA-III and SNDA-IV (but not SNDA-II) assessed the food sources of calories, target nutrients, and other dietary components in NSLP lunches *offered*. In essence, this analysis takes the average amount of a nutrient in a meal as *offered*, and examines how that nutrient was provided—that is, the percentage of that nutrient provided by each of 9 major food groups (left side of Table 11.5), and the 10 minor food groups (from a total of 103) that made the greatest contribution to the calorie/nutrient content of the average lunch (right side of Table 11.5).[19] In comparing results for SY 2009–2010 and SY 2004–2005, we examined the full distribution of calories and nutrients across the 9 major food groups (percentages sum to 100 percent) rather than performing a separate comparison for each food group. For these comparisons, chi-squared statistics indicated that, overall, there were no statistically significant differences in the relative contributions of the 9 major food groups to the calorie and nutrient content of the average NSLP lunch *offered* in SY 2009–2010 and SY 2004–2005.

Although none of the differences over time were statistically significant in this analysis, patterns observed in the data are consistent with other findings reported in this chapter. In the following sections, we summarize patterns observed for milk, vegetables, fruits (including 100% fruit juice), and combination entrees.

a. Milk

Although milk was a leading source of saturated fat in both SYs 2004–2005 and 2009–2010, it contributed a lower percentage of saturated fat in both elementary and secondary school lunches in SY 2009–2010 than in SY 2004–2005 (21 versus 16 percent for elementary schools and 19 versus 15 percent for secondary schools). Although the differences were not large enough to shift the overall distribution across major food groups, the pattern is consistent with findings that fewer schools offered 2% milk in SY 2009–2010, relative to SY 2004–2005, and almost no schools offered whole milk (see Table 11.4).

[19] See Chapter 9 for a description of the general approach used in this analysis and see Appendix Table C-1 for a summary of the items included in each major food group.

Table 11.5. Food Sources of Calories and Nutrients in National School Lunch Program Lunches *Offered* to Students

Major Food Groups	Percentage Contribution to Average Amount Offered			Top 10 Minor Food Groups	Percentage Contribution to Average Amount Offered		
	SY 2009–2010 (SNDA-IV)	SY 2004–2005 (SNDA-III)	Difference (SY 2009–2010 – SY 2004–2005)		SY 2009–2010 (SNDA-IV)	SY 2004–2005 (SNDA-III)	Difference (SY 2009–2010 – SY 2004–2005)
Calories							
Elementary Schools							
Combination Entrees	37.7	34.3	3.4	1% milk, flavored	6.4	6.6	-0.2
Milk	17.3	17.7	-0.4	Peanut butter sandwiches	5.7	5.0	0.7
Fruit	9.5	8.7	0.8	Pizza and pizza products	5.3	6.1	-0.8
Vegetables	9.3	8.3	1.0	Sandwiches with plain meat or poultry[b]	4.4	3.8	0.6
Breads/Grains	8.6	10.9	-2.3	Mexican-style entrees	3.9	3.6	0.3
Accompaniments[a]	7.1	7.9	-0.8	1% milk, unflavored	3.8	2.6	1.2
Meat/Meat Alternate	5.0	5.9	-0.9	Condiments and spreads	3.7	3.7	0.0
Desserts	4.6	5.1	-0.5	Hamburgers/cheeseburgers	3.7	3.6	0.1
Other	0.8	1.1	-0.3	Bread, rolls, bagels[c]	3.4	4.1	-0.7
				Salad dressings	3.4	4.2	-0.8
Secondary Schools							
Combination Entrees	37.5	34.0	3.5	Pizza and pizza products	6.8	5.7	1.1
Milk	15.9	15.3	0.6	1% milk, flavored	5.9	5.1	0.8
Vegetables	10.1	11.9	-1.8	Hamburgers/cheeseburgers	4.7	4.2	0.5
Fruit	9.7	8.7	1.0	Sandwiches with plain meat or poultry[b]	4.5	3.4	1.1
Breads/Grains	9.3	11.0	-1.7	Condiments and spreads	4.2	4.1	0.1
Accompaniments[a]	7.9	7.7	0.2	Bread, rolls, bagels[c]	4.2	4.2	0.0
Desserts	4.6	5.4	-0.8	Salad dressings	3.8	3.7	0.1
Meat/Meat Alternate	3.5	4.4	-0.9	Entree salads, entree salad bars[d]	3.6	4.3	-0.7
Other	1.4	1.7	-0.3	Mexican-style entrees	3.4	2.9	0.5
				Breaded/fried meat or poultry sandwich	3.2	2.9	0.3
Protein							
Elementary Schools							
Combination Entrees	47.0	43.5	3.5	1% milk, flavored	7.5	8.2	-0.7
Milk	26.8	26.8	0.0	1% milk, unflavored	7.3	5.3	2.0
Meat/Meat Alternate	8.7	10.5	-1.8	Sandwiches with plain meat or poultry[b]	7.2	5.9	1.3
Vegetables	5.8	5.3	0.5	Pizza and pizza products	6.2	7.0	-0.8
Breads/Grains	5.7	7.2	-1.5	Entree salads, entree salad bars[d]	5.2	4.8	0.4
Fruit	2.0	1.9	0.1	Hamburgers/cheeseburgers	5.1	6.1	-1.0
Accompaniments[a]	1.9	2.1	-0.2	Mexican-style entrees	4.9	4.5	0.4
Desserts	1.6	1.9	-0.3	Peanut butter sandwiches	4.8	4.3	0.5
Other	0.5	0.8	-0.3	Skim or nonfat milk, flavored	4.8	3.5	1.3
				Skim or nonfat milk, unflavored	3.9	2.1	1.8

Table 11.5 *(continued)*

Major Food Groups	Percentage Contribution to Average Amount Offered: SY 2009–2010 (SNDA-IV)	SY 2004–2005 (SNDA-III)	Difference (SY 2009–2010 – SY 2004–2005)	Top 10 Minor Food Groups	Percentage Contribution to Average Amount Offered: SY 2009–2010 (SNDA-IV)	SY 2004–2005 (SNDA-III)	Difference (SY 2009–2010 – SY 2004–2005)
Protein *(continued)*							
Secondary Schools							
Combination Entrees	49.7	46.0	3.7	Pizza and pizza products	7.9	6.8	1.1
Milk	24.7	24.2	0.5	Sandwiches with plain meat or poultry[b]	7.6	5.5	2.1
Meat/Meat Alternate	6.5	8.6	-2.1	1% milk, flavored	7.1	6.4	0.7
Breads/Grains	6.4	7.3	-0.9	Hamburgers/cheeseburgers	6.7	7.3	-0.6
Vegetables	6.1	7.3	-1.2	1% milk, unflavored	6.3	4.6	1.7
Fruit	2.1	1.9	0.2	Entree salads, entree salad bars[d]	6.3	6.8	-0.5
Accompaniments[a]	2.0	2.1	-0.1	Mexican-style entrees	4.5	3.5	1.0
Desserts	1.7	2.0	-0.3	Skim or nonfat milk, flavored	4.3	3.5	0.8
Other	0.8	0.5	0.3	Breaded/fried meat or poultry sandwich	4.1	4.1	0.0
				Skim or nonfat milk, unflavored	3.4	2.4	1.0
Vitamin A (mcg RE)							
Elementary Schools							
Vegetables	41.1	33.7	7.4	Carrots	23.9	18.2	5.7
Milk	30.8	34.1	-3.3	1% milk, flavored	8.8	11.1	-2.3
Combination Entrees	18.0	17.0	1.0	1% milk, unflavored	8.3	7.0	1.3
Fruit	3.9	4.3	-0.4	Entree salads, entree salad bars[d]	6.7	5.1	1.6
Accompaniments[a]	2.8	3.7	-0.9	Lettuce salads[e]	5.3	2.4	2.9
Desserts	1.2	2.7	-1.5	Skim or nonfat milk, flavored	5.3	4.5	0.8
Breads/Grains	1.1	2.4	-1.3	Mixed vegetables	5.2	4.0	1.2
Meat/Meat Alternate	0.7	1.2	-0.5	Skim or nonfat milk, unflavored	4.7	2.9	1.8
Other	0.4	0.8	-0.4	Entree food bars, bag/preplated lunches	3.3	0.8	2.5
				2% milk, unflavored	3.1	6.1	-3.0
Secondary Schools							
Vegetables	37.9	30.6	7.3	Carrots	19.2	14.9	4.3
Milk	31.1	33.5	-2.4	1% milk, flavored	9.1	9.5	-0.4
Combination Entrees	19.4	20.1	-0.7	Entree salads, entree salad bars[d]	8.6	8.2	0.4
Fruit	4.4	4.7	-0.3	1% milk, unflavored	7.9	6.6	1.3
Accompaniments[a]	3.3	4.5	-1.2	Lettuce salads[e]	6.2	4.7	1.5
Desserts	1.4	1.7	-0.3	Mixed vegetables	5.8	2.8	3.0
Breads/Grains	1.3	3.3	-2.0	Skim or nonfat milk, flavored	5.2	4.8	0.4
Other	0.6	0.3	0.3	Skim or nonfat milk, unflavored	4.5	3.7	0.8
Meat/Meat Alternate	0.5	1.2	-0.7	2% milk, unflavored	3.5	6.0	-2.5
				Condiments and spreads	3.0	4.1	-1.1

Table 11.5 *(continued)*

Major Food Groups	Percentage Contribution to Average Amount Offered: SY 2009–2010 (SNDA-IV)	SY 2004–2005 (SNDA-III)	Difference (SY 2009–2010 – SY 2004–2005)	Top 10 Minor Food Groups	Percentage Contribution to Average Amount Offered: SY 2009–2010 (SNDA-IV)	SY 2004–2005 (SNDA-III)	Difference (SY 2009–2010 – SY 2004–2005)
Vitamin C							
Elementary Schools							
Fruit	57.5	59.5	-2.0	Citrus fruit	23.6	16.3	7.3
Vegetables	22.6	17.7	4.9	Fruit juice, 100%	19.4	24.3	-4.9
Combination Entrees	10.0	8.6	1.4	Lettuce salads[e]	5.7	3.0	2.7
Accompaniments[a]	3.1	3.3	-0.2	Broccoli	5.2	3.9	1.3
Desserts	2.9	2.9	0.0	Entree salads, entree salad bars[d]	3.5	2.7	0.8
Milk	1.4	2.0	-0.6	French fries/potato products	3.1	1.4	1.7
Other	1.4	4.9	-3.5	Condiments and spreads	3.0	3.2	-0.2
Breads/Grains	0.6	0.7	-0.1	Apple	2.7	2.1	0.6
Meat/Meat Alternate	0.5	0.4	0.1	Entree food bars, bag/preplated lunches	2.5	0.5	2.0
				Mixed vegetables	2.2	n.a.	n.a.
Secondary Schools							
Fruit	58.3	51.7	6.6	Citrus fruit	26.2	17.5	8.7
Vegetables	21.1	21.4	-0.3	Fruit juice, 100%	18.1	20.8	-2.7
Combination Entrees	10.1	12.9	-2.8	Lettuce salads[e]	5.4	4.3	1.1
Accompaniments[a]	3.2	4.1	-0.9	Broccoli	4.4	3.1	1.3
Other	2.4	5.3	-2.9	Entree salads, entree salad bars[d]	4.1	5.1	-1.0
Desserts	2.4	1.5	0.9	French fries/potato products	3.6	3.0	0.6
Milk	1.3	1.7	-0.4	Condiments and spreads	3.1	4.0	-0.9
Breads/Grains	0.8	0.9	-0.1	Apple	3.0	2.6	0.4
Meat/Meat Alternate	0.3	0.5	-0.2	Entree food bars, bag/preplated lunches	2.5	1.9	0.6
				Peaches	2.4	3.8	-1.4
Calcium							
Elementary Schools							
Milk	54.1	53.5	0.6	1% milk, flavored	15.0	16.4	-1.4
Combination Entrees	29.0	27.2	1.8	1% milk, unflavored	14.6	10.6	4.0
Vegetables	4.1	3.5	0.6	Skim or nonfat milk, flavored	9.4	6.8	2.6
Breads/Grains	3.7	4.8	-1.1	Skim or nonfat milk, unflavored	8.3	4.3	4.0
Fruit	2.9	2.9	0.0	Pizza and pizza products	6.3	8.7	-2.4
Meat/Meat Alternate	2.6	3.7	-1.1	2% milk, unflavored	5.6	9.5	-3.9
Accompaniments[a]	1.8	2.0	-0.2	Sandwiches with plain meat or poultry[b]	4.1	3.4	0.7
Desserts	1.6	1.9	-0.3	Entree salads, entree salad bars[d]	3.7	2.9	0.8
Other	0.3	0.6	-0.3	Entree food bars, bag/preplated lunches	3.1	n.a.	n.a.
				Mexican-style entrees	3.0	3.0	0.0

Table 11.5 *(continued)*

Major Food Groups	Percentage Contribution to Average Amount Offered			Top 10 Minor Food Groups	Percentage Contribution to Average Amount Offered		
	SY 2009–2010 (SNDA-IV)	SY 2004–2005 (SNDA-III)	Difference (SY 2009–2010 – SY 2004–2005)		SY 2009–2010 (SNDA-IV)	SY 2004–2005 (SNDA-III)	Difference (SY 2009–2010 – SY 2004–2005)
Calcium *(continued)*							
Secondary Schools							
Milk	52.1	51.6	0.5	1% milk, flavored	14.9	13.8	1.1
Combination Entrees	29.8	28.0	1.8	1% milk, unflavored	13.3	9.7	3.6
Vegetables	4.4	4.5	-0.1	Skim or nonfat milk, flavored	8.8	7.2	1.6
Breads/Grains	4.4	5.7	-1.3	Pizza and pizza products	7.8	8.3	-0.5
Fruit	3.2	3.0	0.2	Skim or nonfat milk, unflavored	7.5	5.4	2.1
Accompaniments[a]	2.1	2.1	0.0	2% milk, unflavored	6.1	9.2	-3.1
Desserts	1.9	2.4	-0.5	Sandwiches with plain meat or poultry[b]	4.2	3.4	0.8
Meat/Meat Alternate	1.3	2.2	-0.9	Entree salads, entree salad bars[d]	4.1	4.0	0.1
Other	0.6	0.5	0.1	Mexican-style entrees	2.8	2.2	0.6
				Hamburgers/cheeseburgers	2.7	2.9	-0.2
Iron							
Elementary Schools							
Combination Entrees	48.0	44.9	3.1	Pizza and pizza products	7.8	7.3	0.5
Breads/Grains	14.4	17.3	-2.9	Bread, rolls, bagels[c]	6.8	7.8	-1.0
Vegetables	11.8	10.6	1.2	Sandwiches with plain meat or poultry[b]	6.5	5.8	0.7
Fruit	7.5	7.2	0.3	Hamburgers/cheeseburgers	5.8	6.6	-0.8
Milk	6.3	6.0	0.3	Peanut butter sandwiches	5.1	5.1	0.0
Meat/Meat Alternate	5.1	5.9	-0.8	Mexican-style entrees	4.8	4.6	0.2
Desserts	3.7	3.9	-0.2	Entree food bars, bag/preplated lunches	3.4	0.9	2.5
Accompaniments[a]	2.5	3.4	-0.9	Entree salads, entree salad bars[d]	3.1	3.3	-0.2
Other	0.7	0.7	0.0	Cookies, cakes, brownies	3.0	3.1	-0.1
				Mixtures with pasta or noodle base	2.8	2.8	0.0
Secondary Schools							
Combination Entrees	49.5	45.1	4.4	Pizza and pizza products	9.7	7.0	2.7
Breads/Grains	15.2	17.2	-2.0	Bread, rolls, bagels[c]	8.3	7.9	0.4
Vegetables	11.4	12.6	-1.2	Hamburgers/cheeseburgers	7.4	7.5	-0.1
Fruit	7.1	7.0	0.1	Sandwiches with plain meat or poultry[b]	6.6	5.2	1.4
Milk	5.6	5.3	0.3	Breaded/fried meat or poultry sandwich	4.5	4.1	0.4
Meat/Meat Alternate	3.8	4.9	-1.1	Mexican-style entrees	4.1	3.7	0.4
Desserts	3.7	3.9	-0.2	Entree salads, entree salad bars[d]	4.0	4.3	-0.3
Accompaniments[a]	2.6	3.4	-0.8	Entree food bars, bag/preplated lunches	3.6	3.0	0.6
Other	1.1	0.8	0.3	Cookies, cakes, brownies	2.9	3.5	-0.6
				Rice/pasta	2.8	2.1	0.7

Table 11.5 *(continued)*

Major Food Groups	Percentage Contribution to Average Amount Offered			Top 10 Minor Food Groups	Percentage Contribution to Average Amount Offered		
	SY 2009–2010 (SNDA-IV)	SY 2004–2005 (SNDA-III)	Difference (SY 2009–2010 – SY 2004–2005)		SY 2009–2010 (SNDA-IV)	SY 2004–2005 (SNDA-III)	Difference (SY 2009–2010 – SY 2004–2005)
Total Fat							
Elementary Schools							
Combination Entrees	47.7	41.9	5.8	Peanut butter sandwiches	9.1	7.4	1.7
Accompaniments[a]	15.6	17.6	-2	Salad dressings	8.9	10.9	-2.0
Vegetables	9.9	8.2	1.7	Condiments and spreads	6.7	6.7	0.0
Milk	8.1	10.6	-2.5	Pizza and pizza products	5.7	6.6	-0.9
Meat/Meat Alternate	7.1	8.2	-1.1	Mexican-style entrees	5.1	4.5	0.6
Breads/Grains	6.2	7.9	-1.7	Sandwiches with plain meat or poultry[b]	4.8	3.8	1.0
Desserts	4.0	4.3	-0.3	Lettuce salads[e]	4.5	1.5	3.0
Other	0.9	0.5	0.4	Hamburgers/cheeseburgers	4.4	3.9	0.5
Fruit	0.7	0.8	-0.1	Entree salads, entree salad bars[d]	4.4	4.7	-0.3
				Entree food bars, bag/preplated lunches	3.6	0.8	2.8
Secondary Schools							
Combination Entrees	45.6	40.0	5.6	Salad dressings	9.9	9.3	0.6
Accompaniments[a]	18.1	17.3	0.8	Condiments and spreads	8.2	8.0	0.2
Vegetables	11.3	13.4	-2.1	Pizza and pizza products	7.3	6.2	1.1
Milk	7.5	9.0	-1.5	Hamburgers/cheeseburgers	5.7	4.5	1.2
Breads/Grains	6.3	8.1	-1.8	Entree salads, entree salad bars[d]	5.1	5.8	-0.7
Meat/Meat Alternate	5.2	6.2	-1.0	Sandwiches with plain meat or poultry[b]	4.9	3.4	1.5
Desserts	3.8	4.3	-0.5	Lettuce salads[e]	4.5	3.3	1.2
Other	1.6	0.8	0.8	Mexican-style entrees	4.4	3.7	0.7
Fruit	0.7	0.8	-0.1	French fries/potato products	4.2	6.2	-2.0
				Peanut butter sandwiches	4.1	4.3	-0.2
Saturated Fat							
Elementary Schools							
Combination Entrees	52.6	44.5	8.1	Pizza and pizza products	7.4	8.0	-0.6
Milk	16.3	21.0	-4.7	Sandwiches with plain meat or poultry[b]	6.6	4.9	1.7
Accompaniments[a]	9.6	11.1	-1.5	Entree salads, entree salad bars[d]	6.3	5.2	1.1
Meat/Meat Alternate	6.5	7.7	-1.2	Mexican-style entrees	6.0	5.3	0.7
Vegetables	5.9	5.4	0.5	Peanut butter sandwiches	5.9	4.5	1.4
Breads/Grains	4.4	5.4	-1.0	Condiments and spreads	5.3	6.0	-0.7
Desserts	3.6	4.0	-0.4	Hamburgers/cheeseburgers	5.3	4.7	0.6
Other	0.6	0.5	0.1	1% milk, flavored	5.2	5.6	-0.4
Fruit	0.4	0.4	0.0	1% milk, unflavored	5.1	3.3	1.8
				Salad dressings	4.4	5.0	-0.6

Table 11.5 *(continued)*

Major Food Groups	Percentage Contribution to Average Amount Offered: SY 2009–2010 (SNDA-IV)	SY 2004–2005 (SNDA-III)	Difference (SY 2009–2010 – SY 2004–2005)	Top 10 Minor Food Groups	Percentage Contribution to Average Amount Offered: SY 2009–2010 (SNDA-IV)	SY 2004–2005 (SNDA-III)	Difference (SY 2009–2010 – SY 2004–2005)
Saturated Fat *(continued)*							
Secondary Schools							
Combination Entrees	52.2	43.9	8.3	Pizza and pizza products	9.6	7.9	1.7
Milk	15.4	18.5	-3.1	Hamburgers/cheeseburgers	7.0	5.8	1.2
Accompaniments[a]	11.2	11.0	0.2	Entree salads, entree salad bars[d]	6.8	6.6	0.2
Vegetables	6.8	9.1	-2.3	Sandwiches with plain meat or poultry[b]	6.7	4.5	2.2
Breads/Grains	4.7	5.9	-1.2	Condiments and spreads	6.2	6.5	-0.3
Meat/Meat Alternate	4.6	6.2	-1.6	Mexican-style entrees	5.2	4.1	1.1
Desserts	3.5	4.3	-0.8	Salad dressings	5.0	4.5	0.5
Other	1.2	0.7	0.5	1% milk, flavored	4.9	4.3	0.6
Fruit	0.4	0.4	0	1% milk, unflavored	4.3	2.8	1.5
				2% milk, unflavored	4.0	5.4	-1.4
Cholesterol							
Elementary Schools							
Combination Entrees	57.6	49.0	8.6	Entree salads, entree salad bars[d]	11.5	8.3	3.2
Milk	17.4	19.5	-2.1	Sandwiches with plain meat or poultry[b]	10.1	7.5	2.6
Meat/Meat Alternate	14.4	16.5	-2.1	Hamburgers/cheeseburgers	6.5	6.6	-0.1
Accompaniments[a]	2.9	4.0	-1.1	Mexican-style entrees	6.4	5.1	1.3
Desserts	2.8	3.4	-0.6	1% milk, unflavored	5.8	3.8	2.0
Breads/Grains	2.8	5.2	-2.4	Breaded/fried chicken products	5.5	6.0	-0.5
Vegetables	1.6	1.3	0.3	Pizza and pizza products	4.6	4.2	0.4
Other	0.4	1.0	-0.6	1% milk, flavored	4.5	4.5	0.0
Fruit	0.0	0.0	0.0	Unbreaded poultry, meat or fish	4.4	4.9	-0.5
				2% milk, unflavored	3.6	5.6	-2.0
Secondary Schools							
Combination Entrees	61.9	55.0	6.9	Entree salads, entree salad bars[d]	13.0	13.1	-0.1
Milk	15.8	17.1	-1.3	Sandwiches with plain meat or poultry[b]	10.1	6.6	3.5
Meat/Meat Alternate	10.5	13.0	-2.5	Hamburgers/cheeseburgers	8.1	7.7	0.4
Accompaniments[a]	3.4	3.7	-0.3	Pizza and pizza products	6.2	4.2	2.0
Breads/Grains	3.1	4.7	-1.6	Mexican-style entrees	5.6	3.9	1.7
Desserts	2.4	3.5	-1.1	1% milk, unflavored	4.8	3.2	1.6
Vegetables	2.1	2.5	-0.4	Breaded/fried chicken products	4.5	4.7	-0.2
Other	0.8	0.5	0.3	Breaded/fried meat or poultry sandwich	4.3	6.3	-2.0
Fruit	0.0	0.0	0.0	1% milk, flavored	4.1	3.4	0.7
				2% milk, unflavored	3.6	4.9	-1.3

Table 11.5 *(continued)*

Major Food Groups	Percentage Contribution to Average Amount Offered: SY 2009–2010 (SNDA-IV)	SY 2004–2005 (SNDA-III)	Difference (SY 2009–2010 – SY 2004–2005)	Top 10 Minor Food Groups	Percentage Contribution to Average Amount Offered: SY 2009–2010 (SNDA-IV)	SY 2004–2005 (SNDA-III)	Difference (SY 2009–2010 – SY 2004–2005)
Sodium							
Elementary Schools							
Combination Entrees	43.6	43.1	0.5	Condiments and spreads	9.3	9.0	0.3
Accompaniments[a]	16.6	17.8	-1.2	Salad dressings	7.3	8.8	-1.5
Vegetables	14.0	10.2	3.8	Sandwiches with plain meat or poultry[b]	6.8	6.8	0.0
Breads/Grains	8.7	11.5	-2.8	Pizza and pizza products	6.2	8.6	-2.4
Milk	8.0	8.1	-0.1	Hamburgers/cheeseburgers	4.6	3.0	1.6
Meat/Meat Alternate	6.2	6.1	0.1	Mexican-style entrees	3.8	3.9	-0.1
Desserts	1.9	2.0	-0.1	Lettuce salads	3.8	1.1	2.7
Other	0.8	1.0	-0.2	Entree salads, entree salad bars[d]	3.5	4.5	-1.0
Fruit	0.2	0.2	0.0	Mixtures with pasta or noodle base	3.4	2.9	0.5
				Entree food bars, bag/preplated lunches	3.2	0.8	2.4
Secondary Schools							
Combination Entrees	44.3	42.6	1.7	Condiments and spreads	9.3	9.6	-0.3
Accompaniments[a]	16.9	16.7	0.2	Pizza and pizza products	7.8	8.3	-0.5
Vegetables	13.9	13.2	0.7	Salad dressings	7.6	7.1	0.5
Breads/Grains	9.5	12.0	-2.5	Sandwiches with plain meat or poultry[b]	7.0	5.9	1.1
Milk	7.2	7.1	0.1	Hamburgers/cheeseburgers	5.4	3.7	1.7
Meat/Meat Alternate	4.7	5.1	-0.4	Entree salads, entree salad bars[d]	4.5	5.8	-1.3
Desserts	1.8	2.2	-0.4	Bread, rolls, bagels[c]	4.0	3.9	0.1
Other	1.5	1.0	0.5	Lettuce salads[e]	3.8	2.7	1.1
Fruit	0.2	0.2	0.0	Entree food bars, bag/preplated lunches	3.5	3.3	0.2
				Breaded/fried meat or poultry sandwich	3.5	1.8	1.7
Dietary Fiber							
Elementary Schools							
Combination Entrees	31.0	29.4	1.6	Apple	6.1	5.6	0.5
Fruit	24.8	22.5	2.3	Peanut butter sandwiches	5.9	5.1	0.8
Vegetables	23.6	23.3	0.3	Citrus fruit	4.6	3.5	1.1
Breads/Grains	8.1	9.5	-1.4	Pizza and pizza products	4.1	4.0	0.1
Milk	5.6	6.5	-0.9	Lettuce salads[e]	3.9	2.3	1.6
Accompaniments[a]	2.3	3.1	-0.8	Legumes	3.8	2.9	0.9
Desserts	2.2	2.9	-0.7	Bread, rolls, bagels[c]	3.6	3.5	0.1
Meat/Meat Alternate	1.5	2.2	-0.7	Pears	3.5	3.1	0.4
Other	0.8	0.5	0.3	Mexican-style entrees	3.3	4.4	-1.1
				Entrée food bars, bag/pre-plated lunches	3.2	0.9	2.3

Table 11.5 *(continued)*

Major Food Groups	Percentage Contribution to Average Amount Offered: SY 2009–2010 (SNDA-IV)	SY 2004–2005 (SNDA-III)	Difference (SY 2009–2010 – SY 2004–2005)	Top 10 Minor Food Groups	Percentage Contribution to Average Amount Offered: SY 2009–2010 (SNDA-IV)	SY 2004–2005 (SNDA-III)	Difference (SY 2009–2010 – SY 2004–2005)
Dietary Fiber *(continued)*							
Secondary Schools							
Combination Entrees	29.0	28.3	0.7	Apple	7.4	6.5	0.9
Fruit	27.0	22.9	4.1	Citrus fruit	5.5	3.7	1.8
Vegetables	23.0	26.5	-3.5	Pizza and pizza products	5.0	3.7	1.3
Breads/Grains	8.2	8.9	-0.7	Bread, rolls, bagels[c]	4.2	3.2	1.0
Milk	5.3	5.4	-0.1	Pears	4.2	3.0	1.2
Desserts	2.6	2.5	0.1	Lettuce salads[e]	4.0	3.3	0.7
Accompaniments[a]	2.6	3.2	-0.6	Entree salads, entree salad bars[d]	3.9	4.5	-0.6
Other	1.2	0.7	0.5	Legumes	3.2	4.1	-0.9
Meat/Meat Alternate	1.1	1.6	-0.5	French fries/potato products	3.1	6.4	-3.3
				Entree food bars, bag/preplated lunches	2.9	2.6	0.3

Sources: School Nutrition Dietary Assessment Study-IV, Menu Survey, school year 2009-2010 and School Nutrition Dietary Assessment Study-III, Menu Survey, school year 2004-2005 (Gordon et al. 2007, Table VI.12). Tabulations prepared by Mathematica Policy Research are weighted to be representative of all public schools offering the National School Lunch Program.

Notes: See Appendix Table C.1 for a detailed listing of food items included in each major food group. Chi-squared tests detected no statistically significant differences at the .05 level between school years 2004–2005 and 2009-2010 in the distribution of major food group sources for any nutrient. Statistical tests for differences between the school years were not conducted for the top 10 minor food groups.

Data for SY 1998-1999 (SNDA-II) are not included because SNDA-II did not assess food sources of nutrients.

[a] Includes condiments, toppings, spreads, and salad dressing.
[b] Includes sandwiches with or without cheese.
[c] Include only white breads, rolls, and bagels in SNDA-III.
[d] Includes entree salads with hard-cooked eggs or egg salad. Entree salad bars included an average serving of salad dressing.
[e] Includes side salad bars, which include an average serving of salad dressing.

n.a. = not available; RE = Retinol equivalent; SY = school year.

b. Vegetables

The relative contribution of vegetables to the vitamin A content of school lunches increased between SY 2004–2005 and SY 2009–2010. Indeed, vegetables moved from the second largest (after milk) contributor of vitamin A in SY 2004–2005 to the largest contributor in SY 2009–2010. Carrots and lettuce salads (including side salad bars) accounted for much of this increase—the contribution of carrots to the vitamin A content of the average NSLP lunch increased from 18 to 24 percent in elementary schools and from 15 to 19 percent in secondary school lunches. This is consistent with the patterns observed in the foods offered in NSLP menus. The prevalence of raw carrots increased in all three types of schools and the prevalence of side salad bars increased in elementary and high schools (the difference for high schools was statistically significant) (see Table 11.4).

c. Fruit

The relative contribution of the fruit group (which includes all types of fruit as well as 100% fruit juice) to the dietary fiber content of school lunches increased between SY 2004–2005 and SY 2009–2010 in both elementary and secondary schools. This change might reflect a shift in the percentage of schools offering fresh fruit at lunch rather than 100% fruit juice. Although most of the differences were not statistically significant, the prevalence of fresh fruit increased and the prevalence of 100% fruit juice decreased in all three types of schools between SY 2004–2005 and SY 2009–2010 (see Table 11.4).

d. Combination Entrees

Combination entrees were the leading contributors of calories and almost all nutrients, including protein, iron, total fat, saturated fat, cholesterol, sodium, and dietary fiber. The relative contribution of combination entrees to the total fat, saturated fat, and cholesterol content of school lunches increased by 6 to 9 percentage points between SY 2004–2005 and SY 2009–2010 in both elementary and secondary schools. The change in milk offerings noted earlier undoubtedly played a role in this shift. Another potential contributor is an increase in entree salads over time in elementary and high school menus (see Table 11.4). Entree salads frequently include foods that contribute fat, saturated fat, and cholesterol, such as, cheese, meat, hard-boiled eggs, and high-fat salad dressings.

E. Trends in the Nutrient Content of SBP Breakfasts

To assess changes in the nutrient content of SBP breakfasts over time, we conducted analyses that parallel those reported in the preceding section for NSLP lunches. We used the SMI nutrition standards for SBP breakfasts as the main reference standards, along with benchmarks equivalent to one-fourth of the 1995 *Dietary Guidelines* recommendation for cholesterol and one-fourth of the NRC's 1989 recommendation for sodium.

1. Calories and Target Nutrients in SBP Breakfasts

a. Calories

In SY 2009–2010, significantly fewer elementary schools *served* SBP breakfasts that met the SMI standard for calories, relative to SY 2004–2005 (23 versus 36 percent) (Figure 11.5).[20] Breakfasts *served* in SY 2009–2010 provided 31 fewer calories than breakfasts *served* in SY 2004–2005 and 22 percent (rather than 24 percent) of the 1989 REA (Appendix Tables K.10 and K.11). A parallel drop was noted for secondary schools; however, the difference between SYs 2009–2010 and 2004–2005 was not statistically significant for secondary schools. At all three points in time, secondary schools were considerably less likely than elementary schools to *serve* breakfasts that met the SMI standard for calories (Figure 11.5).

As noted in Chapter 7, new requirements for SBP breakfasts, which will begin to take effect in SY 2013–2014, define both minimum and maximum calorie levels.[21] Readers can get some perspective on how average SBP breakfasts in SY 2009–2010 compare with these calorie ranges by examining the percentile distributions presented in Appendix Tables G.9 through G.11 and G. 13 through G. 15 (also see the discussion in Chapter 7).

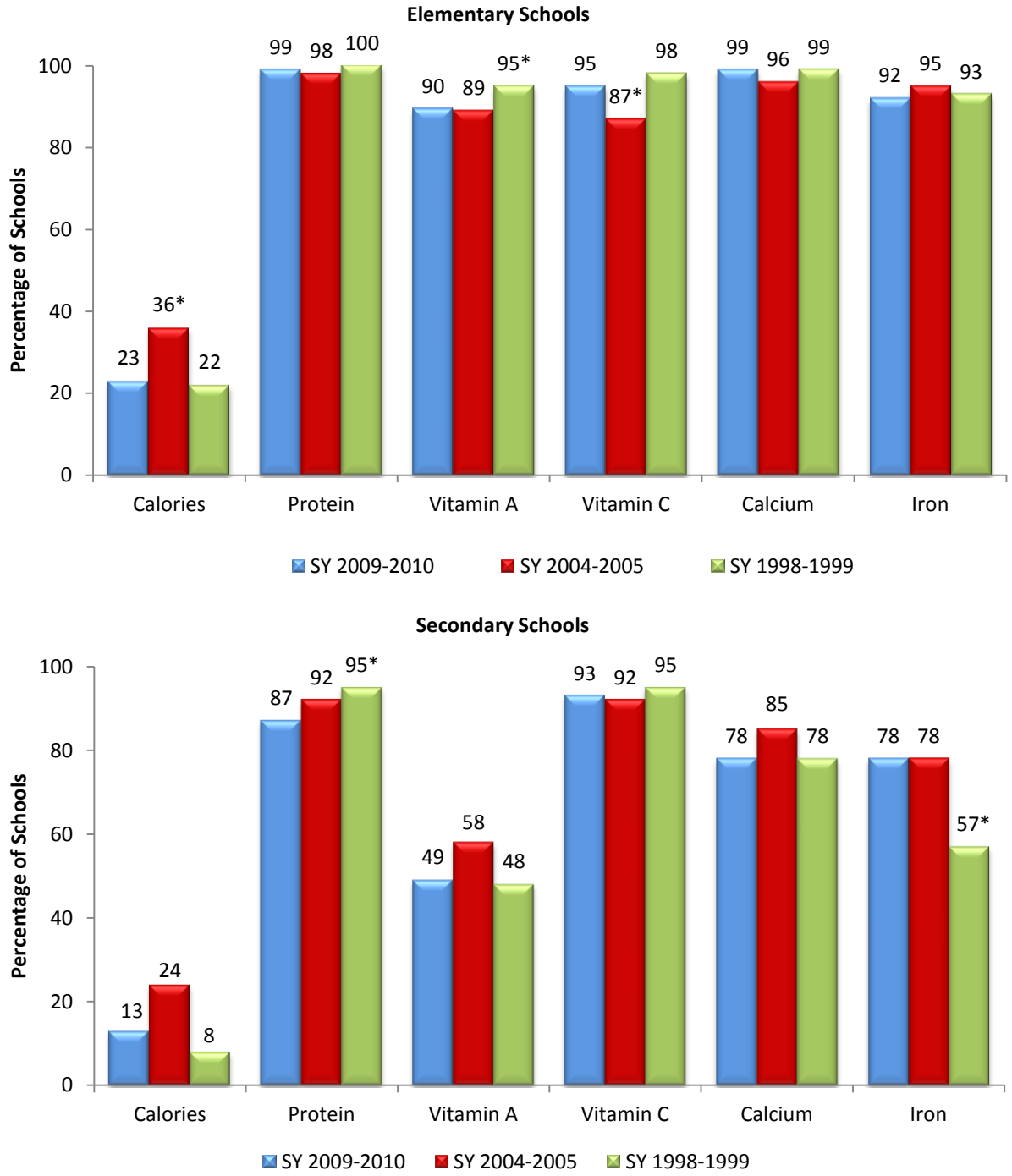
b. Target Nutrients

Compared with SY 2004–2005, SBP breakfasts *served* in SY 2009–2010 in both elementary and secondary schools were generally as likely to satisfy the SMI standards for protein, vitamins A and C, calcium, and iron (Figure 11.5). The only exception was that elementary schools were significantly more likely to *serve* SBP breakfasts that met the SMI standard for vitamin C in SY 2009–2010 than in SY 2004–2005 (95 versus 87 percent). There was a notable difference between SYs 2009–2010 and 2004–2005 in the percentage of secondary schools that *served* breakfasts that met the SMI standard for vitamin A. However, because of the large variability in the vitamin A content of SBP breakfasts, this difference was not statistically significant.

[20] Detailed data on the calorie and nutrient content of SBP breakfasts *served* over time are presented in Appendix Tables K.10 and K.11.Table K.12 presents the detailed data that underlie Figure 11.5, including standard errors.

[21] *Federal Register,* vol.77, no.17, Thursday, January 26, 2012, Rules and Regulations.

Figure 11.5. Proportion of Schools *Serving* School Breakfast Program Breakfasts that Satisfied SMI Standards for Calories and Target Nutrients



Notes: The SMI standards are one-quarter of the 1989 *Recommended Energy/Dietary Allowances*.

For consistency with SNDA-III (SY 2004-2005) and SNDA-II (SY 1998-1999), percentages flagged as >97 in Chapter 7, based on statistical reporting standards applied in SNDA-IV (see Chapter 1), are not flagged in this figure.

* Proportion is significantly different from SY 2009-2010 at the .05 level.

SMI = School Meals Initiative for Healthy Children; SY = school year.

Between SYs 1998–1999 and 2009–2010, there was a significant drop in the proportion of elementary schools *serving* breakfasts that met the SMI standard for vitamin A (95 versus 90 percent) (Figure 11.5). Among secondary schools, there was a significant drop between these two time points in the proportion of schools that *served* breakfasts that met the SMI standard for protein (95 versus 87 percent) and a significant increase in the proportion that *served* breakfasts that met the SMI standard for iron (57 versus 78 percent). At all three points in time, most schools *served* breakfasts that met the SMI standards for most target nutrients.

2. Total Fat and Saturated Fat in SBP Breakfasts

As noted for NSLP lunches, both elementary and secondary schools made steady progress over time in meeting the SMI standards for total fat and saturated fat in SBP breakfasts. However, because breakfasts have always been lower in total fat and saturated fat than lunches, differences between school years were less dramatic than those observed for NSLP lunches. Between SYs 2004–2005 and 2009–2010, there was no significant change in the proportion of elementary schools that *served* SBP breakfasts that satisfied the SMI standards for total fat or saturated fat or in the proportion of secondary schools that *served* breakfasts that satisfied the SMI standard for saturated fat (Figure 11.6). However, the proportion of secondary schools *serving* SBP breakfasts that met the SMI standard for total fat increased significantly over this period (from 67 to 80 percent). Compared with SY 1998–1999, schools in SY 2009–2010 were significantly more likely to meet SMI standards for both total fat and saturated fat.

3. Cholesterol and Sodium in SBP Breakfasts

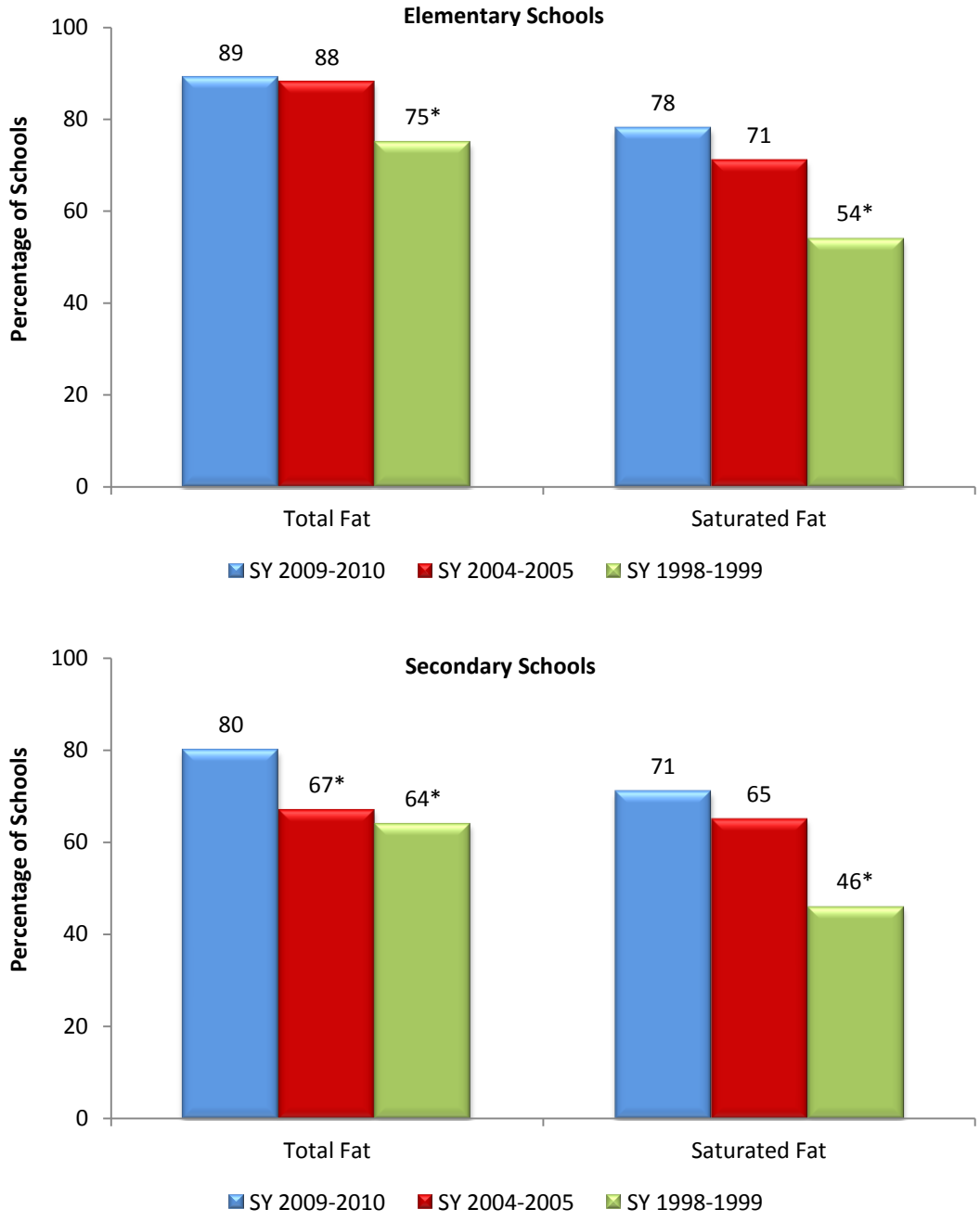
At all three points in time, the majority of schools (76 to more than 90 percent) *served* breakfasts that were consistent with recommended levels of cholesterol (Appendix Table K.12). There have been no significant changes over time in the proportion of schools that met the benchmark for cholesterol content in average breakfasts *served*.[22] At all three points in time, the average cholesterol content of breakfasts *served* was well below the benchmark of no more than 75 mg (Appendix Table K.10).

Similarly, there have been no significant changes over time in the proportion of schools *serving* breakfasts that provided recommended levels of sodium (Appendix Table K.12).[23] The proportions of schools meeting this benchmark have generally been substantially lower than for all other standards and benchmarks except calories. The proportion of schools meeting the benchmark for sodium increased by about 10 percentage points between SYs 2004–2005 and SY 2009–2010. However, this increase was not statistically significant. In SY 2009–2010, 63 percent of elementary schools and 40 percent of secondary schools *served* SBP breakfasts that were consistent with the benchmark for sodium content (Appendix Table K.12).

[22] The benchmark for cholesterol represents one-fourth of NRC's 1989 recommended daily limit of 300 mg per day. The 2010 *Dietary Guidelines* continues to recommend 300 mg as a daily maximum for cholesterol intake.

[23] As noted earlier in this chapter, we use one-third of the older 2,400 mg daily limit for sodium to maintain comparability with SNDA-II and SNDA-III.

Figure 11.6. Percentage of Schools *Serving* School Breakfast Program Breakfasts that Satisfied SMI Standards for Total Fat and Saturated Fat



Notes: The SMI standard for total fat is no more than 30 percent of calories. The SMI standard for saturated fat is less than 10 percent of calories.

* Proportion is significantly different from SY 2009–2010 at the .05 level.

SMI = School Meals Initiative for Healthy Children; SY = school year.

4. Percentage of Schools Meeting All SMI Standards

In addition to assessing the extent to which schools satisfied individual SMI standards, SNDA-III estimated the percentage of schools that *served* SBP breakfasts that, on average, met *all* of the SMI standards. We repeated this analysis for SNDA-IV (and also looked at the percentage of schools that met other combinations of nutrition standards; see Chapter 7). Results showed that the percentage of schools *serving* average SBP breakfasts that met all of the SMI standards decreased significantly between SYs 2004–2005 and 2009–2010, from 20 percent (Gordon et al., Table VII.6) to 11 percent (Appendix Table G.7). This difference is consistent with some of the patterns observed in Figure 11.5, particularly for calories.

F. Trends in the Food Content of SBP Breakfasts

This section describes key differences in the foods offered in SBP lunches in SY 2004–2005 (SNDA-III) and 2009–2010 (SNDA-IV). Differences in the foods offered in SBP breakfasts likely contributed to differences in calorie and nutrient content reported in the preceding section, as well as to changes in the leading food sources of nutrients, which are described later in this section. Data are reported separately for elementary, middle, and high schools because this is how data were reported the SNDA-III final report. SNDA-II data are not included in these comparisons because fully comparable data are not available in published reports.

1. Types and Frequency of Foods Offered in SBP Breakfasts

There were no significant differences between SYs 2004–2005 and 2009–2010 in the frequency with which the major food groups were offered in daily breakfast menus in elementary and middle schools (top panel of Table 11.6). Among high schools, there was a small but statistically significant decrease over this period in the proportion of daily breakfast menus that included fruit or 100% juice (from 100 percent in SY 2004–2005 to 97 percent in SY 2009–2010). This change was driven largely by a decrease in the proportion of daily high school breakfast menus that included a citrus juice (from 88 percent in SY 2004–2005 to 73 percent in SY 2009–2010; lower panel of Table 11.6).

Table 11.6. Foods Offered in School Breakfast Program Breakfasts in SY 2009–2010 and SY 2004–2005

	Percentage of Daily Breakfast Menus					
	Elementary Schools		Middle Schools		High Schools	
	SY 2009 – 2010 (SNDA-IV)	SY 2004 – 2005 (SNDA-III)	SY 2009 – 2010 (SNDA-IV)	SY 2004 – 2005 (SNDA-III)	SY 2009 – 2010 (SNDA-IV)	SY 2004 – 2005 (SNDA-III)
Milk	100	99[a]	100	100	100	100
Fruits and 100% Fruit Juices	97	99	98	98	97	100*
Separate Grains/Breads[b]	93	94	94	97	93	98
Meats/Meat Alternates[c]	39	39	45	39	45	46
Combination Entrees	34	31	51	42	53	42
Number of Daily Menus	**1,367**	**579**	**1,227**	**532**	**1,231**	**494**
Number of Schools	**282**	**120**	**264**	**109**	**257**	**102**
Types of Milk Offered						
Unflavored						
1% fat	73	53*	72	54*	69	34*
Skim or nonfat	42	23*	44	28	42	29
2% fat	29	50*	34	53*	35	67*
Whole	3	29*	1	29*	4	28*
Flavored						
1% fat	48	46	58	52	53	53
Skim or nonfat	27	27	34	26	35	38
2% fat	2	6	3	8	4	6
Whole	1	0	0	2	0	0
Fruits and 100% Juices	97	99	98	98	97	100
100% fruit juice	83	85	89	89	91	97
Citrus juice	61	68	68	67	73	88*
Noncitrus juice	63	61	65	58	69	76
Apple juice	53	52	54	50	61	68
Fruit juice blend	10	5	10	6	9	4
Fresh fruit	35	22	44	31	48	31*
Apple	19	8	30	16	34	19
Orange	13	9	21	14	22	14
Banana	12	6	14	14	17	21
Canned fruit[a]	20	15	18	12	14	9
Vegetables	2	1	6	2	5	4
Hash browns, potato puffs, french fries[b]	2	1	6	2	5	4

Table 11.6 *(continued)*

	Percentage of Daily Breakfast Menus					
	Elementary Schools		Middle Schools		High Schools	
	SY 2009 – 2010 (SNDA-IV)	SY 2004 – 2005 (SNDA-III)	SY 2009 – 2010 (SNDA-IV)	SY 2004 – 2005 (SNDA-III)	SY 2009 – 2010 (SNDA-IV)	SY 2004 – 2005 (SNDA-III)
Separate Grains/Breads[b]	93	94	94	97	93	98
Cold cereal	75	76	78	80	76	83
Sweetened	66	70	71	70	71	80
Unsweetened	36	26	29	27	28	29
Pastries	18	21	35	40	40	44
Breads, rolls, bagels, other plain breads	19	16	30	22	33	32
Muffins (excludes English muffins), sweet/quick breads	19	13	24	17	29	20
Pancakes, waffles, french toast	20	19	21	20	21	17
Buttered toast, bagels with cream cheese	17	24	24	26	21	19
Crackers (mainly graham)	19	11	15	9	13	3*
Biscuits, cornbread	10	15	13	17	12	23
Grain and fruit cereal bars, granola bars	9	4	8	4	11	5
Hot cereal	7	5	6	4	7	6
Separate Meats/Meat Alternates[c]	39	39	45	39	45	46
Yogurt	18	14	22	15	22	12
Low-fat or fat-free	14	14	19	15	18	12
Sausage	11	15	15	16	14	24
Eggs	9	8	8	8	11	12
Cheese	6	4	6	5	6	5
Combination Entrees	34	31	51	42	53	42
Breakfast sandwiches[d]	10	9	21	18	23	22
Pizza (all types)	8	10	15	12	15	13
Sausage with pancake, corn dog, similar products	7	8	9	12	8	10
Breakfast burritos	5	4	6	11	9	10
Peanut butter sandwiches	2	3	5	3	8	4
Number of Daily Menus	**1,367**	**579**	**1,227**	**532**	**1,231**	**494**
Number of Schools	**282**	**120**	**264**	**109**	**257**	**102**

Sources: School Nutrition Dietary Assessment Study-IV, Menu Survey, school year 2009-2010 and School Nutrition Dietary Assessment Study-III, Menu Survey, school year 2004-2005 (Gordon et al. 2007, Table V.7). Tabulations prepared by Mathematica Policy Research are weighted to be representative of all public schools offering the National School Lunch Program.

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

For consistency with SNDA-III (SY 2004-2005), percentages flagged as >97 in Chapter 4, based on statistical reporting standards applied in SNDA-IV (see Chapter 1), are not flagged in this figure.

Data for SY 1998-1999 (SNDA-II) are not included because fully comparable data are not available in published reports.

Table 11.6 *(continued)*

[a] One school did not offer fluid milk at breakfast on four of the five days of the menu survey.
[b] Grains and breads not included in combination entrees or served solely with a specific menu item.
[c] Meats and meat alternates not included in combination entrees.
[d] Includes sandwiches with egg, cheese, sausage, ham or other types of meat on a biscuit, English muffin, bagel or croissant.
* Proportion is significantly different from SY 2009–2010 at the .05 level.

SY = school year.

In keeping with the pattern observed for lunch menus, there was a significant drop in the availability of unflavored whole and 2% milk in daily breakfast menus from SY 2004–2005 to SY 2009–2010 and a concomitant increase in the availability of unflavored 1% milk (lower panel of Table 11.6). Between SYs 2004–2005 and 2009–2010, the percentage of daily breakfast menus offering unflavored whole milk dropped from just under 30 percent to less than 5 percent in all three types of schools. Similarly, the percentage of daily breakfast menus offering unflavored 2% milk decreased from 50 to 67 percent (percentages vary by school type) to 29 to 35 percent. Over the same time period, the percentage of daily breakfast menus offering unflavored 1% milk increased from 34 to 54 percent to 69 to 73 percent. The availability of unflavored skim/nonfat milk also increased; however, this increase was statistically significant only for elementary schools.

2. Food Sources of Calories and Nutrients in Breakfasts *Offered*

Both SNDA-III and SNDA-IV (but not SNDA-II) assessed the food sources of calories, target nutrients, and other dietary components in school breakfasts as *offered* (see Chapter 9 for a description of the methodology). Table 11.7 summarizes the percentage of calories and nutrients provided by each of 9 major food groups (left side of the table) and identifies the 10 minor food groups that made the greatest contribution to the calorie/nutrient content of the average breakfast (right side of the table).[24] Chi-squared statistics indicate that, overall, there were no statistically significant differences in the relative contribution of the 9 major food groups to the calorie and nutrient content of the average SBP breakfast *offered* in SYs 2009–2010 and 2004–2005.

Although none of the differences over time were statistically significant in this analysis, patterns observed in the data are consistent with other findings reported in this chapter. For example, between SYs 2004–2005 and 2009–2010, the relative contribution of milk to the total fat content of the average SBP breakfast fell from 26 to 20 percent in elementary schools and from 22 to 17 percent in secondary schools. A comparable pattern was noted for the relative contribution of milk to the saturated fat content of SBP breakfasts (Table 11.7). These shifts are consistent with findings that fewer schools offered 2% and whole milk in SBP breakfasts in SY 2009–2010 than in SY 2004–2005 (Table 11.6).

[24] See Chapter 9 for a description of the general approach used in this analysis and see Appendix Table C-1 for a summary of the items included in each major food group.

Table 11.7. Food Sources of Calories and Nutrients in School Breakfast Program Breakfasts *Offered* to Students in All Schools

Major Food Group	Percentage Contribution to Average Amount Offered			Top 10 Minor Food Groups	Percentage Contribution to Average Amount Offered		
	SY 2009–2010 (SNDA-IV)	SY 2004–2005 (SNDA-III)	Difference (SY 2009–2010 – SY 2004–2005)		SY 2009–2010 (SNDA-IV)	SY 2004–2005 (SNDA-III)	Difference (SY 2009–2010 – SY 2004–2005)
Calories							
Elementary Schools							
Breads/Grains	37.6	36.5	1.1	Cold cereal	10.7	10.9	-0.2
Milk	26.4	27.4	-1.0	Fruit juice, 100%	9.1	9.3	-0.2
Fruit	13.5	13.1	0.4	1% milk, unflavored	7.9	6.1	1.8
Combination Entrees	10.5	8.7	1.8	1% milk, flavored	7.7	7.4	0.3
Meat/Meat Alternate	5.6	6.3	-0.7	Sweet rolls, donuts, toaster pastries	5.8	7.1	-1.3
Accompaniments[a]	5.5	7.3	-1.8	Condiments and spreads	5.5	7.3	-1.8
Other	0.8	0.5	0.3	Muffins, sweet/quick breads	4.9	2.9	2.0
Vegetables[b]	0.2	0.2	0.0	2% milk, unflavored	3.7	5.5	-1.8
				Pancakes, waffles, french toast	3.7	3.9	-0.2
				Skim or nonfat milk, flavored	3.7	3.6	0.1
Secondary Schools							
Breads/Grains	36.9	38.5	-1.6	Sweet rolls, donuts, toaster pastries	10.3	11.9	-1.6
Milk	24.4	26.2	-1.8	Fruit juice, 100%	8.5	9.2	-0.7
Combination Entrees	13.1	9.2	3.9	Cold cereal	8.1	9.8	-1.7
Fruit	12.7	12.1	0.6	1% milk, flavored	7.9	7.5	0.4
Accompaniments[a]	6.6	7.8	-1.2	Condiments and spreads	6.6	7.7	-1.1
Meat/Meat Alternate	5.0	5.3	-0.3	1% milk, unflavored	5.7	4.0	1.7
Vegetables[b]	0.4	0.2	0.2	Breakfast sandwiches[c]	4.9	3.5	1.4
Other	0.9	0.6	0.3	Muffins, sweet/quick breads	4.7	3.5	1.2
				Skim or nonfat milk, flavored	4.2	4.0	0.2
				2% milk, unflavored	3.6	5.7	-2.1
Protein							
Elementary Schools							
Milk	51.2	52.6	-1.4	1% milk, unflavored	18.3	14.9	3.4
Breads/Grains	21.7	20.9	0.8	1% milk, flavored	10.8	11.0	-0.2
Combination Entrees	12.4	10.2	2.2	Skim or nonfat milk, unflavored	7.9	3.5	4.4
Meat/Meat Alternate	9.2	10.6	-1.4	2% milk, unflavored	7.1	11.0	-3.9
Fruit	3.4	3.6	-0.2	Skim or nonfat milk, flavored	6.3	6.4	-0.1
Accompaniments[a]	1.3	1.7	-0.4	Cold cereal	5.2	5.0	0.2
Other	0.6	0.4	0.2	Breakfast sandwiches[c]	4.3	2.8	1.5
Vegetables[b]	0.1	0.1	0.0	Pancakes, waffles, french toast	2.9	2.8	0.1
				Yogurt	2.6	2.6	0.0
				Bread, rolls, bagels	2.5	2.2[z]	0.3

Table 11.7 *(continued)*

Major Food Group	Percentage Contribution to Average Amount Offered			Top 10 Minor Food Groups	Percentage Contribution to Average Amount Offered		
	SY 2009–2010 (SNDA-IV)	SY 2004–2005 (SNDA-III)	Difference (SY 2009–2010 – SY 2004–2005)		SY 2009–2010 (SNDA-IV)	SY 2004–2005 (SNDA-III)	Difference (SY 2009–2010 – SY 2004–2005)
Protein *(continued)*							
Secondary Schools							
Milk	46.9	50.7	-3.8	1% milk, unflavored	13.6	10.1	3.5
Breads/Grains	21.7	22.3	-0.6	1% milk, flavored	11.5	11.5	0.0
Combination Entrees	17.0	11.3	5.7	Skim or nonfat milk, flavored	7.4	7.4	0.0
Meat/Meat Alternate	8.5	9.4	-0.9	2% milk, unflavored	7.1	11.9	-4.8
Fruit	3.4	3.5	-0.1	Breakfast sandwiches[c]	6.8	4.4	2.4
Accompaniments[a]	1.8	2.3	-0.5	Skim or nonfat milk, unflavored	6.3	4.0	2.3
Other	0.7	0.4	0.3	Sweet rolls, donuts, toaster pastries	4.2	5.1	-0.9
Vegetables[b]	0.1	0.1	0.0	Cold cereal	4.0	4.7	-0.7
				Bread, rolls, bagels	3.9	3.5	0.4
				Pizza and pizza products	3.0	2.2	0.8
Vitamin A (mcg RE)							
Elementary Schools							
Milk	50.8	52.4	-1.6	Cold cereal	27.9	22.4	5.5
Breads/Grains	36.4	35.6	0.8	1% milk, unflavored	18.1	15.5	2.6
Fruit	4.6	5.0	-0.4	1% milk, flavored	10.9	11.7	-0.8
Combination Entrees	4.2	2.9	1.3	Skim or nonfat milk, unflavored	8.2	6.5	1.7
Meat/Meat Alternate	2.4	1.7	0.7	2% milk, unflavored	6.8	11.2	-4.4
Accompaniments[a]	1.6	1.5	0.1	Skim or nonfat milk, flavored	6.0	6.5	-0.5
Other	0.0	0.1	-0.1	Fruit juice, 100%	2.6	3.3	-0.7
Vegetables[b]	0.0	0.8	-0.8	Grain/fruit cereal bars, granola bars	2.0	2.2	-0.2
				Sweet rolls, donuts, toaster pastries	1.9	4.9	-3
				Pancakes, waffles, french toast	1.8	1.3	0.5
Secondary Schools							
Milk	50.3	50.8	-0.5	Cold cereal	23.9	20.8	3.1
Breads/Grains	34.0	35.5	-1.5	1% milk, unflavored	14.5	10.6	3.9
Combination Entrees	5.2	3.1	2.1	1% milk, flavored	12.6	12.5	0.1
Fruit	4.7	4.5	0.2	Skim or nonfat milk, flavored	7.7	7.5	0.2
Accompaniments[a]	3.5	4.0	-0.5	2% milk, unflavored	7.3	12.1	-4.8
Meat/Meat Alternate	1.9	2.0	-0.1	Skim or nonfat milk, unflavored	7.1	4.4	2.7
Vegetables[b]	0.2	0.0	0.2	Sweet rolls, donuts, toaster pastries	4.3	8.2	-3.9
Other	0.2	0.0	0.2	Condiments and spreads	3.5	4.0	-0.5
				Fruit juice, 100%	2.8	3.2	-0.4
				Breakfast sandwiches[d]	1.9	1.4	0.5

Table 11.7 *(continued)*

Major Food Group	Percentage Contribution to Average Amount Offered			Top 10 Minor Food Groups	Percentage Contribution to Average Amount Offered		
	SY 2009–2010 (SNDA-IV)	SY 2004–2005 (SNDA-III)	Difference (SY 2009–2010 – SY 2004–2005)		SY 2009–2010 (SNDA-IV)	SY 2004–2005 (SNDA-III)	Difference (SY 2009–2010 – SY 2004–2005)
Vitamin C							
Elementary Schools							
Fruit	82.8	82.7	0.1	Fruit juice, 100%	67.9	72.4	-4.5
Breads/Grains	13.0	12.1	0.9	Cold cereal	10.3	9.7	0.6
Milk	1.2	1.6	-0.4	Citrus fruit	9.5	5.1	4.4
Combination Entrees	1.2	0.8	0.4	Sweet rolls, donuts, toaster pastries	1.4	2.2	-0.8
Other	1.0	2.2	-1.2	Banana	1.3	1.1	0.2
Meat/Meat Alternate	0.3	0.3	0.0	Grain/fruit cereal bars, granola bars	1.1	n.a.	n.a.
Accompaniments[a]	0.2	0.2	0.0	Apple	1.0	0.6	0.4
Vegetables[b]	0.2	0.1	0.1	1% milk, flavored	1.0	1.2	-0.2
				Peaches	0.9	1.2	-0.3
				Berries	0.9	n.a.	n.a.
Secondary Schools							
Fruit	84.1	82.6	1.5	Fruit juice, 100%	65.9	68.3	-2.4
Breads/Grains	11.2	11.5	-0.3	Citrus fruit	13.2	10.2	3.0
Milk	1.6	1.7	-0.1	Cold cereal	8.2	8.4	-0.2
Combination Entrees	1.2	0.6	0.6	Sweet rolls, donuts, toaster pastries	1.9	2.8	-0.9
Other	0.8	3.0	-2.2	Apple	1.5	0.9	0.6
Accompaniments[a]	0.5	0.4	0.1	Banana	1.3	1.1	0.2
Meat/Meat Alternate	0.3	0.2	0.1	1% milk, flavored	1.1	1.2	-0.1
Vegetables[b]	0.3	0.1	0.2	Grain/fruit cereal bars, granola bars	0.7	n.a.	n.a.
				Entree food bars, bag/preplated lunches	0.7	n.a.	n.a.
				Peaches	0.7	1.3	-0.6
Calcium							
Elementary Schools							
Milk	67.7	69.3	-1.6	1% milk, unflavored	24.0	19.6	4.4
Breads/Grains	16.4	16.2	0.2	1% milk, flavored	14.1	14.5	-0.4
Meat/Meat Alternate	5.9	4.9	1.0	Skim or nonfat milk, unflavored	10.9	4.9	6.0
Combination Entrees	5.1	4.5	0.6	2% milk, unflavored	9.3	14.5	-5.2
Fruit	4.3	4.4	-0.1	Skim or nonfat milk, flavored	8.1	8.4	-0.3
Accompaniments[a]	0.5	0.7	-0.2	Cold cereal	7.4	8.9	-1.5
Other	0.0	0.0	0.0	Fruit juice, 100%	3.4	3.6	-0.2
Vegetables[b]	0.0	0.0	0.0	Yogurt	3.4	3.3	0.1
				Cheese	1.9	n.a.	n.a.
				Pancakes, waffles, french toast	1.8	1.4	0.4

Table 11.7 *(continued)*

Major Food Group	Percentage Contribution to Average Amount Offered			Top 10 Minor Food Groups	Percentage Contribution to Average Amount Offered		
	SY 2009–2010 (SNDA-IV)	SY 2004–2005 (SNDA-III)	Difference (SY 2009–2010 – SY 2004–2005)		SY 2009–2010 (SNDA-IV)	SY 2004–2005 (SNDA-III)	Difference (SY 2009–2010 – SY 2004–2005)
Calcium *(continued)*							
Secondary Schools							
Milk	65.5	67.5	-2.0	1% milk, unflavored	18.9	13.4	5.5
Breads/Grains	15.8	17.5	-1.7	1% milk, flavored	16.0	15.4	0.6
Combination Entrees	7.2	4.8	2.4	Skim or nonfat milk, flavored	10.1	9.7	0.4
Meat/Meat Alternate	5.6	3.8	1.8	2% milk, unflavored	9.8	15.8	-6.0
Fruit	5.0	5.4	-0.4	Skim or nonfat milk, unflavored	9.2	5.6	3.6
Accompaniments[a]	0.8	0.9	-0.1	Cold cereal	6.4	9.4	-3.0
Other	0.1	0.0	0.1	Fruit juice, 100%	3.8	4.5	-0.7
Vegetables[b]	0.0	0.0	0.0	Yogurt	3.7	2.2	1.5
				Sweet rolls, donuts, toaster pastries	2.7	2.9	-0.2
				Breakfast sandwiches[c]	2.5	1.9	0.6
Iron							
Elementary Schools							
Breads/Grains	76.5	74.8	1.7	Cold cereal	52.0	47.4	4.6
Combination Entrees	8.3	6.9	1.4	Fruit juice, 100%	6.5	7.9	-1.4
Fruit	8.1	9.6	-1.5	Sweet rolls, donuts, toaster pastries	4.3	8.4	-4.1
Milk	4.5	5.1	-0.6	Bread, rolls, bagels	3.8	2.8	1.0
Meat/Meat Alternate	1.6	2.3	-0.7	Pancakes, waffles, french toast	3.5	4.5	-1.0
Accompaniments[a]	0.7	1.1	-0.4	Muffins, sweet/quick breads	3.2	2.0	1.2
Other	0.3	0.1	0.2	Grain/fruit cereal bars, granola bars	2.7	1.1	1.6
Vegetables[b]	0.0	0.1	-0.1	Breakfast sandwiches[c]	2.3	1.8	0.5
				Buttered toast/bagels with cream cheese	2.3	3.0	-0.7
				Crackers and pretzels	2.2	1.9	0.3
Secondary Schools							
Breads/Grains	72.7	74.8	-2.1	Cold cereal	42.9	44.7	-1.8
Combination Entrees	10.8	6.8	4.0	Sweet rolls, donuts, toaster pastries	8.7	12.4	-3.7
Fruit	8.1	8.6	-0.5	Bread, rolls, bagels	6.8	4.2	2.6
Milk	5.0	5.7	-0.7	Fruit juice, 100%	6.7	7.6	-0.9
Meat/Meat Alternate	1.7	2.2	-0.5	Breakfast sandwiches[c]	4.0	2.4	1.6
Accompaniments[a]	1.0	1.6	-0.6	Pancakes, waffles, french toast	3.1	3.5	-0.4
Other	0.5	0.2	0.3	Muffins, sweet/quick breads	3.0	2.6	0.4
Vegetables[b]	0.1	0.1	0.0	Buttered toast/bagels with cream cheese	2.5	2.3	0.2
				1% milk, flavored	2.2	2.5	-0.3
				Grain/fruit cereal bars, granola bars	1.9	1.2	0.7

Table 11.7 *(continued)*

Major Food Group	Percentage Contribution to Average Amount Offered			Top 10 Minor Food Groups	Percentage Contribution to Average Amount Offered		
	SY 2009–2010 (SNDA-IV)	SY 2004–2005 (SNDA-III)	Difference (SY 2009–2010 – SY 2004–2005)		SY 2009–2010 (SNDA-IV)	SY 2004–2005 (SNDA-III)	Difference (SY 2009–2010 – SY 2004–2005)
Total Fat							
Elementary Schools							
Breads/Grains	41.4	35.5	5.9	Sweet rolls, donuts, toaster pastries	9.6	10.6	-1.0
Milk	19.7	25.6	-5.9	Muffins, sweet/quick breads	7.9	3.0	4.9
Combination Entrees	19.6	16.7	2.9	1% milk, unflavored	7.3	5.4	1.9
Meat/Meat Alternate	11.3	13.4	-2.1	Breakfast sandwiches[c]	6.9	4.7	2.2
Accompaniments[a]	5.3	6.1	-0.8	2% milk, unflavored	5.9	8.3	-2.4
Fruit	1.4	1.6	-0.2	Condiments and spreads	5.3	6.1	-0.8
Other	1.0	0.6	0.4	Cold cereal	4.9	4.2	0.7
Vegetables[b]	0.4	0.5	-0.1	Pancakes, waffles, french toast	4.7	4.6	0.1
				1% milk, flavored	4.5	4.5	0.0
				Sausages, hot dogs, cold cuts	4.3	6.8	-2.5
Secondary Schools							
Breads/Grains	40.4	37.1	3.3	Sweet rolls, donuts, toaster pastries	15.8	16.4	-0.6
Combination Entrees	23.2	17.2	6.0	Breakfast sandwiches[c]	9.6	7.4	2.2
Milk	16.6	22.1	-5.5	Condiments and spreads	7.4	9.9	-2.5
Meat/Meat Alternate	9.1	11.4	-2.3	Muffins, sweet/quick breads	7.2	3.6	3.6
Accompaniments[a]	7.4	10.1	-2.7	2% milk, unflavored	5.3	8.0	-2.7
Fruit	1.2	1.1	0.1	1% milk, unflavored	4.9	3.3	1.6
Vegetables[b]	0.8	0.5	0.3	1% milk, flavored	4.4	4.2	0.2
Other	1.3	0.5	0.8	Sausages, hot dogs, cold cuts	4.2	6.0	-1.8
				Pizza and pizza products	3.6	2.5	1.1
				Cold cereal	3.3	3.7	-0.4
Saturated Fat							
Elementary Schools							
Milk	34.0	44.7	-10.7	1% milk, unflavored	13.0	9.7	3.3
Breads/Grains	27.9	20.6	7.3	2% milk, unflavored	10.2	14.6	-4.4
Combination Entrees	18.3	14.4	3.9	1% milk, flavored	7.7	7.9	-0.2
Meat/Meat Alternate	12.3	12.4	-0.1	Breakfast sandwiches[c]	6.7	4.3	2.4
Accompaniments[a]	5.8	6.2	-0.4	Sweet rolls, donuts, toaster pastries	6.2	5.7	0.5
Fruit	0.7	0.8	-0.1	Condiments and spreads	5.8	6.2	-0.4
Other	0.8	0.5	0.3	Muffins, sweet/quick breads	4.5	2.0	2.5
Vegetables[b]	0.3	0.4	-0.1	Grain/fruit cereal bars, granola bars	4.2	n.a.	n.a.
				Cheese	3.8	2.0	1.8
				Sausages, hot dogs, cold cuts	3.7	6.1	-2.4

Table 11.7 *(continued)*

Major Food Group	Percentage Contribution to Average Amount Offered			Top 10 Minor Food Groups	Percentage Contribution to Average Amount Offered		
	SY 2009–2010 (SNDA-IV)	SY 2004–2005 (SNDA-III)	Difference (SY 2009–2010 – SY 2004–2005)		SY 2009–2010 (SNDA-IV)	SY 2004–2005 (SNDA-III)	Difference (SY 2009–2010 – SY 2004–2005)
Saturated Fat *(continued)*							
Secondary Schools							
Milk	29.6	38.8	-9.2	Sweet rolls, donuts, toaster pastries	11.0	8.7	2.3
Breads/Grains	28.0	21.9	6.1	2% milk, unflavored	9.6	14.1	-4.5
Combination Entrees	22.0	15.8	6.2	Breakfast sandwiches[c]	9.5	7.1	2.4
Meat/Meat Alternate	9.4	10.8	-1.4	1% milk, unflavored	9.1	5.9	3.2
Accompaniments[a]	9.0	11.3	-2.3	Condiments and spreads	9.0	11.2	-2.2
Fruit	0.6	0.6	0.0	1% milk, flavored	7.8	7.4	0.4
Other	1.0	0.4	0.6	Muffins, sweet/quick breads	4.5	2.6	1.9
Vegetables[b]	0.4	0.4	0.0	Pizza and pizza products	3.8	2.5	1.3
				Sausages, hot dogs, cold cuts	3.6	5.4	-1.8
				Grain/fruit cereal bars, granola bars	3.1	n.a.	n.a.
Cholesterol							
Elementary Schools							
Milk	26.0	37.5	-11.5	Eggs	16.5	11.4	5.1
Combination Entrees	25.0	19.5	5.5	Breakfast sandwiches[c]	13.0	9.9	3.1
Meat/Meat Alternate	24.5	23.2	1.3	1% milk, unflavored	10.6	9.9	0.7
Breads/Grains	21.6	16.2	5.4	Pancakes, waffles, french toast	9.5	6.9	2.6
Accompaniments[a]	2.2	2.8	-0.6	Mexican-style entrees	7.6	4.0	3.6
Other	0.6	0.6	0.0	2% milk, unflavored	6.7	12.0	-5.3
Fruit	0.0	0.1	-0.1	Muffins, sweet/quick breads	5.4	4.3	1.1
Vegetables[b]	0.0	0.0	0.0	Sweet rolls, donuts, toaster pastries	5.0	3.9	1.1
				1% milk, flavored	4.7	5.6	-0.9
				Sausages, hot dogs, cold cuts	4.5	7.7	-3.2
Secondary Schools							
Combination Entrees	33.5	24.5	9.0	Breakfast sandwiches[c]	20.5	13.5	7.0
Milk	23.0	31.6	-8.6	Eggs	12.7	11.8	0.9
Meat/Meat Alternate	20.4	22.2	-1.8	1% milk, unflavored	7.6	5.9	1.7
Breads/Grains	18.7	15.9	2.8	Mexican-style entrees	6.6	6.6	0.0
Accompaniments[a]	3.9	5.4	-1.5	2% milk, unflavored	6.5	11.4	-4.9
Other	0.6	0.4	0.2	Pancakes, waffles, french toast	6.2	3.1	3.1
Fruit	0.0	0.0	0.0	Sweet rolls, donuts, toaster pastries	5.9	7.3	-1.4
Vegetables[b]	0.0	0.0	0.0	Muffins, sweet/quick breads	5.4	4.6	0.8
				Sausages, hot dogs, cold cuts	5.1	6.5	-1.4
				1% milk, flavored	4.8	5.1	-0.3

Table 11.7 *(continued)*

Major Food Group	Percentage Contribution to Average Amount Offered			Top 10 Minor Food Groups	Percentage Contribution to Average Amount Offered		
	SY 2009–2010 (SNDA-IV)	SY 2004–2005 (SNDA-III)	Difference (SY 2009–2010 – SY 2004–2005)		SY 2009–2010 (SNDA-IV)	SY 2004–2005 (SNDA-III)	Difference (SY 2009–2010 – SY 2004–2005)
Sodium							
Elementary Schools							
Breads/Grains	46.3	50.5	-4.2	Cold cereal	13.6	15.6	-2.0
Milk	20.2	19.2	1.0	Breakfast sandwiches[c]	7.3	4.8	2.5
Combination Entrees	19.9	15.0	4.9	1% milk, unflavored	6.9	5.2	1.7
Meat/Meat Alternate	7.6	8.3	-0.7	Pancakes, waffles, french toast	6.4	7.2	-0.8
Accompaniments[a]	3.8	5.0	-1.2	1% milk, flavored	5.4	5.1	0.3
Other	1.3	0.8	0.5	Sweet rolls, donuts, toaster pastries	4.5	6.1	-1.6
Fruit	0.6	0.9	-0.3	Muffins, sweet/quick breads	4.2	3.5	0.7
Vegetables[b]	0.4	0.2	0.2	Biscuits, croissants, cornbread	4.1	5.6	-1.5
				Condiments and spreads	3.8	5.0	-1.2
				Buttered toast/bagels with cream cheese	3.7	5.1	-1.4
Secondary Schools							
Breads/Grains	42.4	49.1	-6.7	Breakfast sandwiches[c]	10.5	7.4	3.1
Combination Entrees	25.8	16.5	9.3	Cold cereal	10.4	13.4	-3.0
Milk	17.7	17.5	0.2	Sweet rolls, donuts, toaster pastries	7.8	9.5	-1.7
Meat/Meat Alternate	6.5	7.6	-1.1	1% milk, flavored	5.4	5.1	0.3
Accompaniments[a]	5.4	8.0	-2.6	Condiments and spreads	5.4	7.9	-2.5
Other	1.2	0.7	0.5	Bread, rolls, bagels	5.0	4.7	0.3
Vegetables[b]	0.6	0.2	0.4	1% milk, unflavored	4.8	3.3	1.5
Fruit	0.5	0.4	0.1	Pizza and pizza products	4.7	3.0	1.7
				Pancakes, waffles, french toast	4.5	5.1	-0.6
				Biscuits, croissants, cornbread	4.0	6.0	-2.0
Dietary Fiber							
Elementary Schools							
Breads/Grains	50.1	50.8	-0.7	Cold cereal	20.1	21.7	-1.6
Fruit	27.2	23.8	3.4	Muffins, sweet/quick breads	6.1	4.5	1.6
Milk	10.5	11.8	-1.3	Apple	6.0	3.9	2.1
Combination Entrees	8.6	7.7	0.9	1% milk, flavored	5.9	7.2	-1.3
Accompaniments[a]	2.0	3.4	-1.4	Fruit juice, 100%	4.9	5.5	-0.6
Meat/Meat Alternate	0.7	1.8	-1.1	Pancakes, waffles, french toast	4.6	3.8	0.8
Vegetables[b]	0.3	0.6	-0.3	Citrus fruit	4.5	2.6	1.9
Other	0.7	0.2	0.5	Banana	4.3	3.8	0.5
				Sweet rolls, donuts, toaster pastries	4.3	5.8	-1.5
				Skim or nonfat milk, flavored	4.1	3.9	0.2

Table 11.7 *(continued)*

Major Food Group	Percentage Contribution to Average Amount Offered			Top 10 Minor Food Groups	Percentage Contribution to Average Amount Offered		
	SY 2009–2010 (SNDA–IV)	SY 2004–2005 (SNDA–III)	Difference (SY 2009–2010 – SY 2004–2005)		SY 2009–2010 (SNDA–IV)	SY 2004–2005 (SNDA–III)	Difference (SY 2009–2010 – SY 2004–2005)
Dietary Fiber *(continued)*							
Secondary Schools							
Breads/Grains	44.0	49.9	–5.9	Cold cereal	14.8	18.6	–3.8
Fruit	28.7	23.6	5.1	Apple	8.4	5.4	3.0
Milk	12.0	14.3	–2.3	Sweet rolls, donuts, toaster pastries	7.0	10.1	–3.1
Combination Entrees	11.3	6.9	4.4	1% milk, flavored	6.4	7.9	–1.5
Accompaniments[a]	2.3	3.7	–1.4	Citrus fruit	6.3	5.6	0.7
Meat/Meat Alternate	0.7	1.0	–0.3	Bread, rolls, bagels	5.3	4.7	0.6
Vegetables[b]	0.6	0.4	0.2	Muffins, sweet/quick breads	5.3	5.2	0.1
Other	0.4	0.2	0.2	Skim or nonfat milk, flavored	4.6	5.3	–0.7
				Fruit juice, 100%	4.6	5.3	–0.7
				Banana	4.1	4.0	0.1

Source: School Nutrition Dietary Assessment Study–IV, Menu Survey, school year 2009–2010 and School Nutrition Dietary Assessment Study–III, Menu Survey, school year 2004–2005 (Gordon et al. 2007, Table VII.12).. Tabulations prepared by Mathematica Policy Research are weighted to be representative of all public schools offering the National School Lunch Program.

Notes: See Appendix Table C.1 for a detailed listing of food items included in each major food group. Chi–squared tests detected no statistically significant differences at the .05 level between SY 2004–2005 and SY 2009–2010 in the distribution of major food group sources for calories or any nutrient. Statistical tests for differences between school years were not conducted for the top 10 minor food groups.

Data for SY 1998–1999 (SNDA–II) are not included because SNDA–II did not assess food sources of nutrients.

[a] Includes condiments, toppings, spreads, and salad dressing.
[b] Mainly hash browns and similar potato products.
[c] Includes sandwiches with sausage, egg, cheese, ham, or other types of meat on a biscuit, English muffin, bagel, or croissant.

n.a. = not available. RE = Retinol equivalent; SY = school year.

G. Trends in School Foodservice Operations and the School Food Environment

We assessed changes in key characteristics of school foodservice operations and the school food environment between SYs 2009–2010 (SNDA-IV) and 2004–2005 (SNDA-III). Where possible, we also assessed changes since SY 1998–1999 (SNDA-II). The number of variables we were able to examine was limited by differences in survey questions used to measure characteristics of interest and by the way data were tabulated in published reports.

1. School Foodservice Operations

a. Menu-Planning Systems

Between SY 1998–1999 and SY 2009–2010, schools could use any of five different approaches to plan their menus. Each menu-planning system had differing requirements related to the types and amounts of food required for a meal to be reimbursable. The five menu-planning systems included the following:

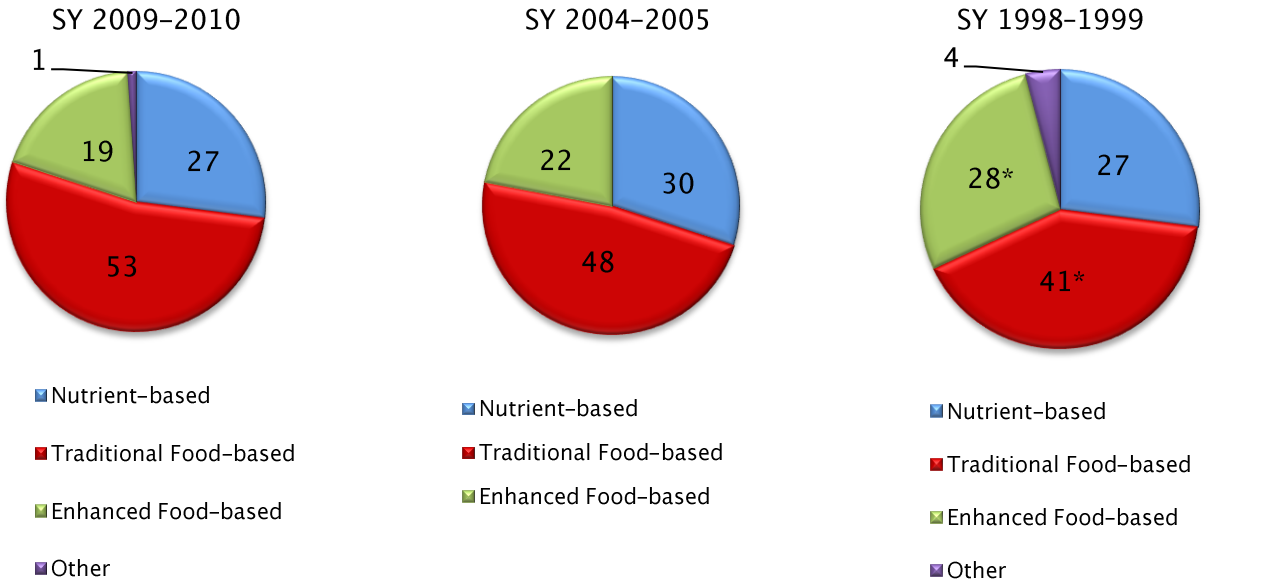
1. **Traditional food-based menu planning.** This system identified food groups that must be included in the meal, as well as minimal acceptable serving sizes for children in different grades.
2. **Enhanced food-based menu planning.** This system was similar to the traditional food-based system, but required more servings of bread or grain products over the course of a week and larger serving sizes of fruit and vegetables.
3. **Nutrient standard menu planning (NSMP).** NSMP required that SFAs use one of several USDA-approved computerized nutrient analysis systems to plan menus. The only food-based menu planning requirements imposed under NSMP, for lunch, were that milk be offered as a beverage and that at least one entree and one side dish be offered. Within these broad guidelines, menu planners were free to use whatever portions and combinations of food they desired as long as the planned menus met the SMI nutrition standards.
4. **Assisted nutrient standard menu planning (ANSMP).** ANSMP was similar to NSMP, but it allowed SFAs to arrange for external sources to assist with menu planning and/or nutrient analysis.
5. **Other reasonable approaches.** Schools could use any other reasonable approach to planning menus, as long as the menus met the nutrition standards. State agencies could establish guidelines for using a modified approach.

In assessing the percentage of schools using different menu-planning systems, all three SNDA studies combined schools that used NSMP and ANSMP to form a single group of schools that used nutrient-based menu planning. This was done because so few schools used ANSMP.

Figure 11.7 shows the percentage of schools that used each menu-planning system in the respective school years. Over time, the percentage of schools using traditional food-based menu planning has increased and the percentage using nutrient-based menu planning has stayed relatively constant. There was no significant shift in menu-planning systems between SYs 2004–2005 and 2009–2010. However, relative to SY 1998–1999 (approximately 2.5 years after the full range of menu-planning options available under the SMI was defined), significantly more schools used the

traditional food-based system in SY 2009–2010 (increased from 41 to 53 percent) and significantly fewer used the enhanced food-based system (decreased from 28 to 19 percent).

Figure 11.7. Percentage of Schools Using Different Menu-Planning Systems in SY 2009-2010, SY 2004-2005, and SY 1998-1999



Notes: SNDA-III (SY 2004-2005) did not report the percentage of schools that reported an "other" type of menu-planning system.

Nutrient-based menu planning includes both nutrient standard menu planning (NSMP) and assisted nutrient standard menu planning (ANSMP).

* Proportion is significantly different from SY 2009-2010 at the .05 level.

SY = school year.

b. Other Characteristics

There was no significant change between SYs 2004–2005 and 2009–2010 in the systems used by schools to prepare and serve meals. At both points in time, most schools (66 to 80 percent) prepared meals on site and served only the children enrolled at that school (Table 11.8). At both points in time, more than one quarter of elementary schools received fully or partially prepared meals from a separate base or central kitchen. This practice was notably less common among middle and high schools.

Table 11.8. Meal Preparation and Production Systems in SY 2009–2010 and SY 2004–2005

	Percentage of Schools					
	Elementary Schools		Middle Schools		High Schools	
	SY 2009–2010 (SNDA–IV)	SY 2004–2005 (SNDA–III)	SY 2009–2010 (SNDA–IV)	SY 2004–2005 (SNDA–III)	SY 2009–2010 (SNDA–IV)	SY 2004–2005 (SNDA–III)
Meals Prepared On Site for Serving Only at that School	69.4	65.7	80.3	76.6	70.5	77.7
Receives Partially Prepared Meals from a Separate Base or Central Kitchen	21.2	16.4	9.5	10.0	3.7	0.7
Meals Prepared On Site for Serving at that School and Shipment to Other Schools	4.8	8.5	8.1	9.7	21.3	19.8
Receives Fully Plated Meals from a Separate Base or Central Kitchen	4.8	9.3	2.0	3.7	4.5	1.7
Number of Schools	**315**	**143**	**284**	**127**	**277**	**125**

Sources: School Nutrition Dietary Assessment–IV, Foodservice Manager Survey, school year 2009–2010 and School Nutrition Dietary Assessment–III, Menu Survey, school year 2004–2005 (Gordon et al. 2007, Table II.3). Tabulations prepared by Mathematica Policy Research are weighted to be representative of all public schools offering the National School Lunch Program.

Note: Chi–squared tests indicate that the distribution of meal preparation and production systems is not significantly different at the .05 level between SY 2009–2010 and SY 2004–2005 for elementary, middle, or high schools.

SY = school year.

The proportion of SFAs using FSMCs has increased significantly over time, from 12 percent in SY 1998–1999 to 19 percent in SY 2009–2010 (Table 11.9). Relative to both SY 2004–2005 and SY 1998–1999, the proportion of SFAs using FSMCs was significantly higher in SY 2009–2010.[25] Data from SNDA-IV provide some perspective on the types of SFAs that have shifted to using FSMCs. By SY 2009–2010, the percentage of SFAs that used FSMCs increased significantly among SFAs in the following subgroups: medium in size (1,000 to 4,999 students); low rate of child poverty; located in suburban and rural areas; and located in FNS's Northeast, Midwest, Southwest, and Mountain Plains regions.

Table 11.9. Use of Foodservice Management Companies in SY 2009–2010, SY 2004–2005, and SY 1998–1999

	Percentage of SFAs Contracting with Foodservice Management Companies		
	SY 2009–2010 (SNDA–IV)	SY 2004–2005 (SNDA–III)	SY 1998–1999 (SNDA–II)
All Public SFAs	18.7	13.4*	12*
SFA Size (enrollment)			
Small (fewer than 1,000)	13.5	10.0	n.a.
Medium (1,000 to 4,999)	25.6	16.0*	n.a.
Large (5,000 or more)	19.6	16.9	n.a.
Child Poverty Rate			
Low (less than 30 percent)	21.1	14.8*	n.a.
Higher (30 percent or more)	12.8	9.6	n.a.
Urbanicity			
Urban	30.0	26.2	n.a.
Suburban	25.4	20.3*	n.a.
Rural	8.6	5.5*	n.a.
Region			
Northeast	31.4	20.4*	n.a.
Mid–Atlantic	38.8	35.2	n.a.
Southeast	2.3	1.0	n.a.
Midwest	22.0	16.7*	n.a.
Southwest	13.6	7.8*	n.a.
Mountain Plains	9.1	3.5*	n.a.
West	13.4	10.3	n.a.
Number of SFAs	**578**	**2,054**	**430**

Sources: School Nutrition Dietary Assessment–IV, SFA Director Survey, school year 2009–2010 (SNDA–IV). School Nutrition Dietary Assessment–III, Preliminary Survey, school year 2003–2004 (SNDA–III). From Logan and Kling (2005), Table B–16. Also reported in Gordon at al. 2007, Volume I, Table II.4. Tabulations prepared by Mathematica Policy Research are weighted to be representative of all public SFAs offering the National School Lunch Program.

* Proportion is significantly different from SY 2009–2010 at the .05 level.

n.a. = not available; SY = school year.

[25] Data for SNDA-III (SY 2004–2005) were actually collected during SY 2003–2004 as part of a preliminary survey that preceded the full study (see Logan and Kling 2005 and Gordon et al. 2007).

2. The School Food Environment

a. Wellness Policies

Based on principals' reports, there was a sharp and statistically significant increase in the prevalence of wellness policies between SYs 2004–2005 and 2009–2010 at both the school and district levels.[26] In SY 2004–2005, the proportion of schools with a district wellness policy ranged from 14 percent of high schools to 29 percent of elementary schools (Table 11.10).[27] By SY 2009–2010, 70 percent or more of elementary, middle, and high schools had district wellness policies. The proportion of schools reporting school-level wellness policies also increased significantly over time; however, the relative increases were substantially smaller. Substantial increases in district and school wellness policies are likely to have occurred because the Child Nutrition and WIC Reauthorization Act of 2004 established a Federal requirement that all school districts participating in the NSLP have a comprehensive wellness policy in place by the start of SY 2006–2007. SFAs were beginning to work toward meeting this requirement in SY 2004–2005, when the SNDA-III data were collected.

[26] Principals' reports may underestimate the prevalence of district wellness policies. In SY 2009–2010, directors in 96 percent of SFAs reported that a district wellness policy was in place (see Chapter 3). Data on the presence of wellness policies in SY 2004–2005 based on SFA director reports are not available in published SNDA-III reports.

[27] Schools of each type were sampled within each district, so the magnitude of the difference across school types in SY 2004–2005 is somewhat unexpected. This might reflect differing levels of awareness about district policy among respondents for different types of schools, or it could indicate that district policies targeted different types of schools.

Table 11.10. Presence of District and School Wellness Policies in SY 2009–2010 and SY 2004–2005

	Percentage of Schools					
	Elementary Schools		Middle Schools		High Schools	
	SY 2009–2010 (SNDA–IV)	SY 2004–2005 (SNDA–III)	SY 2009–2010 (SNDA–IV)	SY 2004–2005 (SNDA–III)	SY 2009–2010 (SNDA–IV)	SY 2004–2005 (SNDA–III)
Has a Wellness Policy Addressing Student Nutrition and Physical Activity						
Has a district–level policy	77.3	28.6*	80.3	22.4*	69.8	14.0*
Has a school–level policy	28.4	13.1*	25.6	10.8*	27.9	15.5*
Number of Schools	**265**	**143**	**230**	**127**	**226**	**125**

Sources: School Nutrition Dietary Assessment–IV, Principal Survey, school year 2009–2010 (SNDA–IV). School Nutrition Dietary Assessment–III, Principal Survey, school year 2004–2005 (SNDA–III). Tabulations prepared by Mathematica Policy Research are weighted to be representative of all public School Food Authorities offering the National School Lunch Program.

* Proportion is significantly different from SY 2009–2010 at the .05 level.

b. Competitive Foods

In both SNDA-III and SNDA-IV, data on the availability of competitive foods were collected from multiple respondents. FSMs provided information about whether foods and beverages were available for a la carte purchase outside the school meal programs. Principals provided information about the availability of vending machines and school stores. In addition, competitive foods checklists provided information about the availability of vending machines, school stores, and other venues. In SNDA-III, which included on-site data collection for many sampled schools, field interviewers completed these checklists. In SNDA-IV, which did not include on-site data collection, most checklists were completed by a school staff member designated by the principal. In some schools, the checklists were completed by telephone.[28]

Data from SNDA-IV indicate that there was no significant change between SYs 2004–2005 and 2009–2010 in the availability of a la carte foods and beverages. At both points in time, a la carte offerings were available at lunch in more than three-quarters of elementary schools and roughly 90 percent or more of middle and high schools (Table 11.11). Fewer schools offered a la carte items at breakfast, and the percentage that did so remained relatively constant over time in elementary and middle schools. The percentage of high schools offering a la carte items at breakfast was about 12 percentage points lower in SY 2009–2010 than in SY 2004–2005, but this difference was not statistically significant.

Findings about changes in the availability of vending machines over time vary by data source. According to the vending machine checklists, significantly fewer schools had vending machines available in SY 2009–2010 than in SY 2005–2006. This was true for elementary, middle, and high schools alike and the decrease between the two periods ranged from 15 to 19 percentage points (Table 11.11). In contrast, data from the principal surveys show a significant decrease in the availability of vending machines only among high schools—from 97 percent of high schools in SY 2004–2005 to 87 percent of high schools in SY 2009–2010. Point estimates for elementary and middle schools decreased as well, but the differences were not statistically significant.

In both SNDA-III and SNDA-IV, there were discrepancies between estimates of the percentage of schools with vending machines based on principal surveys and the vending machine checklists. In SNDA-III, estimates based on the checklist were consistently higher than estimates based on the principal survey. Differences ranged from 1 to 10 percentage points across school types and was greatest for elementary schools (for example, 27 versus 17 percent for the SNDA-III (SY 2004–2005) estimates of the availability of vending machines in elementary schools based on the vending machine checklist and principal survey, respectively). (Table 11.11). In SNDA-IV, discrepancies between the two data sources were smaller (2 to 4 percentage points) and the pattern of differences was reversed, with estimates based on the checklist being slightly but consistently lower than estimates based on the principal survey.

[28] In these instances, data were collected about the presence of competitive foods, but detailed information about the types of foods available was not collected.

Table 11.11. Availability of A la Carte, Vending Machines, School Stores, and Snack Bars in SY 2009–2010 and SY 2004–2005

	Percentage of Schools					
	Elementary Schools		Middle Schools		High Schools	
	SY 2009–2010 (SNDA–IV)	SY 2004–2005 (SNDA–III)	SY 2009–2010 (SNDA–IV)	SY 2004–2005 (SNDA–III)	SY 2009–2010 (SNDA–IV)	SY 2004–2005 (SNDA–III)
A la Carte Available at Lunch	79.4	75.8	93.4	92.1	87.1	91.7
A la Carte Available at Breakfast	57.2	51.4	73.6	70.4	68.1	79.9
Number of Schools	**321**	**100**	**289**	**93**	**285**	**94**
Vending Machines Available—Vending Machine Checklist	11.1	26.5*	68.4	87.1*	83.1	98.4*
Vending Machines Available—Principal Survey	13.1	17.2	71.8	81.7	87.1	96.7*
Number of Schools (Checklist/Survey)	**271/265**	**100**	**223/230**	**93**	**186/226**	**94**
School Store Available—Principal Survey	7.1	7.8	18.6	12.2	25.5	24.8
Snack Bar Available—Principal Survey	1.5	1.1	4.7	2.0	10.3	9.0
Number of Schools	**265**	**143**	**230**	**127**	**226**	**125**

Sources: School Nutrition Dietary Assessment–IV, A la Carte Checklist, Vending Machine Checklist, and Principal Survey, school year 2009–2010 and School Nutrition Dietary Assessment–III, Menu Survey, school year 2004–2005 (Gordon et al. 2007, Volume I, Tables III.6, III.7, IV.1, and IV.5). Tabulations prepared by Mathematica Policy Research are weighted to be representative of all public schools offering the National School Lunch Program.

* Proportion is significantly different from SY 2009–2010 at the .05 level.

SY = school year.

It is likely that the different data collection approaches used for the vending machine checklists in SNDA-III and SNDA-IV (field interviewers versus principal designees) contributed to the differences observed at the two points in time. At the time this report was prepared, we were unable to locate any corroborating evidence that the presence of vending machines decreased in the nation's schools between SYs 2004–2005 and 2009–2010 as dramatically as the vending machine checklist data would suggest.[29] It is possible that SNDA-III field interviewers overestimated the availability of vending machines by counting machines that were not actually available to students during school hours and/or machines that were available only to faculty and staff. Conversely, it is possible that SNDA-IV checklist respondents underreported the presence of vending machines in order to minimize response burden (the form asked for detailed information about the content of every vending machine available to students). For these reasons, findings based on the comparison of data from the vending machine checklists should be interpreted with great caution. On balance, we favor findings from the principal surveys.

In both SYs 2009–2010 and 2004–2005, school stores and snack bars were less commonly available than a la carte foods and beverages or vending machines. Based on principals' reports, school stores that sold food or beverages were available in less than 10 percent of elementary schools, less than 20 percent of middle schools, and about one-quarter of high schools (Table 11.11). Snack bars were even less common—reportedly available in 1 to 2 percent of elementary schools, 2 to 5 percent of middle schools, and about 10 percent of high schools. There were no statistically significant changes in the reported availability of school stores or snack bars between SYs 2004–2005 and 2009–2010.

Finally, the SNDA-III and SNDA-IV SFA director surveys asked respondents whether the district or any individual schools in the district had a ban or restriction on the availability of sweetened beverages or specific foods/snack items on school grounds.[30] The data indicate a dramatic increase over time in the percentage of districts that reported district-wide bans or restrictions.[31] In SY 2004–2005, only 6 and 10 percent of SFA directors reported a district-wide ban or restriction on the availability of sweetened beverages and specific types of food/snack items, respectively (Table 11.12). In SY 2009–2010, the percentage of SFA directors that reported a district-wide ban or restriction related to sweetened beverages was about 9 times higher (53 percent)

[29] We examined findings from the 2006 School Healthy Policies and Practices Study (SHPPS), which was conducted at approximately the same time as SNDA-III. SHPPS estimates of the percentage of schools with vending machines, which were based on data collected via in-person interviews, fell somewhere between the SNDA-III vending machine and principal survey estimates for elementary schools (21 percent), and notably lower than both SNDA-III data sources for middle schools (62 percent) and high schools (86 percent) (O'Toole et al. 2007).

[30] The questions read as follows: "Other than the USDA restriction on selling soft drinks during meals, has your school district, or any school in your district, imposed a ban or restriction on the types of soda, soft drinks, or sweetened fruit beverages (less than 100% juice) that may be sold to students in schools or on school grounds (including vending machines) since school year 2006–2007?" and "Other than the USDA restrictions, has your school district, or any school in your district, restricted the types of food or snack items sold to students in schools or on school grounds (including school stores and vending machines) since school year 2006–2007?" Response options allowed respondents to indicate that district- or school-level bans or restrictions were in place before SY 2006–2007.

[31] Findings for restrictions on snack items should be interpreted with greater caution because the SNDA-III results do not include data on the percentage of SFAs that reportedly never offered snack items or other foods outside of the school meal programs.

and the percentage reporting a district-wide ban or restriction related to snack items and other foods was about 4.5 time higher (46 percent).[32] Both of these differences were statistically significant. There was no significant change over time in the percentage of SFAs that reported school-level bans or restrictions. These findings are consistent with the fact that school districts participating in the NSLP were required to have comprehensive district-level wellness policies by the beginning of SY 2006–2007.

Table 11.12. Presence of District- or School-Level Bans or Restrictions on Sweetened Beverages and Food/Snack Items Sold on School Campuses in SY 2009–2010 and SY 2004–2005

	Percentage of SFAs	
	SY 2009–2010 (SNDA-IV)	SY 2004–2005 (SNDA-III)
Ban or Restriction on Sweetened Beverages		
District-level ban	53.4	5.8*
School-level ban	15.4	17.0
No ban or restriction	14.1	52.7*
Never offered sweetened beverages	13.3	24.5
Ban or Restriction on Food/Snack Items		
District-level ban	45.5	9.7
School-level ban	19.4	18.2
No ban or restriction	20.4	72.1*
Never offered snacks or other items outside of the school meal programs	11.7	n.r.
Number of SFAs	**578**	**395**

Sources: School Nutrition Dietary Assessment-IV, School Food Authority Director Survey, school year 2009–2010 and School Nutrition Dietary Assessment-III, School Food Authority Director Survey, school year 2004–2005 (Gordon et al. 2007, Volume I, Table III.5). Tabulations prepared by Mathematica Policy Research are weighted to be representative of all public School Food Authorities offering the National School Lunch Program.

* Proportion is significantly different from SY 2009–2010 at the .05 level.

n.r. = not reported; SY = school year.

[32] Restrictions or bans might have affected the contents of vending machines rather than the availability of vending machines.

CHAPTER 12
SCHOOLS PARTICIPATING IN THE HEALTHIERUS SCHOOL CHALLENGE

The HealthierUS School Challenge (HUSSC) was established in 2004 to recognize schools that are creating healthier school environments through their promotion of good nutrition and physical activity. HUSSC is designed to build upon USDA's Team Nutrition (TN) initiative, which provides schools with nutrition education materials for children, families, and educators; technical assistance materials for foodservice directors, managers and staff; and materials to build school and community support for healthy eating and physical activity. The chance to be recognized as a HUSSC school provides an incentive for schools to take increasingly bold steps to address the problems of childhood overweight and obesity.

HUSSC is a voluntary certification initiative. To be certified as part of HUSSC, a school must enroll in TN, submit a formal application, verify that they meet HUSSC certification criteria (see box at the top of next page), and submit a local school wellness policy that affirms that schools play a critical role in promoting student health and preventing obesity. In SY 2009−2010, when the data presented in this chapter were collected, HUSSC certification criteria related to school meals focused on NSLP lunches; there were no requirements for SBP breakfasts. In July 2012, HUSSC criteria were updated and expanded. At that time, specific requirements for SBP breakfasts were added. [1]

HUSSC includes four different award levels: Bronze, Silver, Gold, and Gold Award of Distinction. HUSSC-certified schools receive an award plaque, monetary incentives, a banner, recognition of the school on the TN website, and recognition during a local media event. HUSSC schools are certified for a period of four years and make a commitment to meet or exceed the HUSSC criteria for that four year period. Schools can reapply at the end of each certification period or can apply for a higher level award one year after initial certification. The number of schools receiving HUSSC certification increased after February 2010 when First Lady Michele Obama introduced the *Let's Move*! campaign and included HUSSC as a core component, Financial incentives were also added at that time. In July 2012, there were 3,717 HUSSC-certified schools nationwide.[2]

In this chapter, we present findings from a substudy of HUSSC elementary schools that was conducted as part of SNDA-IV. The methods used to assess the calorie, nutrient, and food group content of NSLP lunches and SBP breakfasts *offered* and *served* in HUSSC schools were identical to the methods used in the main SNDA-IV analyses (see Chapters 5, 7, and 8 and Appendix D).The findings provide a snapshot of HUSSC elementary schools in SY 2009–2010 and insights about how HUSSC schools compared to all elementary schools nationwide.

The comparisons presented are descriptive only. The substudy was not designed to assess HUSSC schools' compliance with HUSSC criteria or to measure the impact of HUSSC on school meals or school foodservice operations. In addition, the sample of HUSSC elementary schools differs from all elementary schools nationwide on several dimensions. Compared to all elementary schools nationwide, larger shares of schools in the HUSSC sample were located in rural areas (49 versus 25 percent) and areas with higher rates of child poverty (43 versus 32 percent), and a disproportionately

[1] The HUSSC certification criteria in place during SY 2009−2010 are summarized in Appendix L.

[2] A complete list of active HUSSC schools is available at: http://www.fns.usda.gov/tn/healthierus.

large share of schools in the HUSSC sample were located in the Southeast (49 versus 14 percent). Differences in these characteristics could contribute to differences observed in this analysis between HUSSC elementary schools and all elementary schools nationwide.

HealthierUS School Challenge Criteria in Effect During SY 2009–2010

- School is enrolled in Team Nutrition
- NSLP lunches meet SMI nutrition standards
- Average daily participation in the NSLP meets or exceeds minimum standard
- NSLP menus meet specific criteria related to:
  - Offering different fruits and vegetables every day of the week
  - Number of times dark green or orange vegetables are offered per week
  - Number of times legumes are offered per week
  - Number of times 100% fruit juice is offered per week
  - Number of times fresh fruit is offered per week
  - Number of times whole grain foods are offered per week
  - Types of milk offered (only 1% and nonfat/skim milks are allowed)
- If available, competitive foods (including foods sold through fundraising activities) meet specific criteria related to:
  - Locations and times of day when students have access
  - Calorie and nutrient content per serving
  - Restrictions on the types of competitive beverages available
- School provides nutrition education and the content and structure of the education meets minimum requirements
- School provides physical education and the content and structure of the education meets minimum requirements
- School provides unstructured daily opportunities for physical activity, such as recess
- School district has developed a wellness policy

Note: Specific criteria for each award level are shown in Appendix L.

A. Summary of Findings

NSLP Lunches

- For both lunches *offered* and lunches *served*, a larger share of HUSSC elementary schools met the SMI standards for calories, vitamin C, and iron, relative to elementary schools overall. This was also true for vitamin A in lunches *served*.
- For both lunches *offered* and lunches *served*, a larger share of HUSSC elementary schools met SMI and 2010 *Dietary Guidelines* standards for total fat and saturated fat than elementary schools overall.
- The proportion of daily lunch menus in HUSSC schools that included unflavored 1% milk was notably larger than the proportion in elementary schools overall (90 versus 74 percent) and the proportion that included unflavored 2% milk was notably lower (9 versus 28 percent). Daily lunch menus in HUSSC schools were also more likely to

include skim milk, compared to lunch menus in elementary schools overall (54 versus 47 percent for unflavored skim milk and 45 versus 39 percent for flavored skim milk). This pattern of findings likely reflects the fact that one of the criteria for HUSSC certification is that schools offer only 1% and fat-free milks.

- Differences between HUSSC schools and elementary schools overall in the types of vegetables offered were relatively modest but were consistent with HUSSC criteria that require that dark green or orange vegetables be offered three times per week and legumes be offered at least once per week.
- More than eight out of ten daily lunch menus in HUSSC schools (82 percent) included fresh fruit, compared to just over half (56 percent) of lunch menus in elementary schools overall. Fewer than one in five daily lunch menus in HUSSC schools (18 percent) included 100% fruit juice, compared to more than one-quarter (26 percent) of lunch menus in elementary schools nationwide. Both of these findings are consistent with HUSSC criteria that fresh fruit be offered at least once per week (two days per week for the highest level HUSSC awards) and that 100% juice be offered only once per week
- The percentage of calories from solid fats and added sugars was the identical in both lunches *offered* and *served* in HUSSC schools, 42 percent from added sugars and 58 percent from solid fats.

SBP Breakfasts

- On average, more than 90 percent of HUSSC elementary schools and all elementary schools nationwide met the SMI standards for all target nutrients for breakfasts *offered* and breakfasts *served*.
- Among HUSSC elementary schools, only 9 percent met the SMI standard for calories for breakfasts *offered*. The proportion of schools that met this standard was almost triple for elementary schools overall, but was still low (24 percent). The disparity between HUSSC elementary schools and elementary schools nationwide in the proportion of schools meeting the SMI standard for calories was smaller for breakfasts *served* (17 versus 23 percent).
- For breakfasts *offered* and *served*, more than 85 percent of both HUSSC elementary schools and elementary schools overall met the SMI standard for total fat (no more than 30 percent of calories) and more than 70 percent met the SMI standard for saturated fat (less than 10 percent of calories).
- Only about one-quarter of HUSSC elementary schools and all elementary schools nationwide met the 2010 *Dietary Guidelines* recommendation for total fat (25 to 35 percent of calories) for the average breakfast *offered*. More schools in both groups met the 2010 *Dietary Guidelines* recommendation for total fat for the average breakfast *served*, indicating that students tended to select higher-fat breakfast items, which increased the mean percentage of calories from fat. More HUSSC elementary schools met the 2010 *Dietary Guidelines* recommendation for total fat in breakfasts *served* than elementary schools overall (46 versus 33 percent).

Characteristics of Meal Service Programs

- Compared to elementary schools overall, a larger share of HUSSC elementary schools used traditional food-based menu planning (63 versus 53 percent) and a smaller share used nutrient-based menu planning (20 versus 28 percent).
- Compared to all SFAs nationally, more of the SFAs in which HUSSC elementary schools were located reported purchasing foods through the Department of Defense's Fresh Fruit and Vegetable Program (61 percent of HUSSC SFAs versus 31 percent of all SFAs nationally) and State-level farm-to-school programs (39 versus 13 percent), both of which are designed to increase schools' access to fresh produce.
- Compared to SFAs overall, larger shares of SFA directors and menu planners in HUSSC SFAs had bachelor's degrees in a field related to foodservice management, nutrition-related credentials (licensed nutritionist or registered dietitian), master's degrees in nutrition, and School Nutrition Association certification for School Nutrition Specialists.

Characteristics of School Food and Physical Activity Environments

- Compared to elementary schools overall, foodservice staff in HUSSC elementary schools were generally more involved in nutrition promotion activities. For example, larger proportions of HUSSC elementary schools reported foodservice staff involvement in nutrition education activities in both the foodservice area and classrooms, as well as parent meetings and meetings about school wellness policies, than elementary schools overall.
- Compared to elementary schools overall, a larger share of HUSSC elementary schools required that students receive nutrition education as part of classroom instruction (77 versus 61 percent). HUSSC certification criteria require that nutrition education be incorporated into classroom instruction and that it be offered in at least half of the grades in the school.
- The majority of both HUSSC elementary schools and elementary schools overall reported that they regularly provide students with opportunities for physical activity (outside of PE classes) during school hours. However, the share of schools reporting this practice was larger for HUSSC elementary schools than for elementary schools overall (97 versus 86 percent). This is consistent with the fact that HUSSC certification criteria require that schools provide opportunities for physical activity outside of PE class.

B. Overview of Data Sources

1. Sample Design

The HUSSC substudy used a purposeful (non-random) sample of HUSSC schools. The number of schools participating in the initiative at the time SNDA-IV data were collected (SY 2009–2010) was relatively small and this group of schools was not nationally representative. Because the vast majority of schools that participated in HUSSC at that time were elementary schools, the sample for the HUSSC substudy was limited to elementary schools.

The sampling frame was a file provided by FNS, which included information for 397 public elementary schools certified as HUSSC schools for SY 2009–2010. This list of schools was

compared to the list of SFAs and schools included in the SNDA-IV sample.[3] To avoid sampling SFAs and schools that were already included in SNDA-IV, any schools that appeared on both lists (and their associated SFAs) were dropped from the HUSSC sample frame. In addition, schools that could not be linked to the Common Core of Data, which was used to obtain information about community type, enrollment, and grade span, were dropped. From the remaining list of 375 eligible HUSSC elementary schools, a purposeful sample of 36 HUSSC schools was selected, stratified by State and community type.[4] Among SFAs that had more than one HUSSC school, only one school was selected, based on community type, enrollment, and grade span. The resulting sample of HUSSC schools provided broad representation across FNS regions and variation across schools in community type, size (enrollment), and grade span. Findings from this purposeful sample are not formally representative of all elementary schools participating in HUSSC in SY 2009–2010. However, the fact that the sample of 36 schools represented almost 10 percent (9.7 percent) of the eligible population of HUSSC schools (a relatively large proportion of the population in sampling terms) lends face validity to the findings as a snapshot of HUSSC elementary schools in SY 2009–2010.

2. Sample Sizes and Data Sources

Thirty-one of the 36 sampled HUSSC schools were successfully recruited into the study (86.1 percent response rate). All of the data collected in the SNDA-IV study were collected from HUSSC schools using identical data collection instruments. The final sample of HUSSC schools includes four elementary schools from the main SNDA-IV sample that were certified HUSSC schools in SY 2009–2010 (according to the list of HUSSC schools provided by FNS).[5] Thus, the maximum sample for HUSSC SFAs and schools is 35. In some cases, respondents in HUSSC SFAs and schools did not complete an instrument. For this reason, final sample sizes range from 28 to 35, depending on the instrument.

The primary data source for information about the food and nutrient content of school meals is SNDA-IV menu surveys that were completed by school foodservice managers (FSMs) for one school week between January and June, 2010. Data on characteristics of the school foodservice program and the school food environment were collected through SNDA-IV surveys of FSMs, SFA directors, and principals.

Because of the small sample size of HUSSC schools in this substudy, the rules used in other chapters to flag potentially unreliable estimates in findings from the nutrient analysis have not been applied in this chapter. For this reason, some point estimates for all elementary schools reported as >97 or <3 in previous chapters are reported in this chapter as values between 97 and 100 and 0 and 3, respectively. See Chapter 1 for details on the rules used to flag estimates.

[3] This included SFAs in the main sample as well as alternates that could be recruited as replacements in the event of nonresponse.

[4] A sample of 38 HUSSC schools was initially selected. However, two of these schools were later determined to be ineligible; one was a private school and the other was located in an SFA that was included in the SNDA-IV sample.

[5] Because the protocols for recruitment and data collection were identical for SNDA-IV and the HUSSC substudy, it is appropriate to combine the two sets of schools for analysis.

Characteristics of the sample of HUSSC elementary schools differ from all elementary schools nationwide on several dimensions. Compared to all elementary schools nationwide, larger shares of schools in the HUSSC sample were located in rural areas (49 versus 25 percent) and areas with higher rates of child poverty (43 versus 32 percent) (Table 12.1). In addition, a disproportionately large share of schools in the HUSSC sample were located in the Southeast (49 versus 14 percent).[6] Differences in these characteristics could contribute to differences observed in this analysis between HUSSC elementary schools and all elementary schools nationwide.

Table 12.1. Characteristics of Elementary Schools in the HUSSC Substudy and Elementary Schools Nationwide

	Percentage of Schools	
Characteristic	HUSSC Elementary Schools	All Elementary Schools
School Size		
Small (less than 500 students)	65.7	61.6
Medium (500 to 999 students)	31.4	38.0
Large (1,000 or more students)	2.9	0.4
Urbanicity		
Urban	11.4	29.1
Suburban	40.0	46.4
Rural	48.6	24.5
District Child Poverty Rate		
Low (less than 30 percent)	57.1	67.7
Higher (30 percent or more)	42.9	32.3
FNS Region		
Northeast	5.7	11.9
Mid-Atlantic	5.7	9.0
Southeast	48.6	14.0
Midwest	8.6	18.3
Southwest	8.6	15.9
Mountain Plains	11.4	11.9
Western	11.4	19.0
Number of Schools	**35**	**318**

Source: School Nutrition Dietary Assessment Study-IV, school year 2009–2010. Tabulations prepared by Mathematica Policy Research. Estimates for all elementary schools are weighted to be representative of all public elementary schools offering the National School Lunch Program.

Notes: Data on school size (student enrollment) were reported by SFA directors or taken from the U.S. Department of Education's Common Core of Data, 2008–2009. Data on urbanicity are from the U.S. Department of Education's Common Core of Data, 2006–2007 (the latest data available when the SNDA-IV sampling frame was created). Data on child poverty rates are from the U.S. Census Bureau's Small Area Income and Poverty Estimates school district file.

HUSSC = HealthierUS School Challenge.

[6] The preponderance of HUSSC schools in the Southeast reflects the overall population of public elementary schools that participated in HUSSC in SY 2009–2010. Data provided by FNS indicate that at that time, 51.2 percent of all public elementary schools participating in HUSSC were located in the Southeast; most of these schools (60 percent) were located in Kentucky.

C. Calorie and Nutrient Content of NSLP Lunches *Offered* and *Served* in HUSSC Elementary Schools and All Elementary Schools Nationwide

1. Average Calorie and Nutrient Content of NSLP Lunches

The average NSLP lunch *offered* in HUSSC elementary schools in SY 2009–2010 was higher in calories and all SMI target nutrients (protein, vitamin A, vitamin C, calcium, and iron) than the average NSLP lunch *offered* in elementary schools overall (Table 12.2).[7] The magnitude of the differences ranged from 2 percent for calcium to 16 percent for vitamin C. The average lunch *offered* in HUSSC schools was also higher in cholesterol, sodium, and dietary fiber than the average lunch *offered* in elementary schools overall and was lower in total fat (31.0 percent of calories from fat versus 31.9 percent) and saturated fat (9.5 percent of calories from fat versus 10.0 percent). The average lunch *offered* in HUSSC elementary schools was consistent with the SMI standard for saturated fat (less than 10 percent of calories).

Table 12.2. Average Calorie and Nutrient Content of National School Lunch Program Lunches *Offered* and *Served* in Elementary Schools Participating in the HealthierUS School Challenge and All Elementary Schools Nationwide

	Lunches *Offered*		Lunches *Served*	
	HUSSC Elementary Schools	All Elementary Schools	HUSSC Elementary Schools	All Elementary Schools[a]
	Average Amount			
Calories	752	726	662	661
Nutrients Included in SMI Standards				
Protein (g)	32	30	29	28
Vitamin A (mcg RE)	485	453	347	351
Vitamin C (mg)	37	32	25	23
Calcium (mg)	541	529	482	481
Iron (mg)	4.6	4.4	4.2	4.2
Other Dietary Components				
Cholesterol (mg)	60	56	53	54
Sodium (mg)	1,444	1,395	1,303	1,324
Dietary fiber (g/1,000 calories)	11	10	10	9
	Average Percentage of Calories from:			
Total fat	31.0	31.9	30.3	31.5
Saturated fat	9.5	10.0	9.6	10.1
Number of Schools	**35**	**318**	**35**	**317**

Source: School Nutrition Dietary Assessment Study-IV, Menu Survey, school year 2009–2010. Tabulations prepared by Mathematica Policy Research. Estimates for all elementary schools are weighted to be representative of all public elementary schools offering the National School Lunch Program.

HUSSC = HealthierUS School Challenge; RE = Retinol equivalents

[a] One school in the all elementary schools sample was excluded from the analysis of lunches *served* because it did not provide the detailed information about student selections needed to complete the analysis.

[7] Tables presenting data for a more extensive set of nutrients as well as means expressed as a percentage of SMI standards and other recommendations are presented in Appendix M.

There were fewer differences between HUSSC schools and all elementary schools in the mean nutrient content of lunches *served*. Averages for calories, SMI target nutrients, and cholesterol were virtually identical. Like the average lunch *offered*, the average lunch *served* in HUSSC elementary schools was lower in total fat and saturated fat than the average lunch *served* in elementary schools overall. The average lunch *served* in HUSSC elementary schools was consistent with the SMI standard for saturated fat and came close to meeting the SMI standard for total fat (30.3 percent of calories from fat versus the standard of no more than 30 percent of calories).

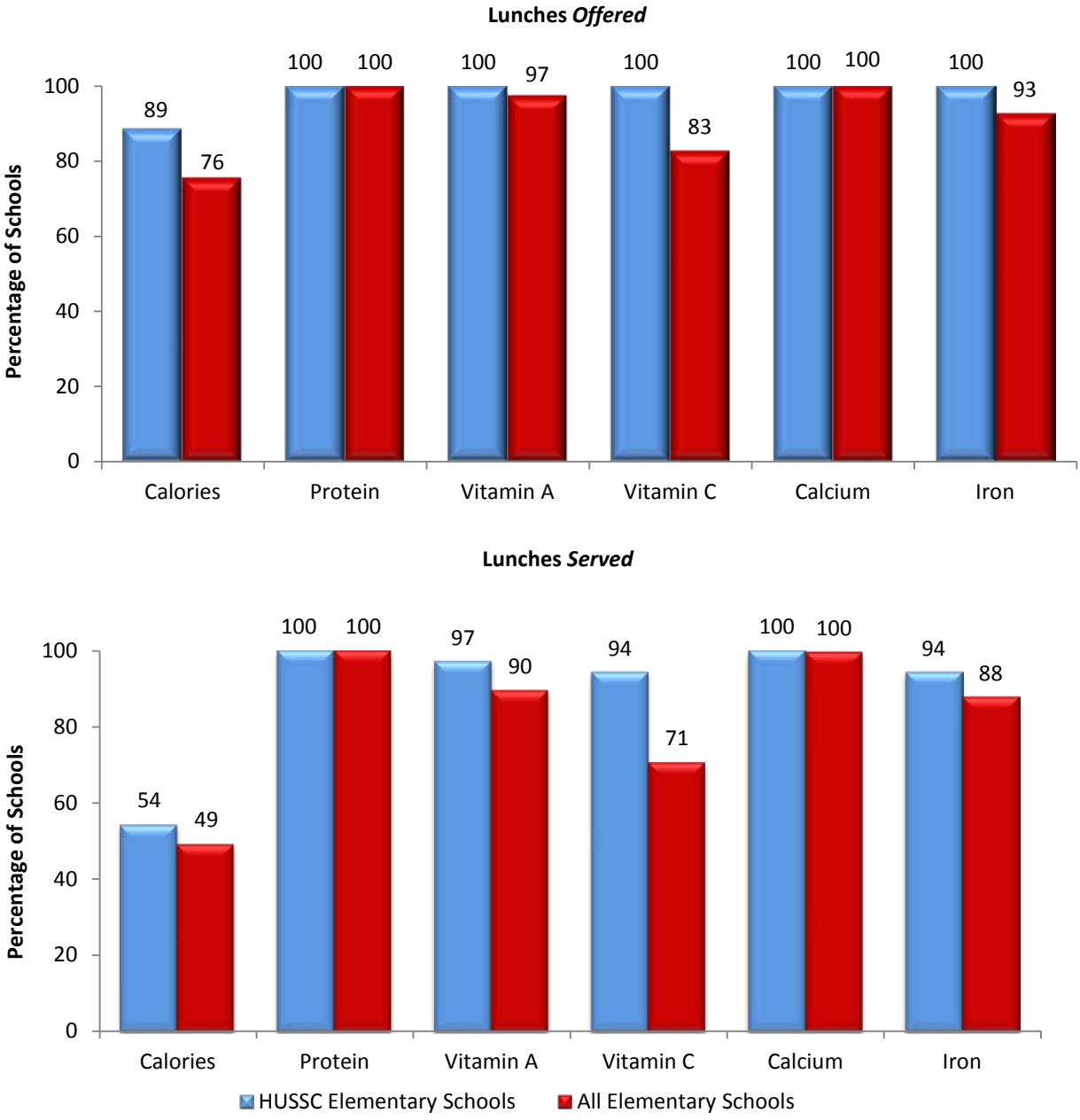
2. Percentage of Schools Meeting Standards in NSLP Lunches

a. Calories and Target Nutrients

On average, both HUSSC elementary schools and elementary schools overall met the SMI standards for protein and calcium for lunches *offered* and lunches *served* (Figure 12.1). For lunches *offered*, virtually all elementary schools met the SMI standard for vitamin A. For both lunches *offered* and lunches *served*, a larger share of HUSSC elementary schools met the SMI standards for calories, vitamin C, and iron. This was also true for vitamin A in lunches *served*.[8]

[8] SMI standards for minimum calories and target nutrients are customized for each school based on grade span (see Appendix D). HUSSC elementary schools had fewer schools that included grades 6 through 8, relative to elementary schools overall. To assess whether this difference in grade spans influenced differences in the percentage of schools that met SMI standards, we conducted a separate analysis that included, for the all-elementary-school sample, only schools with grade spans that were included in the HUSSC sample. Differences between the two analyses were small (the percentages of elementary schools that met SMI standards were 1 to 3 percentage points higher or lower than reported above) and the pattern of differences between HUSSC schools and elementary schools overall was the same.

Figure 12.1. Percentage of Elementary Schools Participating in the HealthierUS School Challenge and All Elementary Schools Nationwide *Offering* and *Serving* National School Lunch Program Lunches that, on Average, Satisfied SMI Standards for Minimum Calories and Target Nutrients



Source: School Nutrition Dietary Assessment Study-IV, Menu Survey, school year 2009–2010. Tabulations prepared by Mathematica Policy Research. Estimates for all elementary schools are weighted to be representative of all public elementary schools offering the National School Lunch Program.

Note: The SMI standards are one-third of the 1989 *Recommended Energy/Dietary Allowances*.

HUSSC = HealthierUS School Challenge; SMI = School Meals Initiative for Healthy Children.

b. Total Fat and Saturated Fat

For both lunches *offered* and lunches *served*, a larger share of HUSSC elementary schools met SMI and 2010 *Dietary Guidelines* standards for total fat and saturated fat, relative to elementary schools overall (Figure 12.2). Fewer than half of HUSSC elementary schools and elementary schools overall met the SMI standard for total fat (no more than 30 percent of calories). However the proportion of HUSSC elementary schools that met this standard was 23 percent larger than the proportion of elementary schools overall for lunches *offered* (43 versus 35 percent) and 18 percent larger for lunches *served* (46 versus 39 percent). Substantially more schools in both groups met the 2010 *Dietary Guidelines* standard for total fat (25 to 35 percent of calories). Again, the proportion of HUSSC elementary schools that met this standard was larger than the proportion of elementary schools overall. For lunches *offered*, the proportion of HUSSC elementary schools that met the 2010 *Dietary Guidelines* standard for total fat was 23 percent higher than elementary schools overall (86 versus 70 percent). The difference was smaller for lunches *served* (86 versus 77 percent).

The disparity between HUSSC elementary schools and elementary schools overall was greatest for saturated fat. Roughly three-quarters of HUSSC elementary schools met the SMI standard for saturated fat (less than 10 percent of calories) for lunches *offered* (74 percent) and lunches *served* (77 percent). In contrast, only about half of elementary schools overall met the SMI standard for saturated fat (50 percent for lunches *offered* and 53 percent for lunches *served*).

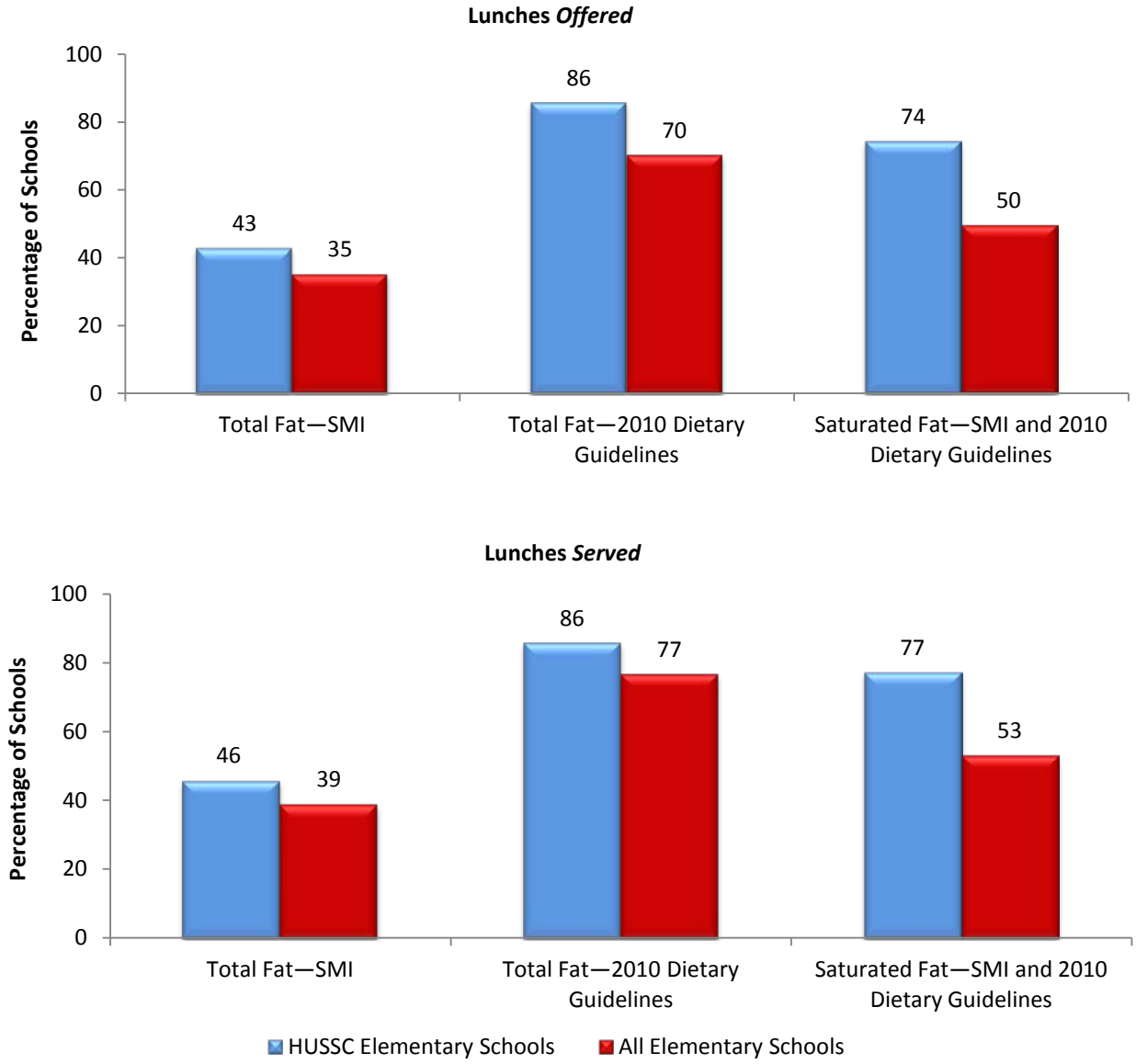
c. Cholesterol, Sodium, and Dietary Fiber

There were no meaningful differences between HUSSC elementary schools and elementary schools overall in the proportions of schools that *offered* and *served* lunches that were consistent with 2010 *Dietary Guidelines* recommendations for cholesterol, sodium, and dietary fiber (Appendix Tables M.3 and M.4). Virtually all schools in both groups *offered* and *served* lunches that provided less than 100 mg of cholesterol, on average, which is equivalent to one-third of the daily limit recommended in the 2010 *Dietary Guidelines*. At the same time, essentially no schools in either group *offered* or *served* NSLP lunches that were consistent with the 2010 *Dietary Guidelines* recommendation for sodium (less than 767 mg or less than one-third of the recommended daily limit of 2,300 mg). As shown in Table 12.2, the mean sodium content of lunches *offered* and *served* in both groups of schools exceeded this benchmark by more than 50 percent.

Finally, very few elementary schools in either group *offered* NSLP lunches that were consistent with the 2010 *Dietary Guidelines* recommendation for dietary fiber (14 g per 1,000 calories) and no HUSSC elementary schools met this benchmark for the average lunch *served* (Appendix Table M.4). The mean concentration of dietary fiber in lunches *offered* and *served* in HUSSC elementary schools was slightly higher than elementary schools overall (10 to 11 g per 1,000 calories versus 9 to 10 g) (Table 12.2). However, the mean fiber content of lunches *offered* and *served* in both groups of elementary schools was less than the 14 g/1,000 calories recommended in the 2010 *Dietary Guidelines.*[9]

[9] As in the main SNDA-IV analysis, we looked at the proportions of schools that met a number of different combinations of SMI standards and 2010 *Dietary Guidelines* recommendations. Results are summarized in Appendix Tables M.3 and M.4. HUSSC elementary schools did a better job of satisfying the combination standards than did elementary schools overall.

Figure 12.2. Percentage of Elementary Schools Participating in the HealthierUS School Challenge and All Elementary Schools Nationwide *Offering* and *Serving* National School Lunch Program Lunches that, on Average, Satisfied SMI and 2010 *Dietary Guidelines* Standards for Total Fat and Saturated Fat



Source: School Nutrition Dietary Assessment Study-IV, Menu Survey, school year 2009–2010. Tabulations prepared by Mathematica Policy Research. Estimates for all elementary schools are weighted to be representative of all public elementary schools offering the National School Lunch Program.

Notes: The SMI standard for total fat is no more than 30 percent of calories.

The 2010 *Dietary Guidelines* recommendation for total fat is 25 to 35 percent of calories.

Both the SMI standard and the 2010 *Dietary Guidelines* recommendation for saturated fat is less than 10 percent of calories.

HUSSC = HealthierUS School Challenge; SMI = School Meals Initiative for Healthy Children.

d. Combinations of Standards

As in the main SNDA-IV analysis, we looked at the proportions of schools that met all of the SMI standards as well as a number of different combinations of SMI standards and 2010 *Dietary Guidelines* recommendations. Results are summarized in Table 12.3. Readers may find it useful to refer to Chapter 5, Table 5.1 for information about the specific requirements included in each combination.

As Table 12.3 illustrates, HUSSC elementary schools did a better job than elementary schools nationwide of *offering* average NSLP lunches that met all of the SMI standards. They also did a better job of satisfying all of the different combinations of nutrition standards examined in this analysis. The same pattern was also observed for the average NSLP lunch *served*. However, the magnitude of differences between HUSSC elementary schools and all elementary schools was smaller for the average NSLP lunch *served*, which reflects students' food selection patterns.

Table 12.3. Percentage of Elementary Schools Participating in the HealthierUS School Challenge and All Elementary Schools Nationwide *Offering* and *Serving* National School Lunch Program Lunches that, on Average, Met Different Combinations of Nutrition Standards

	Lunches *Offered*		Lunches *Served*	
Combinations of Standards	HUSSC Elementary Schools	All Elementary Schools	HUSSC Elementary Schools	All Elementary Schools
All SMI Standards	40.0	16.5	14.3	8.7
SMI Standards for all Target Nutrients[a]	100.0	76.1	88.6	58.5
SMI Standards for all Target Nutrients[a] **and** SMI Standard for Saturated Fat	74.3	38.8	68.6	29.9
SMI Standards for all Target Nutrients[a] **and** SMI Standard for Saturated Fat **and** 2010 *Dietary Guidelines* Standard for Total Fat	65.7	31.4	57.1	24.3
Updated Standards for all SMI Target Nutrients[b] **and** SMI Standard for Saturated Fat **and** 2010 *Dietary Guidelines* Standard for Total Fat	62.9	32.9	40.0	23.2
Number of Schools	**35**	**318**	**35**	**317**

Source: School Nutrition Dietary Assessment Study-IV, Menu Survey, school year 2009–2010. Tabulations prepared by Mathematica Policy Research. Estimates for all elementary schools are weighted to be representative of all public elementary schools offering the National School Lunch Program.

Note: One non-HUSSC elementary school was excluded from the analysis of the average NSLP lunch *served* because the respondent did not provide the necessary data on the number of portions served in reimbursable meals.

[a]Includes protein, vitamin A, vitamin C, calcium and iron.
[b]Updated to reflect Recommended Dietary Allowances specified in the *Dietary Reference Intakes* (Institute of Medicine 2006 and 2010).

HUSSC = HealthierUS School Challenge; SMI = School Meals Initiative for Healthy Children.

The average NSLP lunch *offered* in 40 percent of HUSSC elementary schools met all of the SMI standards (Table 12.3). This was true for only 17 percent of elementary schools overall. In addition, the average NSLP lunch *offered* in all of the HUSSC elementary schools met SMI standards for all target nutrients (protein, vitamin A, vitamin C, calcium, and iron). This compares to 76 percent of all elementary schools nationwide. When the SMI standard for saturated fat (which is the same as the 2010 *Dietary Guidelines* recommendation) is added to the SMI standards for target nutrients, the percentage of schools meeting all of the standards falls for both groups of schools. However, the drop-off is less precipitous for HUSSC elementary schools than for all elementary schools (from 100 to 74 percent for HUSSC schools [a 26 percent decline] compared to a drop from 76 to 39 percent for elementary schools overall [a 49 percent decline]). Results were only slightly different for the two remaining combinations, one of which adds the 2010 *Dietary Guidelines* recommendation for total fat and the other adds updated RDA standards (that is, those specified in the DRIs) for all SMI target nutrients as well as the 2010 *Dietary Guidelines* recommendation for total fat. For each of these combinations, the relative decrease in the proportion of schools meeting all the standards was smaller for HUSSC elementary schools than for all elementary schools.

D. Potential Contribution of Reimbursable Lunches *Offered* and *Served* in HUSSC Elementary Schools and All Elementary Schools Nationwide to Recommended USDA Food Patterns

USDA's food guidance system translates the *Dietary Guidelines for Americans* into dietary patterns that describe the types and amounts of foods included in a diet that is consistent with *Dietary Guidelines* recommendations.[10] A healthful dietary pattern is one that stays within recommended calorie limits and focuses on nutrient-dense foods, such as vegetables, fruits, whole grains, fat-free or low-fat dairy products, and lean protein sources prepared without added solid fats, sugars, starches, and sodium (USDA and HHS 2010). To fully assess the nutritional quality of school meals, it is important to examine their potential contribution to healthful dietary patterns. Previous rounds of the SNDA study have not addressed this question, so findings from this assessment contribute to the knowledge base on the nutritional quality of school meals.

The USDA Food Patterns identify average daily amounts of foods, in nutrient-dense forms, to eat from five major food groups and their subgroups. The Food Patterns are based on the 2010 *Dietary Guidelines for Americans* and are designed to meet nutrient needs without exceeding calorie requirements. The five major food groups in the USDA Food Patterns are:

1. Vegetables
2. Fruits
3. Grains
4. Dairy
5. Protein Foods

[10] See www.Choosemyplate.gov.

Foods in the food groups are assumed to be in their most nutrient-dense form—that is, their fat-free or lowest-fat forms—with no added sugars (Britten et al. 2006). The vegetable and fruit groups include all fresh, frozen, canned, dried, and juiced vegetables and fruits. The grains group includes all enriched or whole grains and products made from grains, such as enriched or whole grain breads, cereals, crackers, and rice. The dairy group includes all fluid milk products (including lactose-free, lactose-reduced, and calcium-fortified soy milks), yogurts, dairy desserts, and cheeses. Protein foods include meat, poultry, seafood, eggs, processed soy products, and nuts and seeds. Legumes can also be part of the protein foods group.

Because vegetables vary considerably in nutrient content, the USDA Food Patterns divide vegetables into five subgroups and provides recommendations on the amounts in each subgroup to eat *over the course of a week*. The vegetable subgroups and some examples of commonly eaten vegetables in each group include the following:

- Dark Green Vegetables—broccoli, spinach, romaine lettuce, collard and turnip greens
- Red and Orange Vegetables—carrots, tomatoes, red peppers, sweet potato
- Legumes—black beans, pinto beans, black-eyed peas (dry), lentils, chickpeas
- Starchy Vegetables—corn, potatoes, green peas, plantains, black-eyed peas (not dry)
- Other Vegetables—iceberg lettuce, cucumbers, green beans, celery, avocado, onions

Finally, the Food Patterns specify a target for whole grains; an allowance for oils (such as olive, canola, and corn oils, and oils found in fish, nuts and seeds); and a suggested maximum limit for calories from solid fats and added sugars (calories from SoFAS, also referred to as empty calories). The limit on calories from SoFAS reflects the balance of calories remaining in a person's calorie requirement after accounting for the calories in the specified amounts of nutrient-dense foods recommended in the food groups and the allowance for oils.

USDA Food Pattern recommendations for individuals depend on calorie requirements, which are determined by age, gender, and activity level. To assess the potential contribution of meals *offered* and *served* in elementary schools to Food Pattern recommendations, we used the Food Pattern for 1,800 calories. This is the calorie level used by the IOM in developing recommendations for revised nutrition standards for school meals (IOM 2010). USDA Food Pattern recommendations for a 1,800 calorie diet are summarized in Table 12.4.

For the most part, the USDA Food Pattern food groups are consistent with the food groups (meal components) used in planning NSLP and SBP meals. However, there is one important exception that is important to bear in mind in interpreting findings. In the NSLP and SBP, milk is considered a separate meal component (by law, fluid milk must be offered in NSLP and SBP meals). Other dairy foods, such as cheese and yogurt are counted as meat alternates. This difference in how milk and cheese are counted in school meal menus and USDA Food Patterns contributes to higher average amounts of dairy and lower average amounts of protein foods than might be expected by NSLP and SBP menu planners.

Table 12.4. USDA Food Pattern Used to Assess Potential Contributions of Elementary School Meals to Recommended Dietary Patterns

	Elementary Schools
Calories	1,800
Vegetables (cups)	2.5
Dark green (cups/week)	1.5
Red and orange cups/week)	5.5
Legumes (cups/week)	1.5
Starchy (cups/week)	5
Other (cups/week)	4
Fruits (cups)	1.5
Grains (oz)	6
Whole grains (oz)	3
Dairy (cups)	3
Protein Foods (oz)	5
Oils (tsp)	5
Calories From Solid Fats and Added Sugars (maximum)	160

Source: U.S. Department of Agriculture and U.S. Department of Health and Human Services 2010, Appendix 7, and www.Choosemyplate.gov.

Note: Unless otherwise noted, recommendations are average daily amounts. Recommended food group amounts are reported in cup or ounce (oz) equivalents. See U.S. Department of Agriculture and U.S. Department of Health and Human Services 2010, Appendix 7, or www.Choosemyplate.gov for information about quantity equivalents for each food group.

cup = cup equivalents; oz = ounce equivalents; tsp = teaspoon.

1. Average Food Group Content of NSLP Lunches

Table 12.5 presents data on the mean amounts of food groups included in NSLP lunches *offered* and *served* to students in HUSSC elementary schools and elementary schools nationwide during a typical school week in SY 2009–2010**.** Overall, NSLP lunches *offered* in HUSSC schools included over three-quarters of a cup of both fruit and vegetables, 2.6 ounce equivalents of grain, 1.36 cups of dairy, 1.6 ounce equivalents of protein, 2.1 teaspoons of oil, and 188 calories from SoFAS. Of the average 2.6 ounce equivalents of grain *offered* in NSLP lunches at HUSSC schools, 0.5 ounce equivalents (19 percent) was whole grain. USDA Food Pattern recommends that half of all grains be whole grains (see Table 12.4).

Table 12.5. Average Amount of Food Groups in National School Lunch Program Lunches *Offered* and *Served* in Elementary Schools Participating in the HealthierUS School Challenge and All Elementary Schools Nationwide

	Lunches *Offered*		Lunches *Served*	
	HUSSC Elementary Schools	All Elementary Schools	HUSSC Elementary Schools	All Elementary Schools
Fruits (cups)	0.82	0.75	0.52	0.48
Vegetables (cups)	0.77	0.72	0.54	0.58
Dark green (cups/week)	0.23	0.19	0.16	0.11
Red and orange (cups/week)	1.18	1.06	0.80	0.88
Legumes (cups/week)[a]	0.17	0.15	0.10	0.12
Starchy (cups/week)	0.71	0.92	0.84	0.99
Other (cups/week)	1.54	1.21	0.71	0.76
Grains (oz)	2.55	2.36	2.33	2.24
Whole grains	0.50	0.28	0.38	0.25
Protein Foods (oz)[b]	1.59	1.49	1.47	1.34
Dairy (cups)	1.36	1.38	1.26	1.30
Oils (tsp)	2.07	2.01	1.53	1.60
Calories from Solid Fats and Added Sugars	188	184	181	184
Calories from solid fats	109	113	104	111
Calories from added sugars	79	71	77	73
Percentage of SoFAS calories from solid fats	58.4	61.5	57.9	60.4
Percentage of SoFAS calories from added sugars	41.6	38.5	42.1	39.6
Number of Schools	**35**	**318**	**35**	**317**

Source: School Nutrition Dietary Assessment Study-IV, Menu Survey, school year 2009–2010. Tabulations prepared by Mathematica Policy Research. Estimates for all elementary schools are weighted to be representative of all public elementary schools offering the National School Lunch Program.

Notes: Food group amounts are reported in cup or ounce (oz) equivalents. See U.S. Department of Agriculture and U.S. Department of Health and Human Services 2010, Appendix 7, or www.Choosemyplate.gov for information about quantity equivalents for each food group.

One school in the all elementary schools sample was excluded from the analysis of lunches *served* because it did not provide the detailed information about student selections needed to complete the analysis.

Averages for vegetable subgroups include only schools that provided menu information for five days.

cup = cup equivalents; HUSSC = HealthierUS School Challenge; oz = ounce equivalents; SoFAS = solid fats and added sugars; tsp = teaspoon.

[a] Includes legumes offered as a vegetable or included in combination entrees.

[b] Includes legumes offered as a meat alternate.

On average, lunches *offered* in HUSSC elementary schools provided larger amounts of almost all food groups than lunches *offered* in elementary schools overall, but the magnitude of the differences was generally small. The most noteworthy differences involved vegetable subgroups and whole grains. Lunches *offered* in HUSSC elementary schools provided, on average, 27 percent more cup equivalents of vegetables included in the other vegetables group (1.54 cups versus 1.21), 79 percent more ounce equivalents of whole grains (0.50 versus 0.28), and 23 percent fewer cup equivalents of starchy vegetables (0.71 cups versus 0.92).[11]

Lunches *served* in HUSSC elementary schools and all elementary schools overall provided smaller amounts of most food groups than lunches *offered*. This is consistent with findings presented elsewhere in this report and reflects the impact of students' food selections. The difference between lunches *offered* and lunches *served* was smallest for calories from SoFAS. This suggests that students in both groups of elementary schools tended to select items that included solid fat and/or added sugars.

2. Average Food Group Content of NSLP Lunches Relative to Recommendations

We used the USDA Food Pattern recommendation for 1,800 calories as the reference standard for assessing the average food group content of NSLP lunches in elementary schools (see Table 12.4). To provide additional context for NSLP lunches, we used the one-third benchmark used in the SMI nutrition standards for NSLP lunches. If the SMI standard were applied to the USDA Food Pattern recommendations, the expectation would be that NSLP lunches would provide one-third of recommended amounts of food groups and oils and no more than one-third of the maximum limit for SoFAS calories.

For the most part, the USDA Food Pattern food groups are consistent with the food groups (meal components) used in planning NSLP and SBP meals. However, there in one exception that is important to bear in mind in interpreting findings. In the NSLP and SBP, milk is considered a separate meal component (by law, fluid milk must be offered in NSLP and SBP meals). Other dairy foods, such as cheese and yogurt are counted as meat alternates. This difference in how milk and cheese are counted in school meal menus and USDA Food Patterns contributes to higher average amounts of dairy and lower average amounts of protein foods than might be expected by NSLP and SBP menu planners.

Figure 12.3 shows the mean food group content of NSLP lunches *offered* and *served* in HUSSC elementary schools and all elementary schools nationwide, expressed as percentages of USDA Food Pattern recommendations. Key findings, which also draw on data presented in Table 12.5, are summarized below:

- The average NSLP lunch *offered* in both groups of elementary schools provided one-third or more of recommended amounts of fruit, total grains, dairy and oils.[12] Average

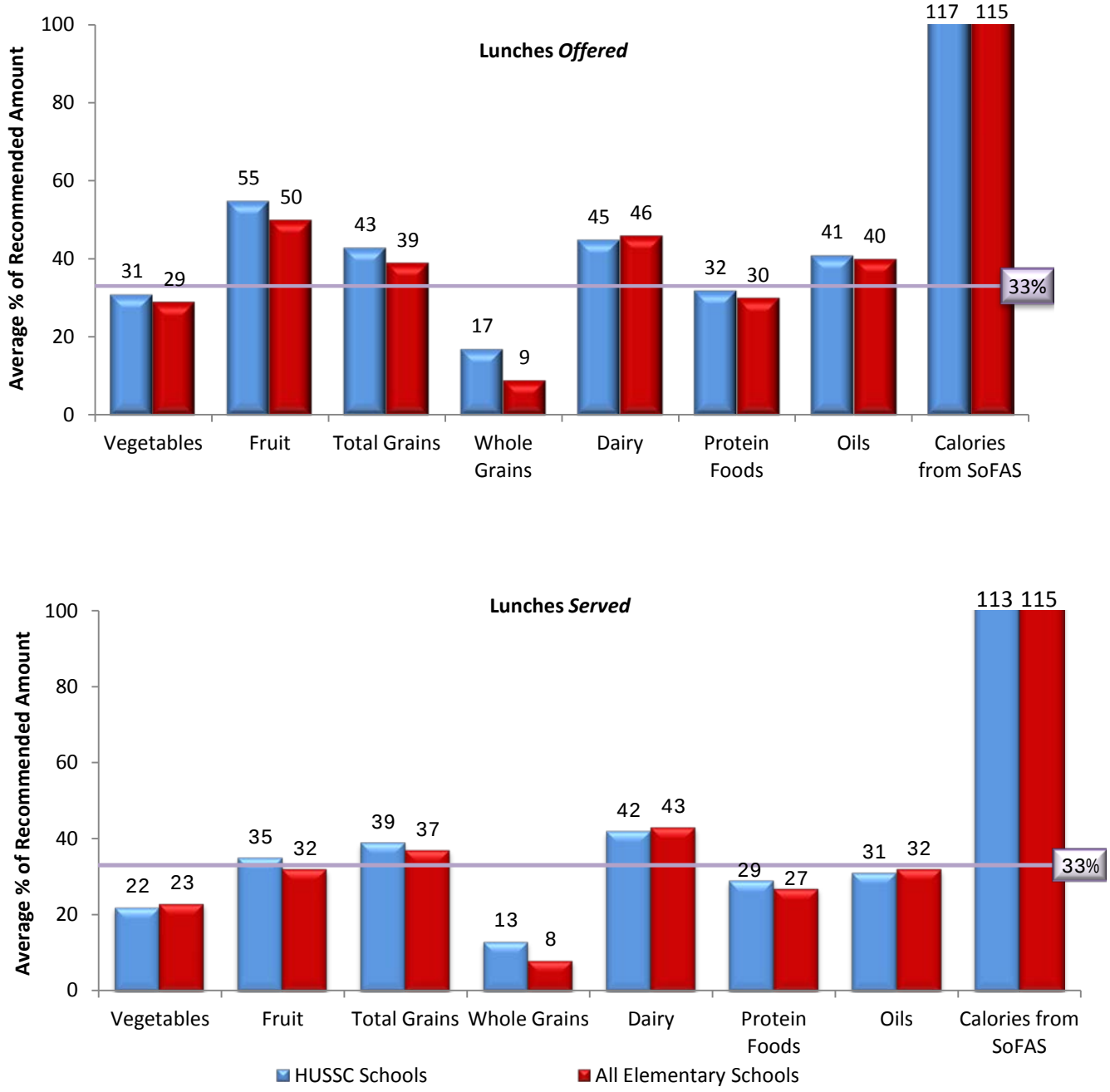
[11] Other vegetables include those not counted in the dark green, red and orange, legumes, and starchy vegetable groups. Common examples include cucumbers, mushrooms, zucchini, and onions. Starchy vegetables include white potatoes, corn, and peas.

[12] The fact that NSLP lunches offered and served did not provide at least one-third of the recommended amounts of protein foods may surprise some readers. Chapter 8 provides a potential explanation for this finding.

amounts of all of these food groups were consistently lower in the average NSLP lunches *served*. On average, lunches *served* provided one-third or more of recommended amounts of total grains and dairy, but generally fell below this benchmark for fruit (not HUSSC schools), protein, and oils.

- Lunches *offered* and *served* in both groups of elementary schools were low in whole grains relative to recommendations, providing less than 20 percent of the recommended amount in lunches *served* and 25 percent or less of the recommended amount in lunches *offered* (Appendix Tables H.1, H.4, M.7 and M.8). However, HUSSC elementary schools provided about 1.5 to 2 times more whole grains than elementary schools overall for lunches *served* and *offered*, respectively.
- NSLP lunches *offered* and *served* in HUSSC elementary schools and all elementary schools nationwide were high in calories from SoFAS. Lunches *offered* and *served* provided 13 to 56 percent more calories from SoFAS than is recommended for consumption over the entire day (Appendix Tables H.1, H.4, M.7 and M.8).
- In both groups of elementary schools, the majority of SoFAS calories came from solid fats (see Table 12.5). This was true for lunches *offered* and lunches *served* (58 to 62 percent of SoFAS calories). Chapter 9 provides information about the leading sources of SoFAS calories in NSLP lunches.

Figure 12.3. Average Amounts of Food Groups in National School Lunch Program Lunches *Offered* and *Served* in Elementary Schools Participating in the HealthierUS School Challenge and All Elementary Schools Nationwide, Relative to the Recommended USDA Food Pattern for an 1,800 Calorie Diet



Source: School Nutrition Dietary Assessment Study-IV, Menu Survey, school year 2009–2010.

Note: Use of the 1,800 calorie daily food plan as a reference standard is based on the calorie levels used by the Institute of Medicine (2010) in developing recommendations for revised nutrition standards for school meals.

The 33 percent benchmark is used for illustrative purposes only and is based on the School Meals Initiative for Healthy Children standard that NSLP meals should provide one-third of students' daily calorie and nutrient needs.

HUSSC = HealthierUS School Challenge; SoFAS = solid fats and added sugars.

Vegetable Subgroups

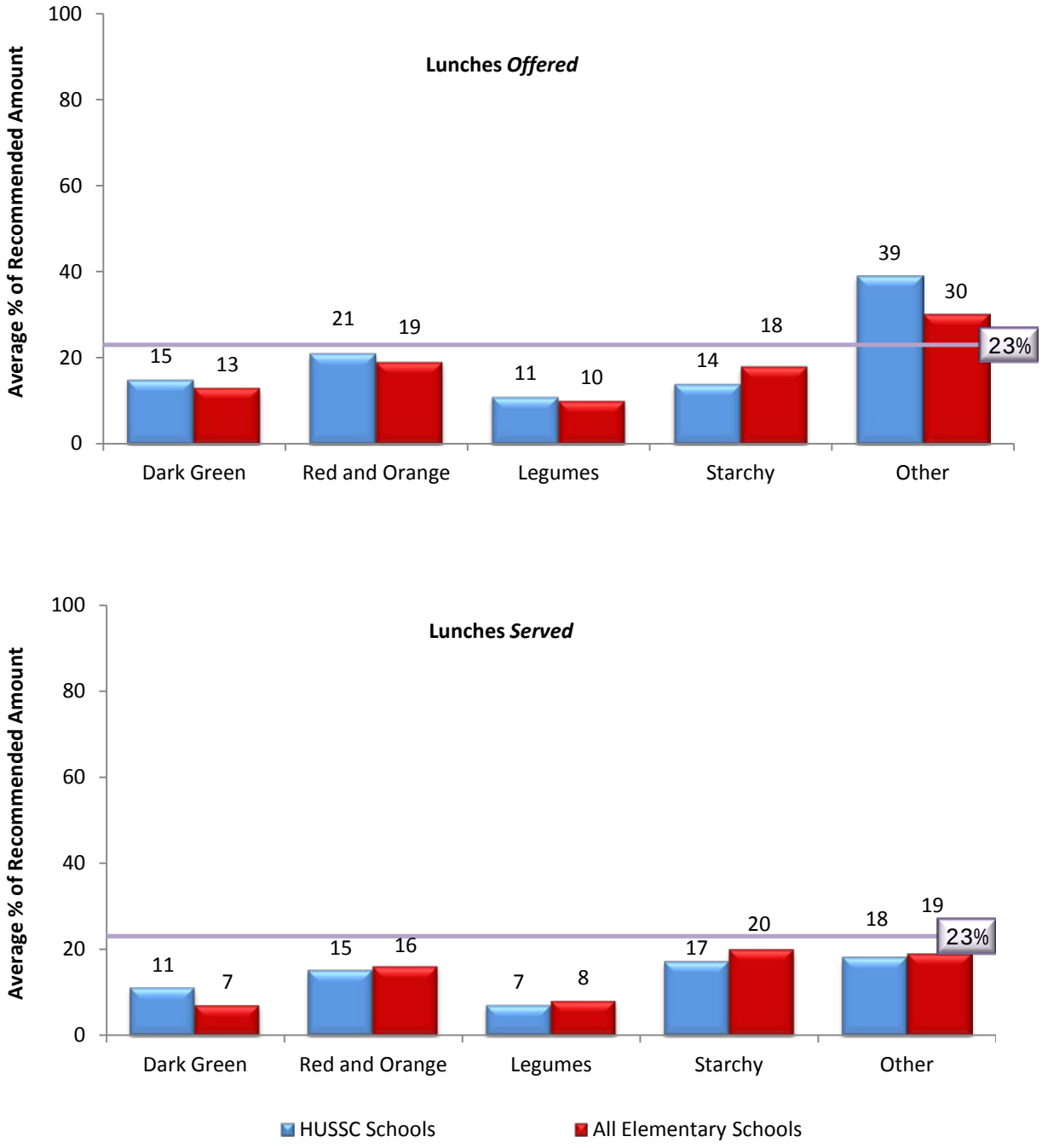
USDA Food Pattern recommendations for vegetable subgroups are defined on a weekly basis. To assess the potential contribution of NSLP lunches to these recommendations, we limited the analysis to schools that provided menu information for five days (a full school week). Further, to provide appropriate context, we used a benchmark of 23 percent rather than the 33 percent benchmark used in assessing daily recommendations. Assuming that consumption of vegetable subgroups was distributed evenly across the week, a five-day period would cover 71 percent of the recommendation. The assumption (for illustrative purposes only) that NSLP lunches are expected to provide one-third of recommended amounts translates into a benchmark of 23 percent (71 percent * 0.33). Thus, the 23 percent benchmark represents the percentage of recommended amounts of vegetable subgroups that NSLP lunches would contribute if these meals provided a fair share of weekly requirements.

Figure 12.4 summarizes data for vegetable subgroups in NSLP lunches *offered* and *served* in HUSSC elementary schools and elementary schools overall. Key findings include:

- The average NSLP lunch *offered* and *served* in elementary schools in both groups was low in dark green vegetables and legumes, providing 7 to 15 percent of recommended amounts.
- The average NSLP lunch *offered* in both groups of schools provided roughly 20 percent of recommended amounts of red and orange vegetables and the average lunch *served* provided about 15 percent of recommended amounts.[13]
- On average, NSLP lunches *offered* in HUSSC elementary schools provided a slightly smaller proportion of the recommended amount of starchy vegetables, relative to elementary schools overall (14 versus 18 percent), and a slightly larger proportion of the recommended amount of vegetables in the other vegetables subgroup (39 versus 30 percent). In NSLP lunches *served*, the difference in starchy vegetables persisted but was smaller in magnitude (17 versus 20 percent); however, the difference for the other vegetables subgroup essentially disappeared.
- For the remaining vegetable subgroups (dark green, red and orange, and legumes), differences between HUSSC elementary schools and all elementary schools were generally negligible (1 to 2 percentage points). Dark green vegetables in the average lunch *served* were an exception. In HUSSC elementary schools, the average NSLP lunch *served* provided 11 percent of the recommended amount of dark green vegetables, compared to 7 percent in the average NSLP lunch *served* in all elementary schools nationwide.

[13] Amounts of red and orange vegetables may be slightly underestimated because the MPED does not have a separate category for red vegetables. To estimate amounts of red and orange vegetables, we combined the "orange vegetables" and "tomatoes" variables in the MPED, with the individual code for red peppers. The MPED variables capture all orange vegetables and tomatoes that were coded as distinct menu items or found in mixed dishes. The individual red pepper code captures red peppers that were coded as distinct menu items, but not those that were part of a mixed dish. No other red vegetables were reported as distinct items in the menus.

Figure 12.4. Average Amounts of Vegetable Subgroups in National School Lunch Program Lunches *Offered* and *Served* in Elementary Schools Participating in the HealthierUS School Challenge and All Elementary Schools Nationwide, Relative to the Recommended USDA Food Pattern for an 1,800 Calorie Diet



Source: School Nutrition Dietary Assessment Study-IV, Menu Survey, school year 2009–2010.

Note: Use of the 1,800 calorie daily food plan as a reference standard is based on the calorie levels used by the Institute of Medicine (2010) in developing recommendations for revised nutrition standards for school meals.

The 23 percent benchmark is used for illustrative purposes only and is based on the assumption that 71 percent of the weekly recommendations should be met in a five-day period, and the SMI standard that NSLP meals should provide one-third of students' daily calorie and nutrient needs (0.71 * 0.33).

E. Foods Offered in NSLP Lunches in HUSSC Elementary Schools and All Elementary Schools Nationwide

To be eligible for Federal reimbursement, NSLP meals must meet a defined set of nutrition standards. In SY 2009–2010, schools could choose from five different systems to plan their menus, and each menu-planning system had different food-based requirements (see Chapter 1 and Appendix A). HUSSC-certified schools had to meet additional food-based requirements, including requirements related to the variety and types of fruits, vegetables, and whole grains offered (see box on page 12-2).

1. Choice and Variety of Foods Offered in NSLP Lunches

To assess the level of choice and variety offered in NSLP lunches, all items reported in daily menus were assigned to one of six meal component groups: milk; fruits, vegetables, and 100 percent juice; meat/meat alternates; combination entrees; grains/breads; and desserts. These meal component groups are based on those used in the food-based menu-planning systems. Although schools using nutrient-based menu planning are not required to offer specific meal components, the meals offered in these schools are generally consistent with the basic structure of food-based meal requirements.

Almost all daily lunch menus (98 to 99 percent) offered in both HUSSC elementary schools and elementary schools overall included more than one type of milk (Table 12.6). Relative to elementary schools overall, a larger share of daily lunch menus in HUSSC schools offered 3 or 4 types of milk (78 versus 67 percent). For both groups of schools, however, the median number of milks offered per week was 3 and, typically, the same milk choices were offered every day of the week.

HUSSC elementary schools offered students more fruit, vegetable, and juice choices at lunch, as well as a wider variety of different types of fruit, vegetable, and juices, than elementary schools overall. For elementary schools overall, one in three daily lunch menus included no more than the minimum two servings of fruit, vegetables, or juice required in food-based menu planning. In contrast, fewer than one in five daily lunch menus in HUSSC schools (16 percent) were this limited. Almost half of the daily lunch menus in HUSSC schools (46 percent) included 5 or more fruit, vegetable, and juice options, compared to 32 percent for elementary school lunch menus overall. Daily lunch menus in HUSSC schools offered more variety in fruit, vegetable, and juice choices than elementary schools overall, both on a daily (median of 4 different items per day versus 3) and weekly basis (median of 16 different items per week versus 11). These findings are consistent with the fact that HUSSC certification criteria require that at least one different fruit and one different vegetable be offered each day of the week (USDA, FNS February 2010).

Table 12.6. Amount of Choice and Variety in National School Lunch Program Lunches in Elementary Schools Participating in the HealthierUS School Challenge and All Elementary Schools Nationwide

	Percentage of Daily Menus	
	HUSSC Elementary Schools	All Elementary Schools
Number of Types of Milk Offered per Day		
No more than 1	1	2
2	20	30
3	46	40
4 or more	32	27
Median number of different items per day	3	2
Median number of different items per week[a]	3	3
Number of Fruits/Vegetables/100% Juices Offered per Day[b]		
No more than 2	16	35
3 to 4	38	34
5 to 7	28	20
8 or more	18	12
Median number of different items per day	4	3
Median number of different items per week[a]	16	11
Number of Entrees Offered per Day[c]		
1	10	26
2 to 3	45	46
4 to 5	32	20
6 or more	14	8
Median number of different items per day	3	2
Median number of different items per week[a]	11	9
Number of Separate Grains/Breads Offered per Day[d]		
None	42	58
1	45	33
2 or more	14	9
Median number of different items per day	1	0
Median number of different items per week[a]	2	1
Number of Desserts Offered per Day[e]		
None	79	81
1	18	17
2 or more	2	1
Median number of different items per day	0	0
Median number of different items per week[a]	1	0
Number of Daily Menus	**168**	**1,529**
Number of Schools	**35**	**318**

Source: School Nutrition Dietary Assessment Study-IV, Menu Survey, school year 2009–2010. Tabulations prepared by Mathematica Policy Research. Estimates for all elementary schools are weighted to be representative of all public elementary schools offering the National School Lunch Program.

HUSSC = HealthierUS School Challenge

[a] Includes only schools that provided menu information for five days.
[b] Fruits and vegetables not included in combination entrees.
[c] Includes meats and meat alternates as well as combination entrees.
[d] Grains and breads not included in combination entrees or served solely with a specific menu item.
[e] Under enhanced food-based menu planning, grain-based desserts may count toward the grains/breads requirement.

HUSSC elementary schools also offered students more entree choices at lunch. Only 10 percent of daily lunch menus in HUSSC schools were limited to one entree choice, compared to 26 percent of daily lunch menus in elementary schools overall. At the opposite end of the spectrum, almost half (46 percent) of daily lunch menus in HUSSC schools included 4 or more entree choices, compared to 28 percent of elementary school lunch menus overall. Daily lunch menus in HUSSC schools included a median of 3 entree choices per day and 11 different entrees per week. Comparable statistics for elementary school lunch menus overall were 2 entree choices per day and 9 different entrees per week.

More HUSSC schools offered at least one choice of a separate grain or bread at lunch than elementary schools overall (59 versus 42 percent). Both HUSSC schools and elementary schools overall offered desserts infrequently. About eight in ten of the daily lunch menus in each group did not include desserts.

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

Overall, the availability of self-serve bars did not differ vary greatly between HUSSC elementary schools and elementary schools overall (Appendix Table M.10). Less than one quarter of elementary schools in each group offered any type of self-serve bar on a daily or weekly basis. Relatively few elementary schools offered self-serve entree salad bars. However, the proportion of schools that did offer entree salad bars was notably higher (about three times) for HUSSC schools than for elementary schools overall (9 versus 3 percent for entree salad bars offered at least once per week and 6 versus 2 percent for entree salad bars offered every day).

3. Types and Frequency of Foods Offered in NSLP Lunches

To obtain more in-depth information about the specific types of foods offered in NSLP lunches in HUSSC elementary schools and elementary schools overall, a more extensive food-grouping system was used. All foods reported in daily menus were categorized into one of nine major food groups—milk, vegetables, fruits, combination entrees, meat/meat alternates, grains/breads, desserts, accompaniments (condiments and toppings), and other menu items (for example, snack items, juice drinks).[14] The major food groups were then divided into minor food groups to further classify foods by characteristics related to nutrition, including ingredients and preparation methods. Each menu item was assigned major and minor food groups to determine the proportion of daily menus in which the most commonly offered foods were available to students. (See Appendix C for details; Table C.1 provides the food group system used for the study). Table 12.7 shows foods or food groups that were offered in at least five percent of menus in either HUSSC elementary schools or elementary schools overall.

[14] Juice drinks are sweetened, fruit-flavored drinks that may or may not contain real fruit juice.

Table 12.7. Foods Offered in National School Lunch Program Lunches in Elementary Schools Participating in the HealthierUS School Challenge and All Elementary Schools Nationwide

	Percentage of Daily Lunch Menus	
	HUSSC Elementary Schools	All Elementary Schools
Milk[a]	99	99
Unflavored	99	99
1% fat	90	74
Skim or nonfat	54	47
2% fat	9	28
Flavored	96	94
1% fat	63	63
Skim or nonfat	45	39
Vegetables	96	95
Vegetables, cooked	73	74
Starchy vegetables	43	45
French fries/similar potato products[b]	19	18
Corn	11	15
White potatoes	14	12
Green peas	9	5
Other vegetables	29	24
String beans	15	14
Mixtures and blends	10	8
Legumes[c]	17	9
Dark green vegetables	11	8
Broccoli	7	7
Leafy greens (turnip greens, collard greens, kale)	5	0
Orange vegetables	9	6
Sweet potatoes	7	2
Vegetables, raw	63	57
Other vegetables	51	46
Side salads	27	23
Side salad bars	17	14
Mixtures	8	5
Celery	3	5
Orange vegetables (carrots)	19	20
Fruits and 100% Fruit Juices	92	86
Any fruit[d]	92	83
Canned fruit[e]	58	57
Peaches	17	18
Applesauce	18	18
Unsweetened	11	14
Sweetened	7	4
Fruit cocktail	20	15
Pears	12	13
Pineapple	13	11
Mandarin oranges	8	5

Table 12.7 *(continued)*

	Percentage of Daily Lunch Menus	
	HUSSC Elementary Schools	All Elementary Schools
Fresh fruit	82	56
Apple	42	33
Orange	35	24
Banana	17	14
Pear	8	6
Grapes	7	2
100% Fruit juice	18	26
Non-citrus juice (mainly apple)	9	20
Citrus juice (mainly orange)	14	19
Frozen fruit[f]	12	4
Strawberries	6	2
Blueberries	5	1
Combination Entrees	97	92
Peanut butter sandwiches	36	30
Sandwiches with plain meat or poultry	35	25
Entree salads (chef's salads)	36	25
Pizza	18	20
Pizza without meat	12	14
Pizza with meat	13	11
Mixtures with meat, grain and/or vegetables (spaghetti, lasagna, macaroni and cheese)	20	14
Mexican-style entrees (burritos, tacos, nachos)	16	17
Hot dog, corn dog, similar sausage sandwiches	13	12
Hamburgers, similar beef/pork sandwiches	14	11
Sandwiches with cheese only	9	10
Sandwiches with breaded/fried meat, poultry, or fish	5	10
Bag lunches and pre-plated meals	14	9
Cheeseburgers, similar beef/pork sandwiches	8	9
Pizza pocket, pizza sticks, calzone (with or without meat)	7	5
Self-serve salad bars and other food bars	8	4
Separate Grains/Breads[g]	76	59
Breads, rolls, bagels, and other plain breads	43	27
Crackers and pretzels	30	21
Rice	7	9
Pasta	4	5
Corn/tortilla chips	6	4
Biscuits, cornbread	11	4
Meats/Meat Alternates[h]	48	42
Breaded/fried chicken nuggets, patties, similar products	21	15
Yogurt	11	10
Low fat or fat-free	10	8
Meat (plain or breaded/fried beef, pork)	10	8
Other meat alternates[i]	8	7
Breaded/fried fish	6	3

Table 12.7 *(continued)*

	Percentage of Daily Lunch Menus	
	HUSSC Elementary Schools	All Elementary Schools
Other Menu Items	32	30
Cookies, cakes, brownies	11	11
Dessert items that contain fruit or juice (fruit juice bars, fruited gelatin)	11	7
Dairy-based desserts (ice cream, pudding)	7	4
Number of Daily Menus	**168**	**1,529**
Number of Schools	**35**	**318**

Source: School Nutrition Dietary Assessment Study-IV, Menu Survey, school year 2009–2010. Tabulations prepared by Mathematica Policy Research. Estimates for all elementary schools are weighted to be representative of all public elementary schools offering the National School Lunch Program.

Notes: Table is limited to food groups offered in at least five percent of menus in HUSSC schools and/or all elementary schools. The table does not account for individual food items offered as part of food bars, bag lunches, or pre-plated meals.

HUSSC = HealthierUS School Challenge.

[a] Includes fresh, canned, frozen, and dried fruit.

[b] One elementary school in each group offered a pre-plated meal every day. The meal included fluid milk, but the milk was not coded separately.

[c] Includes both oven-baked and deep-fried products.

[d] Legumes were coded as vegetables or meat alternates, depending on how they were used in the menu. Most legumes were offered as vegetables.

[e] With the exception of applesauce, the majority of canned fruit was sweetened.

[f] Includes frozen strawberries, blueberries, and peaches.

[g] Grains and breads not included in combination entrees or served solely with a specific menu item.

[h] Meats and meat alternates not included in combination entrees.

[i] Includes cheese, peanut butter, nuts, eggs, hummus, legumes, and meat substitutes.

a. Milk

All schools offered milk (either separately or as part of pre-plated meal) daily at lunch. In both HUSSC schools and elementary schools overall, the most common type of milk was unflavored 1% milk and the least common was unflavored 2% milk (Table 12.7). However, the proportion of daily lunch menus that included unflavored 1% milk was notably larger for HUSSC elementary schools than for elementary schools overall (90 versus 74 percent) and the proportion that included unflavored 2% milk was notably lower (9 versus 28 percent). Daily lunch menus in HUSSC schools were also more likely to include skim milk, compared to lunch menus in elementary schools overall (54 versus 47 percent for unflavored skim milk and 45 versus 39 percent for flavored skim milk). This pattern of findings likely reflects the fact that one of the criteria for HUSSC certification is that schools offer only 1% and fat-free milks (USDA, FNS February 2010).

b. Vegetables

Virtually all lunch menus in both HUSSC elementary schools and elementary schools overall offered vegetables (Table 12.7). In both groups of schools, cooked vegetables were offered in about three out of four lunch menus. Raw vegetables were more commonly offered in HUSSC schools than elementary schools overall (63 percent of daily lunch menus versus 57 percent). Differences between HUSSC schools and elementary schools overall in the types of vegetables offered were relatively modest but were consistent with HUSSC criteria that require that dark green or orange vegetables be offered three times per week and legumes be offered at least once per week (USDA, FNS February 2010). For example, relative to elementary schools overall, daily lunch menus in HUSSC schools more often included legumes (17 versus 9 percent) as well as cooked dark green vegetables (11 versus 8 percent) and cooked orange vegetables (9 versus 6 percent), including leafy greens such as turnip greens, collard greens, and kale (5 versus 0 percent) and sweet potatoes (7 versus 2 percent).

c. Fruit and 100% Juice

Daily lunch menus in HUSSC schools included fruit more often than daily lunch menus in elementary schools overall (92 percent of daily lunch menus versus 83 percent), and included 100% juice less often (18 versus 26 percent) (Table 12.7). HUSSC schools also offered fresh fruit at lunch more frequently than elementary schools overall. More than 8 out of 10 lunch menus in HUSSC schools (82 percent) included fresh fruit, compared to just over half (56 percent) of lunch menus in elementary schools overall. All of these findings are consistent with HUSSC criteria that fresh fruit be offered at least once per week (two days per week for the highest level HUSSC awards) and that 100% juice be offered only once per week (USDA, FNS February 2010).

d. Combination Entrees and Separate Meat/Meat Alternates

The types of entrees included in HUSSC lunch menus were generally comparable to elementary schools overall (Table 12.7). The three most commonly offered entrees were the same for both groups of schools (peanut butter sandwiches, sandwiches with plain meat or poultry, and entree salads). All three of these were offered more frequently in HUSSC schools than elementary schools overall and the differences were most notable for sandwiches with plain meat or poultry (35 percent of daily lunch menus versus 25 percent) and entree salads (36 versus 25 percent). (As noted previously, HUSSC elementary schools offered more entree choices per day and more variety in entrees across the week than elementary schools overall). Relative to elementary schools overall, HUSSC lunch menus also included more mixtures with meat, grain, and/or vegetables (20 versus 14 percent), more bag lunches and pre-plated meals (14 versus 9 percent), and fewer sandwiches with breaded/fried meat, poultry, or fish (5 versus 10 percent). Daily lunch menus in HUSSC schools also included separate meat/meat alternates more often than lunch menus in elementary schools overall (48 versus 42 percent). The most common item in this group was breaded/fried chicken nuggets, patties, and similar products (21 versus 15 percent).[15]

[15] Items in this group varied in nutrient content. Most were baked rather than deep-fried and some schools purchased specially formulated products that were lower in fat.

e. Separate Bread/Grains

Daily lunch menus in HUSSC elementary schools more frequently included a separate bread/grain than daily lunch menus in elementary schools overall (Table 12.7). More than three-quarters of daily lunch menus in HUSSC elementary schools (76 percent) offered students the option to include a separate bread/grain serving, compared to 59 percent of daily lunch menus in elementary schools overall.

4. Availability of Fresh Produce in NSLP Lunches

As noted in the preceding section, HUSSC schools offered raw vegetables and fresh fruit in NSLP lunches more frequently than elementary schools overall (Table 12.7). A supplementary analysis took a broader look at the use of fresh produce in NSLP lunches and assessed the number days where fresh fruit or fresh vegetables (served in either cooked or raw forms) were used. The analysis was limited to schools that provided menu data for five days. Results showed that 82 percent of HUSSC schools offered some type of fresh produce every day at lunch, compared to 62 percent of elementary schools overall (Appendix Table M.11). The share of HUSSC schools that offered cooked fresh vegetables, raw vegetables, and fresh fruit 3 or more days per week was consistently larger than the share of elementary schools overall.

F. Calorie and Nutrient Content of SBP Breakfasts *Offered* and *Served* in HUSSC Elementary Schools and All Elementary Schools Nationwide

We note that at the time this report was prepared, HUSSC did not include specific requirements for SBP meals (see Appendix L). It is possible that menu planning, food purchasing and food preparation practices used in preparing NSLP lunches may affect the planning and preparation of SBP breakfasts. Information about how SBP breakfasts *offered* and *served* in HUSSC elementary schools compare to those *offered* and *served* in all elementary schools nationwide can provide HUSSC administrators and other stakeholders with useful insights about this aspect of school meal operations in HUSSC elementary schools.

1. Average Calorie and Nutrient Content of SBP Breakfasts

The average SBP breakfasts *offered* and *served* in HUSSC elementary schools in SY 2009–2010 were lower in calories and most target nutrients (protein, vitamin A, vitamin C, calcium, and iron) than the average SBP breakfasts *offered* and *served* in elementary schools overall (Table 12.8).[16] There was no difference in the protein content of the average breakfasts *served* in the two groups of elementary schools. For other nutrients, the magnitude of the differences in average breakfasts *offered* and *served* was generally small and ranged from 2 percent for vitamin A and calcium in breakfasts *served* to 11 to 12 percent for iron in breakfasts *served* and *offered*, respectively. The average breakfasts *offered* and *served* in HUSSC elementary schools were also lower in cholesterol, sodium, and dietary fiber than the average breakfasts *offered* and *served* in elementary schools overall. The total fat and saturated fat content of the average breakfasts *offered* and *served* in both HUSSC elementary schools and elementary schools overall were consistent with SMI standards (no more than 30 percent of calories and less than 10 percent of calories, respectively).

[16] Tables presenting data for a more extensive set of nutrients as well as means expressed as a percentage of SMI standards and other recommendations are presented in Appendix M.

Table 12.8. Average Calorie and Nutrient Content of School Breakfast Program Breakfasts *Offered* and *Served* in Elementary Schools Participating in the HealthierUS School Challenge and All Elementary Schools Nationwide

	Breakfasts *Offered*		Breakfasts *Served*	
	HUSSC Elementary Schools	All Elementary Schools	HUSSC Elementary Schools	All Elementary Schools
	Average Amount			
Calories	431	458	419	434
Nutrients Included in SMI Standards				
Protein (g)	15	16	15	15
Vitamin A (mcg RE)	264	278	241	245
Vitamin C (mg)	29	32	26	28
Calcium (mg)	414	428	373	382
Iron (mg)	4.4	5.0	4.0	4.5
Other Dietary Components				
Cholesterol (mg)	33	40	38	44
Sodium (mg)	524	549	562	569
Dietary fiber (g/1,000 calories)	6	7	6	6
	Average Percentage of Calories from:			
Total fat	21.5	22.2	24.1	23.8
Saturated fat	7.7	8.2	8.5	8.6
Number of Schools	**35**	**282**	**35**	**282**

Source: School Nutrition Dietary Assessment Study-IV, Menu Survey, school year 2009–2010. Tabulations prepared by Mathematica Policy Research. Estimates for all elementary schools are weighted to be representative of all public elementary schools offering the National School Lunch Program.

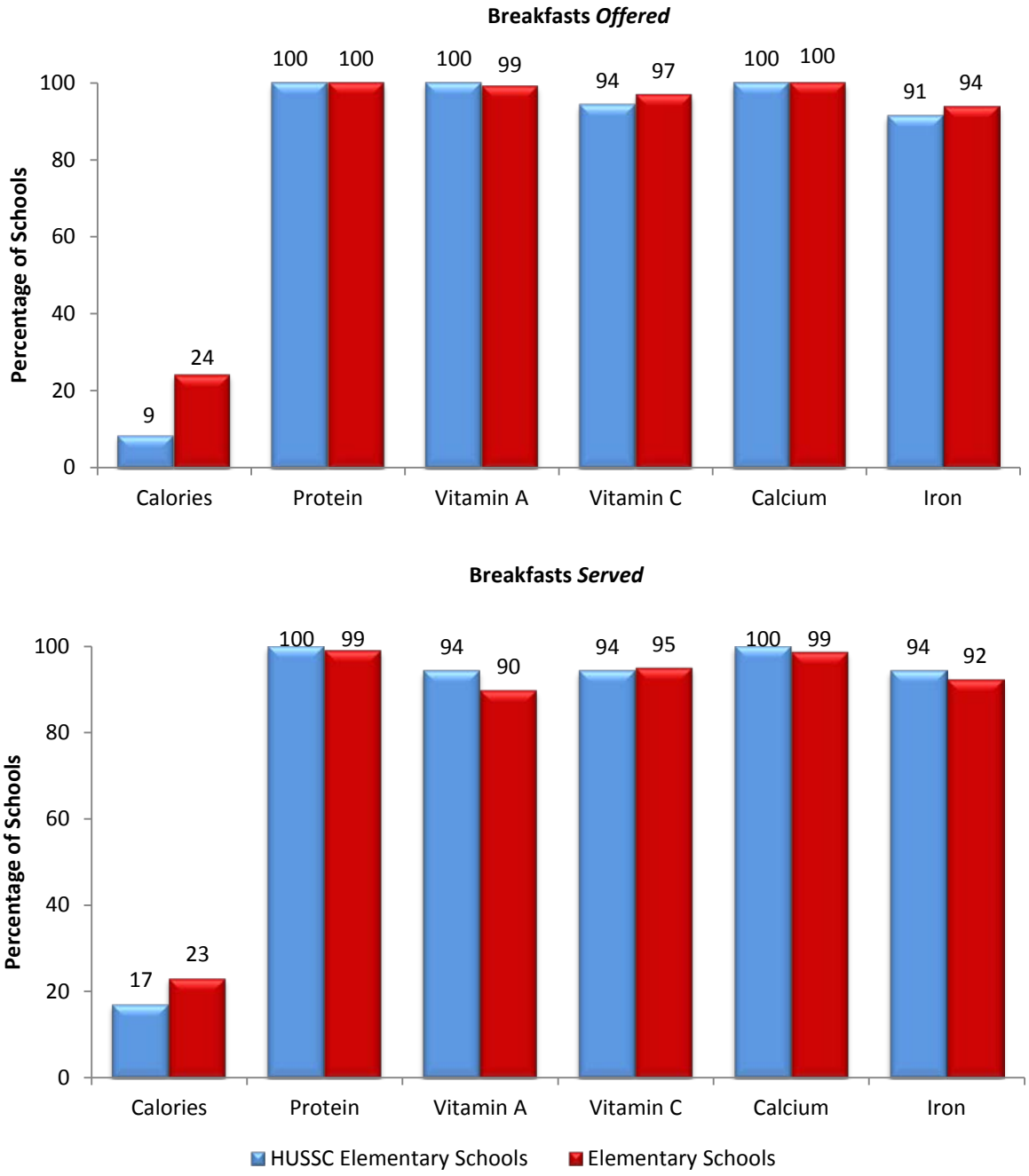
HUSSC = HealthierUS School Challenge; RE = Retinol equivalents.

2. Percentage of Schools Meeting Standards in SBP Breakfasts

a. Calories and Target Nutrients

More than 90 percent of HUSSC elementary schools and elementary schools overall *offered* and *served* breakfasts that, on average, met the SMI standards for individual target nutrients (Figure 12.5). As noted in the main SNDA-IV analysis of SBP breakfasts, findings for calories were very different. Among HUSSC elementary schools, only 9 percent of schools *offered* SBP breakfasts that, on average, met the SMI standard for calories. The proportion of all elementary schools that met this standard was more than double, but was still quite low (24 percent). The disparity between HUSSC elementary schools and elementary schools overall in the proportion of schools meeting the SMI standard for calories was smaller for breakfasts *served* (17 versus 23 percent). This suggests that students in some HUSSC elementary schools tended to select higher calorie breakfast options more frequently than lower calorie options.

Figure 12.5. Percentage of Elementary Schools Participating in the HealthierUS School Challenge and All Elementary Schools Nationwide *Offering* and *Serving* School Breakfast Program Breakfasts that, on Average, Satisfied SMI Standards for Minimum Calories and Target Nutrients



Source: School Nutrition Dietary Assessment Study-IV, Menu Survey, school year 2009–2010. Tabulations prepared by Mathematica Policy Research. Estimates for all elementary schools are weighted to be representative of all public elementary schools offering the National School Lunch Program.

Note: The SMI standards are one-quarter of the 1989 *Recommended Energy/Dietary Allowance*s.

HUSSC = HealthierUS School Challenge; SMI = School Meals Initiative for Healthy Children.

b. Total Fat and Saturated Fat

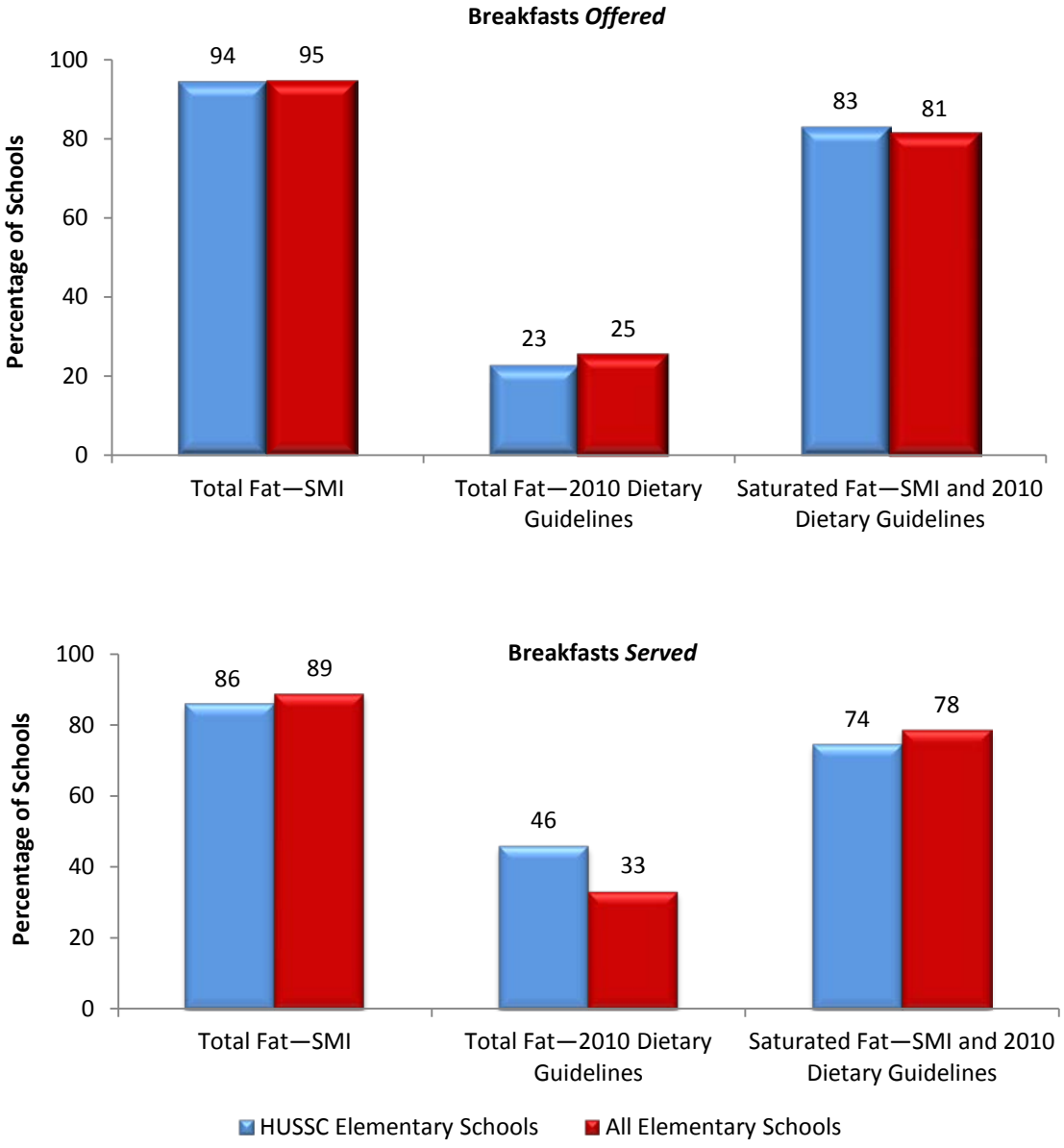
For both breakfasts *offered* and breakfasts *served*, the majority of both HUSSC elementary schools and elementary schools overall met SMI standards for total fat and saturated fat (Figure 12.6). Differences between the two groups of schools were small and were not in a consistent direction. The proportions of schools meeting SMI standards for total fat and saturated fat were consistently lower for breakfasts *served* than for breakfasts *offered*. The decrease was most substantial for HUSSC schools and the standard for saturated fat. Because estimates of the nutrient content of breakfasts *served* incorporate information on students' food choices, this pattern suggests that students tended to select foods/beverages that were higher in total fat and saturated fat than other options.

Only about one-quarter of HUSSC elementary schools and elementary schools overall met the 2010 *Dietary Guidelines* recommendation for total fat (25 to 35 percent of calories) for the average breakfast *offered*. This is consistent with the fact that the mean percentage of calories from fat in breakfasts *offered* in both groups of schools was less than the lower bound of the recommended range (Table 12.8). More schools in both groups met the 2010 *Dietary Guidelines* recommendation for total fat for the average breakfast *served*, indicating that students tended to select higher-fat breakfast items, which increased the mean percentage of calories from fat. The share of HUSSC elementary schools that met the 2010 *Dietary Guidelines* recommendation for total fat in breakfasts *served* was greater than the share of elementary schools overall (46 versus 33 percent).

c. Cholesterol, Sodium, and Dietary Fiber

There were no meaningful differences between HUSSC elementary schools and elementary schools overall in the proportions of schools that *offered* and *served* breakfasts that were consistent with 2010 *Dietary Guidelines* recommendations for cholesterol, sodium, and dietary fiber (Appendix Tables M.14 and M.15). More than 90 percent of schools in both groups *offered* and *served* breakfasts that provided less than 75 mg of cholesterol, on average, which is equivalent to one-quarter of the daily limit recommended in the 2010 *Dietary Guidelines*. About 7 of 10 schools in both groups *offered* SBP breakfasts that were consistent with the 2010 *Dietary Guidelines* recommendation for sodium (less than 575 mg or less than one-quarter of the recommended daily limit of 2,300 mg), and about half of schools in both groups *served* SBP breakfasts that were consistent with this benchmark (Appendix Tables M.14 and M.15). Finally, no schools in either group *offered* or *served* SBP breakfasts that were consistent with the 2010 *Dietary Guidelines* recommendation for dietary fiber (14 g per 1,000 calories). The mean concentration of dietary fiber in breakfasts *offered* and *served* in both groups of schools (6 to 7 g per 1,000 calories; Table 12.8) was 50 percent or less than the amount recommended in the 2010 *Dietary Guidelines*.

Figure 12.6. Percentage of Elementary Schools Participating in the HealthierUS School Challenge and All Elementary Schools Nationwide *Offering* and *Serving* School Breakfast Program Breakfasts that, on Average, Satisfied SMI and 2010 *Dietary Guidelines* for Total Fat and Saturated Fat



Source: School Nutrition Dietary Assessment Study-IV, Menu Survey, school year 2009–2010. Tabulations prepared by Mathematica Policy Research. Estimates for all elementary schools are weighted to be representative of all public elementary schools offering the National School Lunch Program.

Notes: The SMI standard for total fat is no more than 30 percent of calories.

The 2010 *Dietary Guidelines* recommendation for total fat is 25–35 percent of calories.

Both the SMI standard and the 2010 *Dietary Guidelines* recommendation for saturated fat is less than 10 percent of calories.

HUSSC = HealthierUS School Challenge; SMI = School Meals Initiative for Healthy Children.

d. Combinations of Standards

As in the main SNDA-IV analysis, we looked at the proportions of schools that met all of the SMI standards as well as a number of different combinations of SMI standards and 2010 *Dietary Guidelines* recommendations. Results are summarized in Table 12.9. Readers may find it useful to refer to Chapter 7, Table 7.1 for information about the specific requirements included in each combination.

As Table 12.9 illustrates, relatively few schools in either group *offered* or *served* average SBP breakfasts that met all of the SMI standards. For the average SBP breakfast *offered*, fewer HUSSC elementary schools met all of the SMI standards than elementary schools overall (6 versus 19 percent). However, this difference evened out in the average SBP breakfasts *served*, which reflects students' food selections (14 versus 15 percent). As shown in Figure 12.5, the SMI standard that posed the greatest challenge for both HUSSC elementary schools and all elementary schools nationwide was the standard for minimum calories. The proportions of schools that met the SMI standards for all target nutrients (with the standard for calories removed from the combination) were substantially higher—more than 8 out of 10 schools in both groups *offered* and *served* breakfasts that met all the SMI standards for target nutrients.

Table 12.9. Percentage of Elementary Schools Participating in the HealthierUS School Challenge and All Elementary Schools Nationwide *Offering* and *Serving* School Breakfast Program Breakfasts that, on Average, Met Different Combinations of Nutrition Standards

	Breakfasts *Offered*		Breakfasts *Served*	
Combinations of Standards	HUSSC Elementary Schools	All Elementary Schools	HUSSC Elementary Schools	All Elementary Schools
All SMI Standards	5.7	19.0	14.3	14.6
SMI Standards for all Target Nutrients[a]	85.7	90.6	88.6	81.6
SMI Standards for all Target Nutrients[a] **and** SMI Standard for Saturated Fat	74.3	75.3	68.6	65.7
SMI Standards for all Target Nutrients[a] **and** SMI Standard for Saturated Fat **and** 2010 *Dietary Guidelines* Standard for Total Fat	11.4	12.7	20.0	11.9
Updated Standards for all SMI Target Nutrients[b] **and** SMI Standard for Saturated Fat **and** 2010 *Dietary Guidelines* Standard for Total Fat	5.7	9.0	8.6	6.5
Number of Schools	**35**	**282**	**35**	**282**

Source: School Nutrition Dietary Assessment Study-IV, Menu Survey, school year 2009–2010. Tabulations prepared by Mathematica Policy Research. Estimates for all elementary schools are weighted to be representative of all public elementary schools offering the National School Lunch Program.

[a]Includes protein, vitamin A, vitamin C, calcium and iron.
[b]Updated to reflect Recommended Dietary Allowances specified in the *Dietary Reference Intakes* (Institute of Medicine 2006 and 2010).

HUSSC = HealthierUS School Challenge; SMI = School Meals Initiative for Healthy Children.

When the SMI standard for saturated fat (which is the same as the 2010 *Dietary Guidelines* recommendation) is added to the SMI standards for all target nutrients, the percentage of schools meeting all of the standards falls for both groups of schools. However, a more dramatic decline in the proportion of schools meeting all the standards occurs when the combination is expanded to include the 2010 *Dietary Guidelines* recommendation for total fat (Table 12.9). This is true for both average breakfasts *offered* and *served*. This pattern is consistent with the previously discussed finding that relatively few schools met the 2010 *Dietary Guidelines* recommendation for total fat. Finally, when the combination is updated to include current RDAs from the DRIs, the proportions of schools meeting all of the standards drops even further.

G. Potential Contribution of Reimbursable Breakfasts *Offered* and *Served* in HUSSC Elementary Schools and All Elementary Schools Nationwide to Recommended USDA Food Patterns

1. Average Food Group Content of SBP Breakfasts

Table 12.10 presents data on the mean amounts of USDA Food Pattern food groups included in SBP breakfasts *offered* and *served* to students during a typical school week during SY 2009–2010 in HUSSC elementary schools and elementary schools overall**.** In both groups of schools, SBP breakfasts *offered* more than one-half cup of fruit, more than 1.5 ounce equivalents of grain, about 0.3 ounce equivalents of whole grain, and 1.1 cups of dairy. Breakfasts *offered* in HUSSC elementary schools provided roughly 15 percent fewer ounce equivalents of protein foods (0.27 versus 0.32) and fewer teaspoons of oil (0.22 versus 0.26) than breakfasts *offered* in elementary schools overall, and about 10 percent fewer calories from SoFAS (132 versus 146).

Breakfasts *served* in HUSSC elementary schools provided smaller amounts of fruit, dairy, and oils than breakfasts *offered*, and larger amounts of grains, protein foods, and calories from SoFAS. With the exception of calories from SoFAS, the same general patterns were noted for elementary schools overall; however, the magnitude of the differences between breakfasts *offered* and *served* were generally smaller.

2. Average Food Group Content of SBP Breakfasts Relative to Recommendations

We used the recommended USDA Food Pattern for 1,800 calories as the reference standard for assessing the average food group content of SBP breakfasts *offered* and *served* in elementary schools (see Table 12.4). To provide additional context for SBP breakfasts, we used the one-quarter benchmark used in the SMI nutrition standards for SBP breakfasts. If the SMI standard were applied to the USDA Food Pattern recommendations, the expectation would be that SBP breakfasts would provide one-quarter of recommended amounts of food groups and oils and no more than one-third of the maximum limit for SoFAS calories.

Table 12.10. Average Amounts of Food Groups in School Breakfast Program Breakfasts *Offered* and *Served* in Elementary Schools Participating in the HealthierUS School Challenge and All Elementary Schools Nationwide

	Breakfasts *Offered*		Breakfasts *Served*	
	HUSSC Elementary Schools	All Elementary Schools	HUSSC Elementary Schools	All Elementary Schools
Fruits (cups)	0.56	0.59	0.48	0.50
Vegetables (cups)	0.01	0.01	0.00	0.01
Dark green (cups/week)	0.00	0.00	0.00	0.00
Red and orange (cups/week)	0.02	0.02	0.02	0.02
Legumes (cups/week)[a]	0.00	0.00	0.00	0.00
Starchy (cups/week)	0.00	0.02	0.00	0.04
Other (cups/week)	0.00	0.01	0.00	0.01
Grains (oz)	1.55	1.59	1.63	1.60
Whole grains	0.34	0.33	0.27	0.28
Protein Foods (oz)[b]	0.27	0.32	0.33	0.35
Dairy (cups)	1.11	1.11	0.98	0.99
Oils (tsp)	0.22	0.26	0.21	0.23
Calories from Solid Fats and Added Sugars	132	146	136	144
Calories from solid fats	67	73	74	76
Calories from added sugars	66	74	62	69
Percentage of SoFAS calories from solid fats	50.6	49.6	54.7	52.4
Percentage of SoFAS calories from added sugars	49.4	50.4	45.3	47.6
Number of Schools	**35**	**282**	**35**	**282**

Source: School Nutrition Dietary Assessment Study-IV, Menu Survey, school year 2009–2010. Tabulations prepared by Mathematica Policy Research. Estimates for all elementary schools are weighted to be representative of all public elementary schools offering the National School Lunch Program.

Notes: Recommended food group amounts are reported in cup or ounce (oz) equivalents. See U.S. Department of Agriculture and U.S. Department of Health and Human Services 2010, Appendix 7, or www.Choosemyplate.gov for information about quantity equivalents for each food group.

Averages for vegetable subgroups include only schools that provided menu information for five days.

Calories from solid fats and added sugars may not sum to total calories from solid fats and added sugars because of rounding.

cup = cup equivalents; HUSSC = HealthierUS School Challenge; oz = ounce equivalents; SoFAS = solid fats and added sugars; tsp = teaspoon.

[a] Includes legumes offered as a vegetable or included in combination entrees.

[b] Includes legumes offered as a meat alternate.

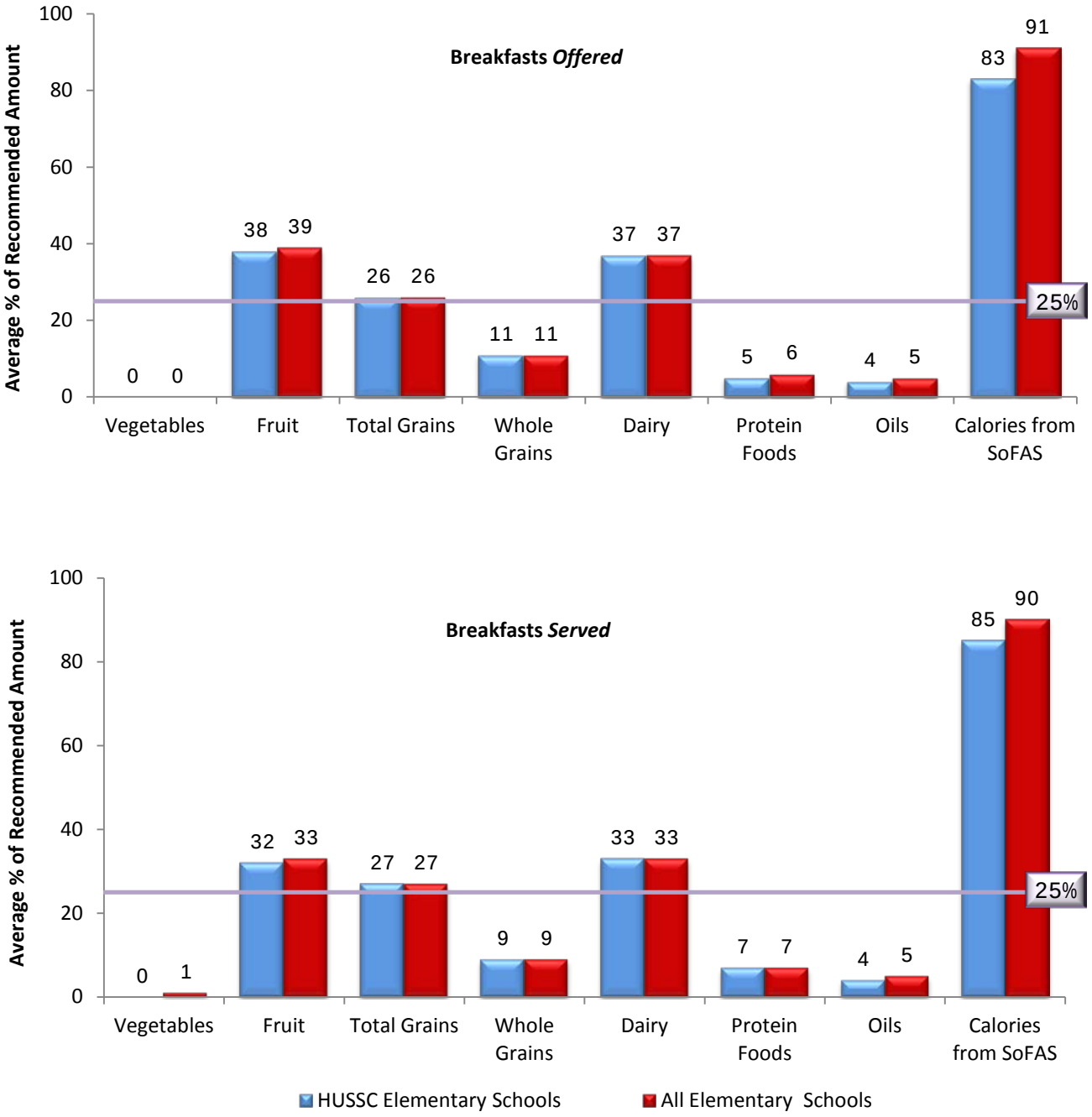
Figure 12.7 shows the mean food group content of SBP breakfasts *offered* and *served* in HUSSC elementary schools and all elementary schools overall, expressed as percentages of USDA Food Pattern recommendations. Key findings, which also draw on data presented in Table 12.10, are summarized below:

- The average SBP breakfast *offered* and *served* in both groups of elementary schools provided one-quarter or more of the recommended amounts of fruit, total grains, and dairy.[17]
- Breakfasts *offered* and *served* in both groups of elementary schools were low in whole grains, relative to recommendations, providing only 9 to 11 percent of the recommended amount.
- SBP breakfasts *offered* and *served* in both groups of elementary schools were high in calories from SoFAS. On average, breakfasts provided more than 80 percent of the maximum amount of SoFAS calories recommended for the entire day. Breakfasts *offered* and *served* in HUSSC schools provided a smaller percentage of the maximum amount of SoFAS calories than breakfasts *offered* and *served* in elementary schools overall.
- In both HUSSC elementary schools and all elementary schools nationwide, solid fats and added sugars each contributed about half of the calories from SoFAS in the average SBP breakfast *offered* (see Table 12.10).
- In the average SBP breakfast *served*, which reflects students' food selection patterns, solid fats contributed a larger share of SoFAS calories than added sugars (52 to 55 percent versus 45 to 48 percent; see Table 12.10). Chapter 9 provides information about the leading sources of SoFAS calories in SBP breakfasts.

The finding that average SBP breakfasts *offered* and *served* were high in SoFAS calories may seem inconsistent with findings presented in Figure 12.6, which showed that a majority of schools *offered* and *served* breakfasts that were consistent with the SMI standard for saturated fat (most of the fat in solid fats is saturated fat). The data presented in Table 12.10 provide insight into these apparently contradictory findings. On average, calories from solid fats in SBP breakfasts fell below the maximum limit for SoFAS calories (160; see Table 12.4). However, calories from solid fats accounted for only about half of SoFAS calories overall, and it is the combined total of calories from solid fats and calories from added sugars that is high, relative to the maximum limit (Figure 12.7).

[17] The fact that average SBP breakfasts offered and served did not provide at least one-quarter of the recommended amounts of protein foods may surprise some readers. Chapter 8 provides a potential explanation for this finding.

Figure 12.7. Average Amounts of Food Groups in School Breakfast Program Breakfasts *Offered* and *Served* in Elementary Schools Participating in the HealthierUS School Challenge and All Elementary Schools Nationwide, Relative to the Recommended USDA Food Pattern for an 1,800 Calorie Diet



Source: School Nutrition Dietary Assessment Study-IV, Menu Survey, school year 2009–2010. Tabulations prepared by Mathematica Policy Research. Estimates for all elementary schools are weighted to be representative of all public elementary schools offering the National School Lunch Program.

Notes: The reference daily food plans are based on the calorie levels used by the Institute of Medicine (2010) in developing recommendations for revised nutrition standards for school meals.

The 25 percent benchmark is used for illustrative purposes only and is based on the SMI standard that NSLP meals should provide one-quarter of students' daily energy and nutrient needs.

HUSSC = HealthierUS School Challenge; SoFAS = solid fats and added sugars.

H. Foods Offered in SBP Breakfasts in HUSSC Elementary Schools and All Elementary Schools Nationwide

To be eligible for Federal reimbursement, SBP meals must meet a defined set of nutrition standards. In SY 2009–2010, SFAs could choose from five different systems to plan menus, and each menu-planning system had different food-based requirements (see Chapter 1 and Appendix A). In SY 2009–2010, HUSSC did not include additional food-based requirements for breakfasts (see box on page 12-2 and Appendix L). However, HUSSC schools may have applied some of the food-based requirements for lunches to their breakfast menus.[18]

1. Choice and Variety of Foods Offered in SBP Breakfasts

There was relatively little variation between HUSSC elementary schools and elementary schools overall in the amount of choice and variety offered in breakfast menus (Table M.21). A larger share of daily breakfast menus in HUSSC elementary schools than elementary schools overall offered only one type of milk (30 versus 17 percent). However, the median number of milk choices offered in both groups of schools was 2 per day. The median number of milk choices per week was 3 in HUSSC elementary schools and 2 in elementary schools overall.

More than 60 percent of daily breakfast menus in both groups offered 2 or more choices of fruit, vegetable, or juice and the same proportion offered 2 or more choices of bread/grain items. Very few breakfast menus (2 to 11 percent) included a choice of combination entree or separate meat/meat alternate (Table M.21).

2. Types and Frequency of Foods Offered in SBP Breakfasts

a. Milk

All schools offered milk (either separately or as part of pre-plated meal) daily at breakfast (Table M.22). Although unflavored 1% milk was the most commonly offered milk in both groups of schools, it was offered more frequently in HUSSC schools than elementary schools overall (89 percent of daily breakfast menus versus 73 percent). In addition, unflavored 2% milk was offered much less frequently in HUSSC elementary schools than elementary schools overall (6 percent of daily breakfast menus versus 29 percent). This pattern of findings is similar to what we observed for lunch menus and likely reflects the fact that one of the criteria for HUSSC certification is that schools offer only 1% and fat-free milks for lunch (USDA, FNS February 2010).

b. Fruit and 100% Juice[19]

There were few noteworthy differences between HUSSC elementary schools and elementary schools overall in the frequency or types of fruit and 100% juice included in daily breakfast menus (Table M.22). Virtually all breakfast menus in both groups of schools included fruit and/or 100% juice. More than 80 percent of daily menus included 100% juice; more than one-third included fresh

[18] In July 2012, HUSSC criteria were updated and expanded. At that time, specific requirements for SBP breakfasts were added.

[19] Vegetables were offered at breakfast in fewer than 5 percent of breakfast menus and, therefore, are not included in Table M.22.

fruit; and about one in five included canned fruit. Grape juice was offered more frequently in HUSSC elementary schools than elementary schools overall (40 percent of daily breakfast menus versus 24 percent).

c. Separate Bread/Grains

Daily breakfast menus in HUSSC elementary schools included separate bread/grain choices somewhat less often than elementary schools overall (88 versus 93 percent) (Table M.22). This may reflect the fact that daily breakfast menus in HUSSC elementary schools included combination entrees like breakfast pizza more frequently than elementary schools overall (12 versus 8 percent). Overall, the mix of bread/grain items offered in the two groups of schools was similar. However, breakfast menus in HUSSC schools included plain breads, rolls, and bagels more frequently than breakfast menus in elementary schools overall (32 versus 19 percent) and included cold cereals and muffins and sweet/quick breads less frequently (70 versus 75 percent and 15 versus 19 percent, respectively). In addition, HUSSC breakfast menus included unsweetened cereals more often than breakfast menus in all elementary schools nationwide (40 versus 36 percent). The increased reliance on plain breads, rolls, and bagels and unsweetened cereals, combined with the lower prevalence of 2% milk and muffins and sweet/quick breads, may explain, at least in part, the lower average calorie content of breakfasts *offered* in HUSSC elementary schools.[20]

I. Characteristics of Meal Service Programs and Food and Physical Activity Environments

Local SFAs and schools have considerable discretion in how they operate their school meal programs. Some aspects of program operations may affect meal quality and/or students' decisions to eat school meals. Thus, questions about how meal service programs in HUSSC elementary schools may differ from elementary schools overall are of interest. Similarly, key district- and school-level policies and practices that are not decided or managed by school foodservice departments may affect efforts to encourage children to make healthy food choices and be physically active—two important requirements for maintaining a healthy body weight. These policies and practices, which define a school's food and physical activity environment, include policies related to nutrition education, PE, and physical activity outside of PE, the presence and characteristics of school wellness policies, and student access to foods and beverages other than those offered in reimbursable school meals (competitive foods). HUSSC certification criteria include requirements related to some of the meal service program and school environment characteristics examined in this section, but not all.

The data used in the analyses presented in this section come mainly from the SNDA-IV SFA director survey, principal survey, and FSM survey. Because not all of the relevant respondents in sampled SFAs and schools completed the surveys, sample sizes vary based on the source of the data. For HUSSC schools, maximum sample sizes range from 35 to 32 and are lowest for data reported in the principal survey. Because of skip patterns and item non-response, sample sizes for some variables are smaller. While all of the data reported for HUSSC schools should be interpreted with

[20] Although the differences are not as large as those noted for unflavored milks, HUSSC elementary schools also offered skim/nonfat flavored milks more frequently than elementary schools overall (30 percent of daily lunch menus versus 27 percent) and offered 1% flavored milks less frequently (44 versus 48 percent) (Appendix Table M.22).

caution, we've included notes in the text for situations where extra caution is warranted due to especially small sample sizes.

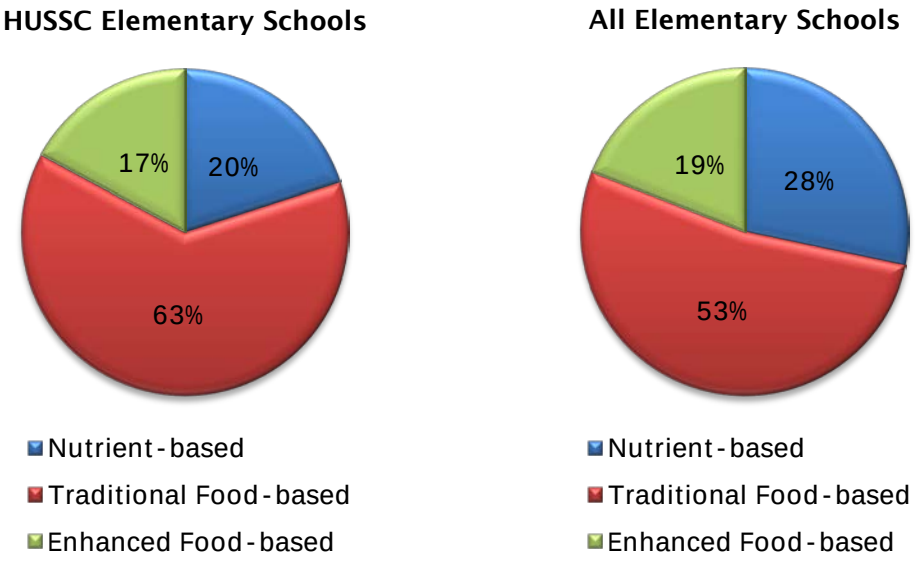
1. Characteristics of Meal Service Programs

a. Menu-Planning Systems

A key characteristic of school meal service programs is the system used to plan menus. In SY 2009-2010, SFAs had the option to choose from five different USDA-approved menu-planning systems (see Chapter 1 and Appendix A). Two systems were food-based (traditional and enhanced), two were nutrient-based (nutrient-based menu planning (NSMP) and assisted NSMP (ANSMP)), and the fifth allowed SFAs to use other reasonable approaches approved by State agencies. Such alternatives typically varied only slightly from the four main menu-planning systems.

Most HUSSC elementary schools (63 percent) used traditional food-based menu planning (Figure 12.8). Twenty percent used nutrient-based menu planning and 17 percent used enhanced food-based menu planning. Relative to all elementary schools nationwide, a larger share of HUSSC elementary schools used traditional food-based menu planning (63 versus 53 percent) and a smaller share used nutrient-based menu planning (20 versus 28 percent).[21]

Figure 12.8. Menu-Planning Systems Used in SY 2009–2010 by Elementary Schools Participating in the HealthierUS School Challenge and All Elementary Schools Nationwide



Note: Nutrient-based menu planning includes both nutrient standard menu planning (NSMP) and assisted nutrient standard menu planning (ANSMP).

HUSSC = HealthierUS School Challenge; SY = school year.

[21] Nutrient-based menu planning includes both NSMP and ANSMP. Menu-planning systems were reported by SFA directors. Six SFA directors in the SNDA-IV sample reported using another reasonable approach. Based on the descriptions provided and information available from school district websites, we categorized these approaches into one of the main menu-planning systems.

b. Meal Preparation and Productions Systems

The majority of both HUSSC elementary schools and elementary schools overall prepared meals on-site (Table 12.11). However, this was true for a larger share of HUSSC elementary schools than elementary schools overall (83 versus 74 percent). Consequently, in comparison to elementary schools overall, fewer HUSSC elementary schools received partially prepared or fully pre-plated meals from separate base or central kitchens (17 versus 26 percent).[22]

Table 12.11. Meal Preparation and Production Systems in Elementary Schools Participating in the HealthierUS School Challenge and All Elementary Schools Nationwide

	Percentage of Schools	
	HUSSC Elementary Schools	All Elementary Schools
Meals Prepared On-site for Serving Only at that School	77.1	69.4
Receives Partially Prepared Meals from a Separate Base or Central Kitchen	14.3	21.2
Meals Prepared On-site for Serving at that School and Shipment to Other Schools	5.7	4.8
Receives Fully Plated Meals from a Separate Base or Central Kitchen	2.9	4.8
Number of Schools	**35**	**315**

Source: School Nutrition Dietary Assessment Study-IV, Foodservice Manager Survey, school year 2009–2010. Tabulations prepared by Mathematica Policy Research. Estimates for all elementary schools are weighted to be representative of all public elementary schools offering the National School Lunch Program.

HUSSC = HealthierUS School Challenge.

c. Food Purchasing Practices

Compared to all SFAs nationally, more of the SFAs in which HUSSC elementary schools were located reported purchasing foods through programs designed to increase access to fresh produce (Table 12.12). This includes the Department of Defense's Fresh Fruit and Vegetable Program (known as DoD Fresh) (61 percent of HUSSC SFAs versus 31 percent of all SFAs nationally) and State-level farm-to-school programs (39 versus 13 percent). On a less positive note, more HUSSC SFAs reported having a pouring rights contract for at least some schools in their district than SFAs overall (39 versus 27 percent).[23]

Although missing data for the all SFAs sample limits the conclusions that can be drawn, the available data suggest that SFAs in which HUSSC schools were located included nutrition-focused

[22] Nationally, elementary schools are more likely than middle or high schools to receive partially prepared or fully pre-plated meals from separate base or central kitchens (26 versus 12 and 8 percent, respectively). See Chapter 2, Table 2.14.

[23] A pouring rights contract is a long-term contract between a school district and a beverage company that establishes the beverage company as the sole source vendor for beverages (other than milk) in a given location.

requirements in their purchasing specifications more often than SFAs overall (Table 12.12). This was particularly true for purchasing specifications related to per-serving content of whole grains and, to a lesser extent, total or added sugar, total fat, and saturated fat.[24]

Table 12.12. Food Purchasing Practices in SFAs with Elementary Schools Participating in the HealthierUS School Challenge and All SFAs Nationwide

	Percentage of SFAs	
	HUSSC SFAs	All SFAs
SFA Purchases Foods Through DoD Fresh Program	60.6	31.1
SFA Purchases Foods Through State Farm to School Program	39.4	13.3
SFA Offers Foods from Brand-Name or Chain Restaurants	18.2	16.8
SFA Uses a Pouring Rights Contract	39.4	27.1
Food Purchasing Specifications Include Per- Serving Requirements for:[a,b]		
Whole grains	84.8	45.5
Total fat	75.8	56.1
Saturated fat	72.7	51.5
Trans fat	69.7	53.5
Total or added sugar	66.7	43.5
Sodium	57.6	41.9
Calories	54.5	44.9
Dietary Fiber	42.4	34.0
Other	3.0	2.3
Number of SFAs	**33**	**578**

Source: School Nutrition Dietary Assessment-IV, School Food Authority Director Survey, school year 2009–2010. Tabulations prepared by Mathematica Policy Research. Estimates for all SFAs are weighted to be representative of all public SFAs offering the National School Lunch Program.

Note: Two SFA Directors in HUSSC SFAs did not complete the SFA Director Survey.

HUSSC = HealthierUS School Challenge.

[a] Multiple responses were allowed.

[b] In the all SFA sample, data were missing for 11 to 12 percent of SFAs for most nutrients (see Chapter 2, Table 2.13).

d. Use of USDA Resources and Guidance Materials

USDA provides schools with a wide variety of resources and guidance materials to assist SFAs in planning menus, modifying recipes, and developing food purchasing specifications.[25] SFA directors were asked about their use of specific resources since SY 2004-2005 (when the SNDA-III study was conducted). All of the SFAs in which HUSSC elementary school were located and all but 6 percent of SFAs overall reported using at least one of these resources (Table 12.13). For almost all

[24] As noted in Table 12.12, data were missing for most nutrients for 10 to 12 percent of SFAs in the all SFAs sample. The differences between HUSSC SFAs and all SFAs would be noteworthy for these nutrients even if all of the SFAs with missing data had reported having the relevant purchasing specifications.

[25] See http://teamnutrition.usda.gov/healthierUS/training.html (Accessed December 30, 2011).

of the materials queried, the share of SFAs that reportedly used the resource was greater for SFAs in which HUSSC elementary schools were located than for SFAs overall. Perhaps not surprisingly, the difference was greatest for the HealthierUS School Challenge Whole Grains Resource (88 percent of SFAs in which HUSSC elementary schools were located versus 23 percent of SFAs overall). Sizable differences were also noted for Fact Sheets for Healthier School Meals (64 versus 43 percent), the Food Buying Guide for Child Nutrition Programs (82 versus 65 percent), Fruits and Vegetables Galore (52 versus 36 percent), and Menu Planner for Healthy School Meals (49 versus 40 percent).

Table 12.13. Use of USDA Resources and Guidance Materials Since SY 2004–2005 by SFAs with Elementary Schools Participating in the HealthierUS School Challenge and All SFAs Nationwide

	Percentage of SFAs	
Resource/Guidance Material	HUSSC SFAs	All SFAs
Healthier US School Challenge Whole Grains Resource	87.9	22.9
Food Buying Guide for Child Nutrition Programs	81.8	64.8
Recipes for Schools	63.6	62.0
Fact Sheets for Healthier School Meals	63.6	43.4
Offer Versus Serve	60.6	58.0
Fruits and Vegetables Galore	51.5	36.1
Menu Planner for Healthy School Meals	48.5	39.5
Road to SMI Success: A Guide for School Food Service Directors	36.4	26.0
New School Lunch and Breakfast Recipes / Tool Kit for Healthy School Meals	33.3	23.4
Changing the Scene: Improving the School Nutrition Environment	27.3	17.7
Nutrient Analysis Protocols: How to Analyze Menus for USDA's School Meals Programs	27.3	13.4
SMI Frequently Asked Questions	24.2	25.8
Making it Happen! School Nutrition Success Stories	24.2	13.3
Team Nutrition Guide to Purchasing Food Service Equipment	18.2	16.1
First Choice (Second Edition)	12.1	8.6
Choice Plus: A Reference Guide for Foods and Ingredients	9.1	13.7
Menu Planning Tools - South Dakota Team Nutrition	0.0	3.0
Other	0.0	1.4
None of the Above	0.0	5.6
Number of SFAs	**33**	**578**

Source: School Nutrition Dietary Assessment-IV, School Food Authority Director Survey, school year 2009–2010. Tabulations prepared by Mathematica Policy Research. Estimates for all SFAs are weighted to be representative of all public SFAs offering the National School Lunch Program.

Notes: Multiple responses were allowed.

Two SFA Directors in HUSSC SFAs did not complete the SFA Director Survey.

SY = School Year; HUSSC = HealthierUS School Challenge.

e. Credentials of Program Directors and Managers

Table 12.14 presents data on the credentials of SFA directors, menu planners, and foodservice managers in HUSSC SFAs and elementary schools and SFAs and elementary schools overall. Compared to SFAs overall, larger shares of SFA directors and menu planners in HUSSC SFAs had Bachelor's degrees in a field related to foodservice management, nutrition-related credentials

(licensed nutritionist or registered dietitian), Master's degrees in nutrition, and School Nutrition Association certification for School Nutrition Specialists. Conversely, among SFAs nationally, larger shares of SFA directors and menu planners reported on-the-job training as a credential.[26] Differences in credentials were less stark for foodservice managers, but were generally in the same direction (higher-level credentials among staff in HUSSC schools).

Table 12.14. Credentials of SFA Directors, Menu Planners, and Foodservice Managers in Elementary Schools Participating in the HealthierUS School Challenge and All Elementary Schools Nationwide

	SFA Directors (Percentage of SFAs)		Menu Planners (Percentage of SFAs)		Foodservice Managers (Percentage of Schools)	
Credentials Held	HUSSC SFAs	All SFAs	HUSSC SFAs	All SFAs	HUSSC Elementary Schools	All Elementary Schools
On-the-job training	45.5	62.5	36.4	61.9	51.4	60.3
School Nutrition Specialist (SNA certified)	42.4	18.1	39.4	17.2	28.6	13.2
Bachelor's degree in consumer science, hotel/restaurant management, bakery/culinary arts, or related field	36.4	15.5	27.3	15.1	8.6	8.8
State foodservice certificate	33.3	28.9	33.3	28.5	34.3	44.4
Registered Dietitian	33.3	5.5	39.4	10.7	14.3	4.0
Master's level nutritionist	30.3	3.3	24.2	4.8	11.4	2.6
Licensed nutritionist	21.2	3.4	18.2	4.3	8.6	2.2
Associate's degree in consumer science, hotel/restaurant management, bakery/culinary arts, or related field	6.1	8.2	0.0	8.1	0.0	6.5
Other	21.2	9.7	6.1	8.6	14.3	14.0
Number of SFAs	**33**	**578**	**33**	**578**	**35**	**315**

Source: School Nutrition Dietary Assessment-IV, SFA Director Survey and Foodservice Manager Survey, school year 2009–2010. Tabulations prepared by Mathematica Policy Research. Estimates for all SFAs and all elementary schools are weighted to be representative of all public SFAs and all public elementary schools offering the National School Lunch Program.

Notes: Multiple responses were allowed.

SFA directors in 2 HUSSC SFAs did not complete the SFA Director Survey.

HUSSC = HealthierUS School Challenge.

[26] The SFA director survey collected data on credentials of both SFA directors and menu planners. SFA directors may have reported credentials for menu planners. The survey question asked "Which of the following credentials do you hold?" and included all of the response options shown in Table 12.14.

2. Characteristics of Food and Physical Activity Environments

a. Student Participation in School Meal Programs

Participation in the NSLP and SBP is open to all students in participating schools. Students from low-income households are eligible to receive meals free of charge or at a reduced price. Compared to all elementary schools nationwide, students in HUSSC elementary schools participated in the NSLP at higher rates for all benefit categories (free, reduced-price, and paid). Total average daily NSLP participation in SY 2009-2010 was 10 percentage points higher in HUSSC elementary schools than in elementary schools overall (80 versus 70 percent) (Table 12.15). Higher rates of participation in HUSSC elementary schools were noted for all meal benefit categories. Across the three meal-benefit categories, the difference was smallest for students certified for free meals (88 versus 84 percent) and largest for students not certified to receive meal benefits (63 versus 54 percent).

Table 12.15. Student Participation Rates in Elementary Schools Participating in the HealthierUS School Challenge and All Elementary Schools Nationwide

	Average Percentage of Students Participating per Day	
Program/Meal Benefit Category	HUSSC Elementary Schools	All Elementary Schools
National School Lunch Program		
All Students	79.6	69.5
Students Certified for Free Lunches	87.9	84.2
Students Certified for Reduced-Price Lunches	83.3	77.7
Students Not Certified for Meal Benefits	63.1	53.7
Number of Schools	**30**	**284**
School Breakfast Program		
All Students	41.7	32.9
Students Certified for Free Breakfasts	51.5	45.4
Students Certified for Reduced-Price Breakfasts	38.9	30.5
Students Not Certified for Meal Benefits	20.3	13.2
Number of Schools	**29**	**262**

Source: School Nutrition Dietary Assessment-IV, Menu Survey, school year 2009-2010. Tabulations prepared by Mathematica Policy Research. Estimates for all elementary schools are weighted to be representative of all public elementary schools offering the National School Lunch Program.

Notes: Participation is measured as the ratio of the average daily number of meals served, overall and in each meal benefit category, to the number of students in each meal benefit category.

Participation rates could not be calculated for schools that lacked information on the number of students approved for free and reduced-price meal benefits or for schools that had conflicting data on enrollment and student eligibility for meal benefits.

HUSSC = HealthierUS School Challenge.

Higher rates of NSLP participation in HUSSC elementary schools is consistent with the fact that most HUSSC award levels include a requirement associated with student participation in the NSLP. In SY 2009–2010, the bronze award did not include a participation requirement, but the three other award levels required a minimum NSLP participation rate of 60 percent (silver award) or 70 percent (gold award and gold award of distinction).

Rates of student participation were notably lower for the SBP than the NSLP in both HUSSC elementary schools and elementary schools overall, even among students certified to receive free or reduced-price breakfasts. It is well recognized that many students who are eligible to receive these breakfasts do not participate in the SBP (FRAC 2011). In SY 2009–2010, HUSSC did not include requirements related to SBP participation.[27] However, similar to the pattern noted for the NSLP, students in HUSSC elementary schools participated in the SBP at higher rates than elementary schools overall. Overall and for each meal benefit category, average daily SBP participation in HUSSC elementary schools was 6 to 9 percentage points higher than average daily SBP participation in all elementary schools (Table 12.15).

Another approach that is used to describe student participation in the school meal programs is the distribution of meals by meal reimbursement category. In a typical week in SY 2009-2010, the percentage of lunches served free of charge in HUSSC elementary schools was 10 percentage points higher than the percentage for elementary schools overall (65 versus 55 percent) (Table 12.16) The percentage of lunches served at a reduced-price was roughly equivalent for both groups of schools (about 8 percent), and HUSSC elementary schools had a lower percentage of lunches in the paid category than elementary schools overall (27 versus 37 percent).

The distribution of free, reduced-price and paid meals in the SBP was notably different than in the NSLP. Distributions were similar for HUSSC elementary schools and elementary schools overall. In the SBP, three-quarters or more of breakfasts in both HUSSC elementary schools and elementary schools overall were served free of charge, 7 to 8 percent were served at a reduced price, and 15 to 17 percent were paid breakfasts.

[27] Requirements for SBP participation were added in July 2012 when the HUSSC criteria were updated and expanded.

Table 12.16. Average Distribution of Free, Reduced-Price, and Paid Meals in Elementary Schools Participating in the HealthierUS School Challenge and All Elementary Schools Nationwide

Program/Meal Benefit Category	Average Percentage of Daily Reimbursable Meals	
	HUSSC Elementary Schools	All Elementary Schools
National School Lunch Program		
Free Lunches	65.2	55.0
Reduced-Price Lunches	8.1	8.5
Paid Lunches	26.8	36.5
Number of Schools	**35**	**314**
School Breakfast Program		
Free Breakfasts	77.5	74.9
Reduced-Price Breakfasts	7.1	8.2
Paid Breakfasts	15.4	16.9
Number of Schools	**35**	**279**

Source: School Nutrition Dietary Assessment-IV, Menu Survey, school year 2009-2010. Tabulations prepared by Mathematica Policy Research. Estimates for all elementary schools are weighted to be representative of all public elementary schools offering the National School Lunch Program.

HUSSC = HealthierUS School Challenge.

b. Nutrition Promotion Activities

Two-thirds or more of both HUSSC elementary schools and elementary schools overall routinely made information about the nutrient content of school meals available to students or parents (Table 12.17). However, relative to elementary schools overall, foodservice staff in HUSSC elementary schools were generally more involved in other types of nutrition promotion activities. For example, FSMs in 60 percent of HUSSC elementary schools reported that foodservice staff had conducted a nutrition education activity in the foodservice area in the past 12 months. Such activity was reported in about half as many elementary schools overall (32 percent). Similarly, larger shares of HUSSC elementary schools than elementary schools overall reported foodservice staff participation in classroom-based nutrition education activities (51 versus 27 percent), parent meetings (51 versus 34 percent), and meetings about school wellness policies (57 versus 42 percent).

Table 12.17. Strategies Used by Foodservice Staff to Promote Good Nutrition or Nutrition Awareness in Elementary Schools Participating in the HealthierUS School Challenge and All Elementary Schools Nationwide

	Percentage of Schools	
Promotion Activities	HUSSC Elementary Schools	All Elementary Schools
Specific Activities in the Past 12 Months[a]		
Provided families with information about school foodservice program	82.9	74.2
Invited family members to consume a school meal	74.3	70.6
Conducted a nutrition education activity in the foodservice area	60.0	32.1
Participated in a school meeting about local wellness policy	57.1	42.4
Attended a PTA or other parent group meeting to discuss school foodservice program	51.4	33.6
Participated in nutrition education activity in the classroom	51.4	27.3
Participated in a district meeting about local wellness policy	45.7	38.8
Routinely Makes Information About Nutrient Content Available to Students or Parents	71.4	66.9
Number of Schools	**35**	**315**

Source: School Nutrition Dietary Assessment-IV, Foodservice Manager Survey, school year 2009–2010. Tabulations prepared by Mathematica Policy Research. Estimates for all elementary schools are weighted to be representative of all public schools offering the National School Lunch Program.

[a] Multiple responses were allowed.

HUSSC = HealthierUS School Challenge; PTA = Parent Teacher Association.

c. Requirements for Nutrition Education and Physical Education

Compared to elementary schools overall, a larger share of HUSSC elementary schools required that students receive nutrition education as part of classroom instruction (77 versus 61 percent) (Table 12.18) Among schools that required nutrition education, the majority of both HUSSC schools and elementary schools overall (87 to 88 percent) required nutrition education in all grades. HUSSC certification criteria require than nutrition education be incorporated into classroom instruction and that it be offered in at least half of the grades in the school (USDA, FNS February 2010).

Table 12.18. Requirements for Nutrition Education in Elementary Schools Participating in the HealthierUS School Challenge and All Elementary Schools Nationwide

	Percentage of Schools	
	HUSSC Elementary Schools	All Elementary Schools
School Requires Students to Receive Nutrition Education in Class	76.7	60.9
Among Schools Requiring Nutrition Education in Class (n = 23 and 151):		
Grades Required to Receive Nutrition Education in Class		
Every grade	87.0	88.3
Some grades	13.0	11.7
Number of Schools	**30**	**265**

Source: School Nutrition Dietary Assessment-IV, Principal Survey, school year 2009–2010. Tabulations prepared by Mathematica Policy Research. Estimates for all elementary schools are weighted to be representative of all public elementary schools offering the National School Lunch Program.

Note: Principals in 5 HUSSC schools did not complete the Principal Survey.

HUSSC = HealthierUS School Challenge.

All HUSSC elementary schools and 97 percent of elementary schools overall required that students participate in structured PE classes (none of the data reported in this paragraph are shown in a table). Students in all HUSSC elementary schools and 96 percent of elementary schools overall participated in PE classes all year. Among schools that required PE, students spent an average of 97 minutes (with a mode of 60 minutes) in PE per week. HUSSC certification criteria include requirements that structured PE classes be offered and that students spend a minimum of 45 minutes in PE per week (USDA, FNS February 2010). Schools that offer more time in PE are eligible for higher-level HUSSC awards.

d. Opportunities for Physical Activity Outside of Physical Education Classes

The majority of both HUSSC elementary schools and elementary schools overall reported that they regularly provide students with opportunities for physical activity (outside of PE) during school hours. However, the share of schools reporting this practice was larger for HUSSC elementary schools than for elementary schools overall (97 versus 86 percent) (Table 12.19). This is consistent with the fact that HUSSC certification criteria require that schools provide opportunities for physical activity outside of PE class.

Table 12.19. Opportunities for Physical Activity During School Hours, Excluding Physical Education Classes, in Elementary Schools Participating in the HealthierUS School Challenge and All Elementary Schools Nationwide

	Percentage of Schools	
	HUSSC Elementary Schools	All Elementary Schools
School Regularly Provides Opportunities for Physical Activity During School Hours	96.7	85.6
Among Schools That Provide Opportunities for Physical Activity During School Hours (n = 29 and 232):		
Types of Activities Provided[a]		
Recess	93.1	97.0
Free play in gymnasium or on playing fields	41.4	38.7
Staff-led walks	41.4	33.7
Faculty-led games or activities	27.6	25.6
Aerobic or active stretch breaks	41.4	28.3
Other	6.9	6.0
Number of Schools	**30**	**265**

Source: School Nutrition Dietary Assessment-IV, Principal Survey, school year 2009–2010. Tabulations prepared by Mathematica Policy Research. Estimates for all elementary schools are weighted to be representative of all public elementary schools offering the National School Lunch Program.

Note: Principals in 5 HUSSC schools did not complete the Principal Survey.

HUSSC = HealthierUS School Challenge.

[a] Multiple responses were allowed.

By a wide margin, the most commonly reported opportunity for physical activity in both HUSSC elementary schools and elementary schools overall was recess. Free play and staff-led walks were reported by more than one-third of schools that provided opportunities for physical activity and faculty-led games and activities were reported by more than one-quarter of schools. Forty-one percent of HUSSC elementary schools reported aerobic or active stretch breaks. This type of activity was less commonly reported among elementary schools overall (28 percent).

e. Wellness Policies

The Child Nutrition and WIC Reauthorization Act of 2004 (PL 108-265) required schools to implement local wellness policies beginning in SY 2006–2007. At a minimum, these policies were required to include:

- Goals for nutrition education, physical activity, and other school-based activities designed to promote student wellness,
- Nutrition guidelines for all foods available on school campuses during the school day,
- A plan for measuring implementation, including designation of one or more persons with operational responsibility for ensuring that schools meet wellness policy requirements,

- Assurances that requirements for reimbursable meals were not less restrictive than current Federal requirements,
- Plans for involving parents, students, and other stakeholders in the development of the wellness policy.

The Healthy, Hunger-Free Kids Act of 2010 (PL 111-296) expanded the scope of these wellness policies; required additional stakeholder involvement in the development, implementation and review of these policies[28]; and required public updates on the content and implementation of the policies. The intent of the new provisions was to strengthen school wellness policies so they become useful tools in evaluating, establishing, and maintaining healthy school environments (USDA, FNS July 2011). Schools were expected to review their existing policies and begin planning for the required changes in SY 2011–2012. In addition, the Healthy, Hunger-Free Kids Act of 2010 requires that USDA establish nutrition standards for all foods sold or served in schools at any time during the school day.

Based on SFA director reports, all SFAs in which HUSSC elementary schools were located had a district-level wellness policy in place during SY 2009–2010, as did the vast majority (96 percent) of elementary schools in all SFAs nationwide (Table 12.20). This is consistent with Federal policy that requires all districts participating in the NSLP to have a comprehensive wellness policy. Eighty-two percent of HUSSC SFAs had a designated school wellness coordinator. Among SFAs nationwide that had a district wellness policy, 73 percent had a designated wellness coordinator.

Table 12.20. Presence of District-Level Wellness Policies and Designated Wellness Coordinators in SFAs with Elementary Schools Participating in the HealthierUS School Challenge and All SFAs Nationwide

	Percentage of SFAs	
	HUSSC SFAs	All SFAs
School District Has a Wellness Policy	100.0	96.1
Among Districts with a Wellness Policy (n=33 and 567)		
District Has a Designated Wellness Coordinator	81.8	72.8
Number of SFAs	**33**	**578**

Source: School Nutrition Dietary Assessment-IV, School Food Authority Director Survey, school year 2009–2010. Tabulations prepared by Mathematica Policy Research. Estimates for all SFAs are weighted to be representative of all public elementary schools and all public SFAs offering the National School Lunch Program.

Note: SFA directors in 2 HUSSC SFAs did not complete the SFA Director Survey.

HUSSC = HealthierUS School Challenge.

[28] SFAs are now required to permit teachers of physical education and school health professionals as well as parents, students, representatives of the school board, school administrators, and the public to participate in the development of wellness policies. The Act also expanded the purpose of the team of collaborators beyond the development of a local wellness policy to also include the implementation of the local wellness policy with periodic review and updates (USDA FNS March 2011).

SFA directors were asked about the content of wellness policies and the degree to which different policy components had been implemented. Some of the components SFA directors were asked about were not explicitly required in the legislation that mandated local wellness policies, but are of interest to policymakers and the school nutrition community. This included, for example, questions about defining a minimum amount of time for students to eat lunch and the availability of staff wellness programs. Additional information about selected policy components (nutrition standards for foods offered in schools, nutrition promotion activities, requirements for nutrition education and PE, and opportunities for physical activity outside of PE) are provided in other sections of this chapter.

In general, the content and implementation of wellness policies were relatively similar for HUSSC SFAs and SFAs overall. However, relative to SFAs overall, larger shares of HUSSC SFAs reported that policy components related to PE, nutrition education, and daily physical activity were fully implemented (61 to 79 percent of HUSSC SFAs, compared to 40 to 55 percent of SFAs overall; Table 12.21).[29] These components were fully implemented in This pattern is consistent with the fact that criteria for all HUSSC award levels included requirements for nutrition education, physical education, and daily opportunities for unstructured physical activity.

At least half of SFAs in both groups reported that policy components related to students' access to competitive foods, parent involvement, community involvement, the minimum amount of time for students to eat lunch, and staff wellness were fully or partially implemented. However, sizeable proportions of SFA directors (from 15 to 33 percent) indicated that their district's wellness policy did not address one or more of these components. Among HUSSC SFAs, this was most frequently reported for policies related to the minimum amount of time for students to eat lunch and staff wellness programs, neither of which is specifically required under the law.

A larger share of HUSSC SFAs than SFAs overall reported having a fully implemented plan for measuring wellness policy implementation (42 versus 24 percent). Moreover, the proportion of HUSSC SFAs with a wellness policy that did not include plans for measuring implementation was almost half that of SFAs overall (9 versus 17 percent). Fewer than half of SFAs in both groups had fully or partially implemented a plan for measuring the impact of their wellness policy (which is not specifically required under the law). One-third of HUSSC SFAs and 22 percent of SFAs overall were still planning this component, and directors in 15 percent of HUSSC SFAs and 20 percent of SFAs overall reported that their wellness policy did not include a plan for measuring impact.

[29] It is important to note that the relative strength of wellness policies varies widely across SFAs (Metos and Nanney 2007; Moag-Stahlberg et al. 2008; Schwartz et al. 2009). Factors that influence the relative strength of a policy include the level of detail and specificity in the language and the inclusion of explicit mandates and requirements, as opposed to suggestions and encouragement.

Table 12.21. Content and Implementation of Local Wellness Policies in SFAs with Elementary Schools Participating in the HealthierUS School Challenge and All SFAs Nationwide

Policy Component/Extent to Which Requirements Have Been Implemented	Percentage of SFAs	
	HUSSC SFAs	All SFAs
Physical Education[a]		
Addressed in policy and fully implemented	78.8	55.1
Addressed in policy and partially implemented	12.1	26.5
Still being planned	3.0	4.1
Not addressed in policy	3.0	2.4
Missing	3.0	9.6
No local wellness policy	0.0	2.3
Daily Physical Activity		
Addressed in policy and fully implemented	63.6	51.4
Addressed in policy and partially implemented	21.2	24.7
Still being planned	6.1	8.5
Not addressed in policy	3.0	2.6
Missing	6.1	10.5
No local wellness policy	0.0	2.3
Nutrition Education		
Addressed in policy and fully implemented	60.6	40.3
Addressed in policy and partially implemented	33.3	39.3
Still being planned	3.0	6.0
Not addressed in policy	0.0	3.9
Missing	3.0	8.2
No local wellness policy	0.0	2.3
Minimum Amount of Time for Students to Eat Lunch[a]		
Addressed in policy and fully implemented	48.5	44.6
Addressed in policy and partially implemented	12.1	11.7
Still being planned	3.0	6.6
Not addressed in policy	33.3	22.3
Missing	3.0	12.3
No local wellness policy	0.0	2.3
Access to Competitive Foods During School Hours[a]		
Addressed in policy and fully implemented	42.4	38.4
Addressed in policy and partially implemented	36.4	18.5
Still being planned	0.0	4.9
Not addressed in policy	15.2	23.4
Missing	6.1	12.5
No local wellness policy	0.0	2.3
Plan for Measuring Implementation		
Addressed in policy and fully implemented	42.4	24.2
Addressed in policy and partially implemented	27.3	25.2
Still being planned	18.2	19.1
Not addressed in policy	9.1	16.7
Missing	3.0	12.6
No local wellness policy	0.0	2.3
Community Involvement		
Addressed in policy and fully implemented	33.3	26.7
Addressed in policy and partially implemented	39.4	25.9
Still being planned	9.1	15.8
Not addressed in policy	15.2	18.6
Missing	3.0	10.7
No local wellness policy	0.0	2.3

Table 12.21 *(continued)*

Policy Component/Extent to Which Requirements Have Been Implemented	Percentage of SFAs	
	HUSSC SFAs	All SFAs
Parent Involvement		
Addressed in policy and fully implemented	27.3	28.9
Addressed in policy and partially implemented	39.4	28.5
Still being planned	15.2	16.4
Not addressed in policy	15.2	13.8
Missing	3.0	10.1
No local wellness policy	0.0	2.3
Staff Wellness Program[a]		
Addressed in policy and fully implemented	24.2	28.6
Addressed in policy and partially implemented	27.3	22.1
Still being planned	15.2	14.6
Not addressed in policy	30.3	21.3
Missing	3.0	11.1
No local wellness policy	0.0	2.3
Use of Food as Student Reward[a]		
Addressed in policy and fully implemented	18.2	14.6
Addressed in policy and partially implemented	36.4	17.8
Still being planned	6.1	8.3
Not addressed in policy	36.4	45.1
Missing	3.0	11.9
No local wellness policy	0.0	2.3
Plan for Measuring Impact[a]		
Addressed in policy and fully implemented	12.1	18.1
Addressed in policy and partially implemented	36.4	23.9
Still being planned	33.3	21.5
Not addressed in policy	15.2	19.7
Missing	3.0	14.5
No local wellness policy	0.0	2.3
Number of SFAs	**33**	**578**

Source: School Nutrition Dietary Assessment-IV, School Food Authority Director Survey, school year 2009-2010. Tabulations prepared by Mathematica Policy Research. Estimates for all SFAs are weighted to be representative of all public SFAs offering the National School Lunch Program.

Note: SFA directors in 2 HUSSC SFAs did not complete the SFA Director Survey.

HUSSC = HealthierUS School Challenge.

[a] Not explicitly required in the Child Nutrition and WIC Reauthorization Act of 2004 (PL 108-265), the legislation that mandated local wellness policies.

Nutrition Standards for Foods Offered on School Campuses

As noted above, PL 108-265 required that SFAs develop nutrition guidelines for all foods available on school campuses during the school day. This includes foods offered in school meals as well as competitive foods that may be available through a la carte programs, vending machines, school stores, snack bars, fundraisers or other venues.

School Meals. In developing nutrition standards for school meals, SFAs were expected to ensure that guidelines were no less restrictive than existing Federal requirements, but had the option of incorporating standards that exceeded (that is, were more stringent than) these requirements. In SY 2009–2010, the only Federal requirements that affected the types of foods offered in school meals and snacks were: (1) the requirement that schools offer low-fat or nonfat/skim milks and (2) the restriction on sale of foods of minimal nutritional value (carbonated beverages, water ice, gum, and certain candies) in the foodservice area during breakfast and lunch periods. SFAs that elected to implement more restrictive standards for the types of foods offered in school meals may have established per-serving targets for calories, total fat, saturated fat, cholesterol, sodium, whole grains, fiber or other nutrients for selected foods or groups of foods (see Chapter 2, Table 2.13).

Close to half (49 percent) of HUSSC SFAs reported that that their wellness policy did include nutrition standards for foods offered in school meals that exceeded Federal requirements and that these standards were fully implemented (Table 12.22). The percentage of all SFAs nationwide that had fully implemented more restrictive requirements for school meals was lower (36 percent). HUSSC qualification criteria include specific requirements about the types of foods to be offered in lunch menus (for example, a different fruit must be offered each day of the week and a minimum number of whole grain bread/grain options must be offered each week), but do not include more stringent nutrition standards.

Table 12.22. Nutrition Standards in School Wellness Policies in SFAs with Elementary Schools Participating in the HealthierUS School Challenge and All SFAs Nationwide: School Meals

	Percentage of SFAs	
Wellness Policy Includes Nutrition Standards for School Meals That Exceed Federal Requirements	HUSSC SFAs	All SFAs
Yes, and They Are Fully Implemented	48.5	35.6
Yes, and They Are Partially Implemented	12.1	16.4
Will Have Such Standards, but They Are Still Being Planned	0.0	5.3
No Such Standards in Place or Planned	39.4	33.4
Missing	0.0	7.1
No Local Wellness Policy	0.0	2.3
Number of SFAs	**33**	**578**

Source: School Nutrition Dietary Assessment-IV, SFA Director Survey, school year 2009-2010. Tabulations prepared by Mathematica Policy Research. Estimates for all SFAs are weighted to be representative of all public SFAs offering the National School Lunch Program.

Notes: Response categories are mutually exclusive.

SFA directors in 2 HUSSC SFAs did not complete the SFA Director Survey.

HUSSC = HealthierUS School Challenge.

Nutrition Standards for Foods Available Outside of School Meals. Wellness policies should include nutrition standards for foods available to students on an a la carte basis in school foodservice areas as well as foods available to students through vending machines, schools stores and other non-foodservice venues. The HUSSC criteria in place during SY 2009–2010 included requirements related to the locations and times of day where students had access to competitive foods as well as specific requirements for calorie and nutrient content (total fat, trans fat, saturated fat, sugar, and sodium) per serving. For Bronze and Silver Awards, the competitive foods criteria applied to foods sold in the school cafeteria during meal times. For the Gold and Gold Award of Distinction, the competitive foods criteria applied to all foods sold on school campuses anytime during the school day. Foods offered in classroom birthday celebrations were exempted from the competitive foods criteria.

Table 12.23 presents data for HUSSC SFAs and SFAs overall on the presence and implementation of nutrition standards for foods offered outside of the school meal programs. The data suggest that SFAs in both groups are well along in developing nutrition standards for a la carte and vending machine offerings. Only about 12 percent of HUSSC SFAs and SFAs overall indicated that their wellness policy does not and will not include nutrition standards for these foods.

SFAs in both groups were less likely to have nutrition standards for foods offered in school or classroom celebrations, foods used in fundraising activities, and foods available at staff or parent meetings (Table 12.23). Twenty-four percent of HUSSC SFAs and 20 percent of SFAs overall reported that they do not have nutrition standards for foods available in classroom or school celebrations, and had no plans to develop such standards. The same is true for about one-third of SFAs in both groups for foods used in fundraising activities. Nutrition standards for foods offered in staff or parent meetings were even less common. More than half of SFAs in both groups (55 and 50 percent, respectively) indicated that their wellness policy does not address foods available in these venues, and they had no plans to develop such standards.

Table 12.23. Nutrition Standards in School Wellness Policies in SFAs with Elementary Schools Participating in the HealthierUS School Challenge and All SFAs Nationwide: Foods and Beverages Offered in Other School Settings

Wellness Policy Includes Nutrition Standards for Foods and Beverages Offered in Other School Settings	Setting/Percentage of SFAs				
	A la Carte Offerings	Vending Machines, School Stores[a]	Classroom or School Celebrations	Fundraising Activities	Staff or Parent Meetings
HUSSC SFAs					
Yes, and They are Fully Implemented	54.5	42.4	21.2	12.1	12.1
Yes, and They are Partially Implemented	21.2	39.4	33.3	36.4	15.2
Will Have Such Standards, but They are Still Being Planned	3.0	0.0	12.1	9.1	9.1
No Such Standards in Place or Planned	12.1	12.1	24.2	33.3	54.5
Not Available/Allowable in District	6.1	3.0	3.0	6.1	6.1
Missing	3.0	3.0	6.1	3.0	3.0
No Wellness Policy	0.0	0.0	0.0	0.0	0.0
Number of SFAs			**33**		
All SFAs					
Yes, and They are Fully Implemented	41.4	36.2	20.1	14.6	8.8
Yes, and They are Partially Implemented	13.3	22.2	29.6	22.4	14.6
Will Have Such Standards, but They are Still Being Planned	2.4	5.4	10.2	10.3	7.6
No Such Standards in Place or Planned	12.6	12.1	20.0	33.6	50.1
Not Available/Allowable in District	20.5	13.4	8.5	6.3	7.9
Missing	7.5	8.4	9.3	10.5	8.6
No Wellness Policy	2.3	2.3	2.3	2.3	2.3
Number of SFAs			**578**		

Source: School Nutrition Dietary Assessment-IV, SFA Director Survey, school year 2009-2010. Tabulations prepared by Mathematica Policy Research. Estimates for all SFAs are weighted to be representative of all public SFAs offering the National School Lunch Program.

Notes: Response categories are mutually exclusive.

SFA directors in 2 HUSSC SFAs did not complete the SFA Director Survey.

HUSSC = HealthierUS School Challenge.

[a] Or other non-foodservice venues.

f. Availability of Competitive Foods

Information about the availability of competitive foods was collected in multiple instruments including surveys of principals and foodservice managers and checklists that were completed by a school staff member designated by the principal. We used all available instruments to provide a comprehensive picture of the availability of competitive foods in each school. The a la carte checklist was used to assess availability of a la carte foods; data from the principal survey, the foodservice manager survey, and the vending machine checklist were used to assess availability of vending machines; and data from the principal survey and the other sources of foods and beverages checklist was used to assess the availability of school stores, snack bars, food carts, fundraisers and other competitive food venues. Results are presented in Table 12.24.

The percentage of HUSSC elementary schools that offered a la carte was higher than it was for elementary schools overall (69 versus 58 percent for breakfast and 97 versus 82 percent for lunch). Similarly, the percentage of schools that had vending machines available was higher for HUSSC elementary schools than for elementary schools overall (20 versus 13 percent). This is consistent with the data presented in Table 12.23 which shows that the proportion of SFAs that reported that a la carte and vending were not allowed was substantially lower for HUSSC SFAs than for elementary school SFAs overall (6 versus 21 percent for a la carte and 3 versus 13 percent for vending machines, school stores, and other non-foodservice venues). As discussed in Chapter 3, it seems likely that the "not allowed" restriction does not apply to all schools in a district. In such a case, it is more likely that restrictions apply to elementary schools than to middle and high schools.

HUSSC qualification criteria do not prohibit the sale of competitive foods. Rather, they call for restrictions on students' access to these foods and use of nutrition standards in selecting foods to be offered in these venues. As shown in Table 12.23, 55 percent of HUSSC SFAs had fully implemented nutrition standards for a la carte foods, 21 percent had standards that were partially implemented, and 3 percent were still working on these standards. Similarly, 42 percent of HUSSC SFAs had fully implemented nutrition standards for vending machines and other non-foodservice venues and 39 percent had standards that were partially implemented.

Table 12.24 Availability of Competitive Foods in Elementary Schools Participating in the HealthierUS School Challenge and All Elementary Schools Nationwide

Competitive Food Sources	Percentage of Schools	
	HUSSC Elementary Schools	All Elementary Schools
Any A la Carte[a]		
Offered a la carte at breakfast	68.6	58.2
Offered a la carte at lunch	97.1	82.2
Any Vending Machines	20.0	13.1
Any Other Alternative Food Sources	11.4	12.2
Missing	5.7	11.4
Number of Schools	**35**	**315**
Among Schools with Complete Information About Competitive Foods		
Any Competitive Food Source (Vending Machines, A la Carte, or Alternative Food Sources[b])	97.0	89.4
Combinations of Sources		
A la carte only	63.6	65.2
Vending machines and a la carte	21.2	7.9
Vending machines, a la carte, and other alternative food sources[b]	0.0	1.9
A la carte and other alternative food sources[b]	12.1	8.2
Vending machines only	0.0	2.6
Other alternative food sources only[b]	0.0	2.3
Vending machines and other alternative food sources[b]	0.0	1.4
Number of Schools	**33**	**273**

Source: School Nutrition Dietary Assessment-IV, Foodservice Manager Survey, Principal Survey, A la Carte Checklist, Vending Machine Checklist, and Other Sources of Foods and Beverages Checklist, school year 2009–2010. Tabulations prepared by Mathematica Policy Research. Estimates for all elementary schools are weighted to be representative of all public elementary schools offering the National School Lunch Program.

HUSSC = HealthierUS School Challenge.

[a] A la carte foods and beverages are sold by school foodservice programs, but are not part of reimbursable meals.

[b] Alternative food sources include school stores, snack bars, or fundraisers reported by principals as well as school stores, snack bars, food carts, fundraisers, or other sources of competitive foods documented on the other sources of foods and beverages checklist.

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