

V. FACTORS THAT AFFECT THE FAT CONTENT OF NSLP LUNCHES

The nutritional requirements of the National School Lunch Program (NSLP) seek to ensure that school lunches provide an adequate amount of key nutrients. The current meal pattern was established to ensure that, over time, students would consume at least one-third of the Recommended Dietary Allowances (RDA) for all nutrients at lunch. During the past several years, public health concerns have focused on the overconsumption of some dietary components, particularly fat, saturated fat, cholesterol, and sodium. The *Dietary Guidelines for Americans* recommend that persons limit their intakes of these dietary components. An objective of *Healthy People 2000*, promulgated by the U.S. Department of Health and Human Services in 1990 and adopted by the U.S. Department of Agriculture (USDA), is that "90 percent of school lunch and breakfast services... provide meals that are consistent with the nutritional principles in the *Dietary Guidelines for Americans*." At the same time, the NSLP lunch must compete for the patronage of students in the face of a broad array of alternatives—among which are a la carte offerings, vending machines, and fast food restaurants. To attract students, school food service programs must offer foods that students like to eat, which may conflict with the goals of the Dietary Guidelines.

This chapter addresses three questions about the fat content of NSLP lunches:

- Do the practices at schools in which meals provide a relatively low percentage of food energy from fat differ from the practices at schools in which meals contribute a higher percentage of food energy from fat? In particular, are specific menu-planning, food-purchasing, and/or food-preparation practices more common or less common at schools offering lower fat meals than at other schools?
- What is the relationship between the fat content of lunches offered and other nutrients? Do meals that offer a lower average percentage of food energy from fat meet NSLP targets for key nutrients?
- Are identifiable school-level factors associated with a greater likelihood of offering low-fat lunches? Does the existence of state or district policies that direct school food services to follow specific practices aimed at attaining the goals of the Dietary Guidelines increase the likelihood that the schools will serve low-fat lunches?

A. SUMMARY OF FINDINGS

Only 1 percent of schools provide lunches that, on average, meet the Dietary Guideline goal that 30 percent of food energy or less be derived from fat. Consequently, the analysis focuses on those schools that come close to meeting the guideline—that is, on the 5 percent of schools that offer lunches providing, over a one-week period, an average of less than 32 percent of energy from fat.

1. Menu-Planning and Food-Purchasing Practices of Schools Offering Low-Fat Lunches

The meals of schools offering lunches providing an average of less than 32 percent of food energy from fat differ from the meals of other schools in several ways. The schools offering low-fat lunches:

- Offer ground-beef entrees less often, and poultry and meatless entrees more often
- Frequently offer an extra bread item, in addition to the bread or bread alternate included in the entree (for example, bread plus the rice or spaghetti in an entree)
- Offer vegetables with added fat (particularly, deep-fried french fries) less often
- Offer fruits and fruit juices more often and offer juices in addition to other items that meet the vegetable and fruit requirements of the meal pattern
- Offer 2 percent milk less frequently, and 1 percent milk or nonfat milk more frequently
- Offer salad dressing less frequently, but offer low-calorie dressing twice as frequently
- Offer desserts (especially cakes and cookies) less frequently, but offer low-fat, high-carbohydrate desserts (such as yogurt, pudding made from skim milk, or jello) more frequently

A review of school menus showed that schools offering low-fat lunches follow all or most of these practices. Schools offering moderate- to high-fat lunches follow some, but not all, of these practices, or follow them less frequently or less consistently.

2. Nutrient Content of Low-Fat and Higher-Fat Lunches

Lunches that provide less than 32 percent of food energy from fat also offer less food energy than do lunches providing a higher percentage of food energy from fat: the average food energy of the low-fat meals is less than one-third of the RDA for most age/gender groups. Generally, schools offering low-fat lunches and schools offering moderate- to high-fat lunches provide similar average amounts of most vitamins and minerals. One exception, however, is that low-fat lunches provide somewhat less iron than do higher-fat lunches. Low-fat lunches are relatively low in saturated fat and high in carbohydrate, but contain almost the same amount of protein as do higher-fat lunches.

3. Factors Associated with Offering Low-Fat Lunches

School characteristics, such as region of the country, urban location, socioeconomic status of students, enrollment, and grade level, are *not* associated with a higher or lower likelihood of offering low-fat meals. This finding indicates that schools in different parts of the country are equally likely to offer lunches that provide, on average, less than 32 percent of food energy from fat. Similarly, schools in urban, suburban, and rural districts are equally likely to offer low-fat lunches, as are schools with student bodies of differing grade levels, size, and average income levels.

Schools having a state or district guideline in place that requires or recommends providing lunches with 30 percent to 35 percent of food energy from fat are somewhat more likely than schools without such a guideline to actually achieve the goal of providing lunches with this characteristic. However, even among schools offering lower-fat lunches, less than one-half reported having a guideline in place, which suggests that much of the impetus for providing lower-fat lunches may come from school food service staff or informal community pressure, rather than from more formal district or state policies. Finally, guidelines stating that lunches should increase the number of servings of fruits, vegetables, and grains are also more prevalent in schools offering low-fat lunches than in other schools.

B. FACTORS AFFECTING THE PERCENTAGE OF FOOD ENERGY FROM FAT

1. Analytical Method

To identify the meal-preparation factors that affect the average fat content of meals, each of the 515 NSLP schools in the study sample was allocated to one of four categories, on the basis of the average fat content of their lunches:

- *Low-fat*: an average percentage of food energy from fat of less than 32 percent
- *Moderate-fat*: an average percentage of food energy from fat of 32 to (just less than) 35 percent
- *High-fat*: an average percentage of food energy from fat of 35 to (just less than) 40 percent
- *Very-high-fat*: an average percentage of food energy from fat of 40 percent or more

Table V.1 shows the distribution of schools across these categories, by grade level. Only 5 percent of all schools offer low-fat lunches. Eighteen percent offer moderate-fat lunches, 53 percent offer high-fat lunches, and 23 percent offer very-high-fat lunches. Similar percentages of elementary schools, middle schools, and high schools are in the low-fat category. However, a lower percentage of elementary schools than middle and high schools provide moderate-fat lunches (15 percent versus approximately 25 percent). A cut-off of 32 percent was used to classify "low-fat," rather than one of 30 percent, because only 1 percent of schools met the 30 percent criterion.

The menu-planning, food-purchasing, and meal-preparation practices of the four groups of schools were examined to determine which practices differed across the groups. The analysis primarily sought to identify and describe those practices that differentiated the low-fat-lunch schools from the other schools *in the sample*. Because relatively few schools nationwide offer low-fat lunches, the study sample of 515 schools participating in NSLP included only 34 schools offering lunches that provided, on average, less than 32 percent of food energy from fat. Because the number of such schools in the sample is small, it is not possible to estimate the attributes of low-fat schools nationally

TABLE V.1

DISTRIBUTION OF NSLP SCHOOLS, BY AVERAGE PERCENTAGE OF
FOOD ENERGY FROM FAT
(Percentage of Schools)

Lunch-Fat Category	Elementary Schools	Middle Schools	High Schools	All Schools
Low	5	7	5	5
Moderate	15	23	26	18
High	58	47	39	53
Very High	22	23	30	23
Number of Schools (Unweighted)	278	92	145	515

SOURCE: Menu data from the School Nutrition Dietary Assessment study, based on one week of school menus from a nationally representative sample of schools, collected from February to May 1992.

NOTE: Only schools serving NSLP lunches are included in this table. Low percentage of food energy from fat = less than 32 percent; moderate percentage of food energy from fat = 32 to just less than 35 percent; high percentage of food energy from fat = 35 to just less than 40 percent; very high percentage of food energy from fat = 40 percent or more.

with an acceptable degree of precision, or to provide rigorous, nationally valid estimates of the differences between low-fat-lunch schools and other schools. Therefore, as the differences between the practices of low-fat-lunch schools and other schools are described in this chapter, the reader should bear in mind that the findings do not rest on formal statistical tests.¹ Consequently, individual findings do not warrant the same degree of confidence as do findings presented in other chapters of this report. Despite this limitation, the broad patterns in the differences between low-fat-lunch schools and other schools appear to provide considerable insight into which specific practices distinguish the meal-planning and preparation practices of schools offering lower-fat lunches from those of other schools.

The practices selected for analysis were derived largely from the suggestions contained in nutrition guidance materials offered by the USDA. Tabulations show the percentage of schools offering specific foods at least once per week or, in some cases, every day of the school week.² In addition, to identify combinations of practices and/or other menu features that might not be apparent from the tabulations, a nutritionist reviewed the lists of foods offered by 15 randomly selected schools in each lunch-fat category.³

¹To maintain consistency with the rest of the report, the tabulations presented in this chapter are weighted to be representative of schools nationally. However, the sample sizes in the four groups of schools (especially those in the low-fat group) are relatively small, and the weights vary considerably within each group. Thus, some specific findings are sensitive to whether the data are reported as weighted or unweighted. The major findings (reported in Section A) are not sensitive to whether the data are weighted.

²Most of the items were defined according to data on the recipe ingredients of entrees or foods prepared from recipes, based on the food codes defined in Appendix A. For example, the information on the frequency with which ground beef was offered includes not only ground beef patties, but also ground beef used in recipes. Some exceptions to the use of food codes in Appendix A are noted in Tables V.2 through V.6.

³Unlike the tabulations for the full sample, conclusions based on the nutritionist's manual review were not weighted.

2. Findings Based on Tabulations for the Full Sample of Schools

This section presents the findings on the foods offered under each of the four required NSLP meal-pattern components: (1) meats and meat alternates; (2) breads and bread alternates; (3) vegetables and fruits; and (4) milk. It also presents findings on foods that do not count toward satisfying the NSLP meal-pattern requirement (noncreditable foods). The final subsection describes the range of lunch choices, including the use of self-serve food bars.

a. Meats and Meat Alternates

Compared with schools in the other three lunch-fat categories, schools offering low-fat lunches offer more meals without meat, more meals with chicken or turkey, and fewer meals with ground beef or deli meats (Table V.2). Differences in how frequently other meat or meat alternate items are offered are small.

Meatless Lunches. A greater percentage of schools that offer low-fat lunches serve meatless entrees at least once per week (83 percent versus 68 percent to 79 percent). Cheese pizza, the most common meatless entree, is much more likely to be served by schools that offer low-fat lunches. Entrees without meat or cheese (those made with beans, eggs, or peanut butter) are more likely to be served in schools offering low- and moderate-fat lunches than in schools offering high- or very-high-fat lunches.

Ground Beef and Substitutes. Compared with schools in the other categories, schools that offer low-fat lunches are less likely to serve ground beef, but are no more likely to use lower-fat ground beef or ground-beef substitutes. In fact, more schools offering higher-fat lunches serve entrees made with textured vegetable protein and beans with ground beef than do schools offering low-fat lunches. This finding suggests that reducing the frequency with which ground beef is served lowers average fat content more effectively than does using lower-fat ground beef.

Lunchmeats. Schools in the low-fat and very-high-fat categories are about equally likely to serve hot dogs (often, lower-fat turkey hot dogs). Schools that offer low-fat lunches serve deli meats less

TABLE V.2
MEATS AND MEAT ALTERNATES, BY LEVEL OF FAT IN NSLP LUNCHES OFFERED
(Percentage of Schools Serving Item at Least Once per Week)

Meats and Meat Alternates	Level of Fat in NSLP Lunches Offered			
	Low	Moderate	High	Very High
Meatless Entrees				
Entrees without Meat	83	79	73	68
Cheese Pizza (No Meat Topping)	42	34	29	19
Entrees without Meat or Cheese	58	61	47	48
Ground Beef or Substitutes				
Ground Beef	78	88	96	95
Lower-Fat Ground Beef*	5	4	7	6
Ground Beef with TVP	6	4	11	8
Ground Beef with Beans	20	44	32	38
Ground Turkey	14	6	11	16
Lunchmeats				
Hot Dogs	66	51	49	64
Lower-Fat Hot Dogs	42	39	34	39
Deli Meats	53	60	56	70
Lower-Fat Deli Meats	40	47	38	43
Poultry				
Chicken	88	57	76	77
Chicken without Skin	40	16	21	13
Breaded Chicken	48	32	35	51
Turkey	49	44	34	35
Turkey without Skin	28	34	21	12
Fish				
Fish	47	48	38	57
Tuna in Water	1	19	4	6
Tuna Salad	35	11	9	16
Breaded Fish	29	21	27	42
Cheese				
Cheese, All Types	90	87	97	94
Lower-Fat Natural Cheese	73	59	74	70
Low-Fat Imitation Cheese	8	1	3	2
Pizza	70	48	62	54
Pizza with Low-Fat Cheese	62	42	61	46
Number of Schools (Unweighted)	34	85	260	136

SOURCE: Menu data from the School Nutrition Dietary Assessment study, based on one week of school menus from a nationally representative sample of schools, collected from February to May 1992.

NOTES: Only schools serving NSLP lunches are included in this table. Low percentage of food energy from fat = less than 32 percent; moderate percentage of food energy from fat = 32 to just less than 35 percent; high percentage of food energy from fat = 35 to just less than 40 percent; very high percentage of food energy from fat = 40 percent or more.

Tests of statistical significance were not performed.

*Less than 20 percent fat by weight.

TVP = textured vegetable protein.

often, especially when compared with schools in the very-high-fat group, but are about as likely as other schools to serve low-fat deli meats (turkey lunchmeats or lean ham).

Poultry. Schools that offer low-fat lunches use more turkey and chicken (other than lunchmeats), and more skinless turkey and chicken, probably for sandwiches.

Fish. Schools that offer very-high-fat lunches are more likely to serve fish overall, and the fish is more likely to be breaded (and fried). However, schools that offer low-fat lunches are more likely to serve tuna salad, which usually contains mayonnaise.⁴

Cheese. Schools offering low-fat lunches and those offering higher-fat lunches were about equally likely to serve cheese. However low-fat-lunch schools were more likely than schools in the other groups to serve low-fat imitation cheese, although the use of imitation cheese is restricted, and it is served by only 8 percent of schools that offer low-fat lunches.⁵ Schools that offer low-fat lunches are more likely than the other schools to serve pizza and pizza made with low-fat cheese.

b. Vegetables and Fruits

Schools serving low-fat lunches and those serving higher-fat lunches offer different types of vegetables and fruits and prepare them in different ways. Low-fat lunches offer more fruit, more varieties of fruit, and more fruit juice, but fewer deep-fried french fries, and fewer vegetables with added fat (Table V.3).

One of the largest differences is in how frequently deep-fried french fries are served. Only 20 percent of low-fat-lunch schools offer deep-fried french fries at least once per week, compared with 38 percent of schools that offer high-fat lunches, and with 56 percent that offer very-high-fat lunches. (The frequency with which oven-baked french fries were served by schools in the four categories did

⁴Conclusions about fish were sensitive to the sample weights.

⁵Imitation cheeses are low-fat products the use of which is restricted in the NSLP. Imitation cheese must be mixed with natural cheese, must be used in a cooked entree, and cannot comprise more than one-half of the meat/meat alternate requirement in any meal.

TABLE V.3

VEGETABLES AND FRUITS, BY LEVEL OF FAT IN NSLP LUNCHES OFFERED
(Percentage of Schools Serving Item at Least Once per Week or as Shown)

Vegetables and Fruits	Level of Fat in NSLP Lunches Offered			
	Low	Moderate	High	Very High
Vegetables				
At Least Four Vegetables per Day ^a	51	71	52	60
Potatoes	82	94	96	97
French-Fried Potatoes (Deep Fried)	20	23	38	56
French-Fried Potatoes (Oven Baked)	27	37	18	28
Other High-Fat Potatoes	58	83	84	76
Potatoes without Added Fat	12	13	15	18
Cooked Vegetables (Not Potato)	76	96	98	99
Raw Vegetables	83	98	94	97
Raw Vegetables Daily	24	34	22	42
Vegetables with Added Fat (Not Potato) ^b	43	73	80	88
Fruits				
Fruit Daily	72	55	53	53
Raw Fruit	76	73	67	77
Raw Fruit Daily	21	22	11	16
Canned Fruit Daily	25	18	18	17
At Least Four Fruits per Day	31	19	17	25
Juice ^c	45	39	33	26
Juice Daily	15	8	12	8
Number of Schools (Unweighted)	34	85	260	136

SOURCE: Menu data from the School Nutrition Dietary Assessment study, based on one week of school menus from a nationally representative sample of schools, collected from February to May 1992.

NOTES: Only schools serving NSLP lunches are included in this table. Low percentage of food energy from fat = less than 32 percent; moderate percentage of food energy from fat = 32 to just less than 35 percent; high percentage of food energy from fat = 35 to just less than 40 percent; very high percentage of food energy from fat = 40 percent or more.

Tests of statistical significance were not performed.

^aIncludes vegetables that are ingredients in entree recipes.

^bDefined as vegetable dishes providing more than 20 percent of food energy from fat. Vegetables in entrees are not included.

^cIncludes a small number of frozen fruit juice bars.

not follow any clear pattern.) Schools that offer low-fat lunches also are less likely to serve other high-fat potatoes, such as chips, scalloped potatoes, and potato tots (58 percent compared with 76 percent to 84 percent).

Interestingly, potatoes prepared without added fat (baked or boiled potatoes) are not served more frequently in low-fat-lunch schools. In fact, more schools offering higher-fat lunches than those offering low-fat lunches serve baked or boiled potatoes. One possible explanation is that, although prepared without added fat, baked and boiled potatoes are served with such fats as butter or sour cream.

Schools in the low-fat group are less likely to offer cooked vegetables, raw vegetables, and, especially, vegetables other than potatoes that are prepared with added fat (such as cole slaw and broccoli with cheese sauce). Seventy-six percent of low-fat-lunch schools offer cooked vegetables other than potatoes, whereas virtually all schools in the other categories offer these food items. Surprisingly, schools offering low-fat lunches are less likely to offer raw vegetables once per week (83 percent compared with 94 percent to 98 percent) and are less likely to offer them daily (24 percent compared with 34 percent, 22 percent, and 42 percent in the moderate-, high-, and very-high-fat groups, respectively). The likely explanation for this pattern is that cooked vegetables tend to be served with butter, and raw vegetables tend to be served with salad dressing, thereby making them relatively high-fat offerings. Finally, only 43 percent of low-fat-lunch schools offer a vegetable with added fat at least once per week, compared with 73 percent to 88 percent of schools offering moderate- to very-high-fat lunches.

Schools that offer low-fat lunches serve more fruit than do schools in the other groups. They are more likely to serve fruit every day—72 percent do so, compared with 53 percent to 55 percent of schools in the other groups. They also are more likely to serve raw fruit and canned fruit every day and tend to serve more varieties of fruit—31 percent serve at least four fruit items per day, compared with 17 percent to 25 percent of schools in the other groups. Finally, low-fat-lunch schools

are more likely to serve juice once per week (45 percent compared with 26 percent to 39 percent) and to serve juice every day (15 percent compared with 8 percent to 12 percent).

c. Breads and Bread Alternates

Schools that offer low-fat lunches are more likely to serve a low-fat bread or bread alternate, especially spaghetti, and are less likely to serve a high-fat bread or bread alternate, such as biscuits and taco shells (Table V.4). All groups are almost equally likely to serve medium-fat breads (hamburger rolls, hot dog rolls, some whole wheat breads).

Grain-based mixed dishes with meat or cheese are more commonly served in schools that offer low-fat lunches. In addition to serving pizza more frequently, schools in the low-fat group also offer rice, spaghetti, and tortillas more frequently, usually as part of an entree. The menu review showed that such entrees, which include a bread alternate, are often served with additional bread on the side.

Schools that offer low-fat lunches serve more whole-wheat bread and rolls.

d. Milk

Schools in the low-fat group are more likely to offer milk containing less than 2 percent fat, especially nonfat white milk and nonfat chocolate milk (Table V.5). Fifty percent of schools that offer low-fat lunches offer nonfat white milk, compared with 19 percent of schools that offer very-high-fat lunches. Twenty-seven percent of low-fat-lunch schools offer non-fat chocolate milk, compared with 12 percent of moderate-fat-lunch schools and 8 percent of very-high-fat-lunch schools. Schools in the low-fat-lunch group are also somewhat less likely than those in the higher-fat-lunch groups to offer 2 percent white milk.

e. Noncreditable Items

Schools may offer items that do not satisfy the NSLP meal-pattern requirement. Such noncreditable items include butter, condiments, salad dressings, and desserts (pudding, jello, cookies,

TABLE V.4

BREADS AND BREAD ALTERNATES, BY LEVEL OF FAT IN NSLP LUNCHES OFFERED
(Percentage of Schools Serving Item at Least Once per Week)

Breads and Bread Alternates	Level of Fat in NSLP Lunches Offered			
	Low	Moderate	High	Very High
Separate Bread Item Daily^a	68	78	50	56
Lower-Fat Breads/Bread Alternates^{a,b}	87	81	76	71
White Bread	33	38	52	56
French Bread	9	7	14	9
Submarine Rolls	13	18	11	13
Spaghetti	40	16	16	10
Egg Noodles	14	16	16	18
Rice	20	25	24	13
Macaroni	3	16	24	15
Medium-Fat Breads/Bread Alternates^{a,b}	92	98	94	94
Whole Wheat Bread	25	18	18	13
Hamburger/Hot Dog Rolls	76	76	79	80
White Rolls	57	72	58	45
Whole Wheat Rolls	22	21	19	13
Other White Bread (Bread Sticks, Croutons)	32	32	32	29
Saltines	14	34	22	23
Higher-Fat Breads/Bread Alternates^{a,b}	60	75	76	84
Fried Corn Tortillas	12	2	2	2
Other Tortillas	24	26	18	22
Taco Shells	19	18	27	38
Biscuits	5	12	7	15
Muffins	6	2	2	3
Number of Schools (Unweighted)	34	85	260	136

SOURCE: Menu data from the School Nutrition Dietary Assessment study, based on one week of school menus from a nationally representative sample of schools, collected from February to May 1992.

NOTES: Only schools serving NSLP lunches are included in this table. Low percentage of food energy from fat = less than 32 percent; moderate percentage of food energy from fat = 32 to just less than 35 percent; high percentage of food energy from fat = 35 to just less than 40 percent; very high percentage of food energy from fat = 40 percent or more.

Tests of statistical significance were not performed.

^aBreads/bread alternates that are ingredients in recipes are excluded.

^bLower-fat breads/bread alternates = less than 15 percent of energy from fat; medium-fat breads/bread alternates = 15 percent to 25 percent of energy from fat; higher-fat breads/bread alternates = more than 25 percent of energy from fat. The cut-offs for identifying the groups were arbitrary and were based on empirical distributions of fat in bread alternates.

TABLE V.5

TYPES OF MILK, BY LEVEL OF FAT IN NSLP LUNCHES OFFERED
(Percentage of Schools Serving Each Type of Milk)

Milk	Level of Fat in NSLP Lunches Offered			
	Low	Moderate	High	Very High
Whole White	92	98	94	95
2% White	75	71	88	93
1% White	33	43	31	11
Nonfat White	50	36	29	19
Whole Chocolate	3	0	11	4
2% Chocolate	43	42	44	47
1% Chocolate	43	41	44	38
Nonfat Chocolate	27	12	4	8
Number of Schools (Unweighted)	34	85	260	136

SOURCE: Menu data from the School Nutrition Dietary Assessment study, based on one week of school menus from a nationally representative sample of schools, collected from February to May 1992.

NOTES: Only schools serving NSLP lunches are included in this table. Low percentage of food energy from fat = less than 32 percent; moderate percentage of food energy from fat = 32 to just less than 35 percent; high percentage of food energy from fat = 35 to just less than 40 percent; very high percentage of food energy from fat = 40 percent or more.

Tests of statistical significance were not performed.

cake, and frozen desserts). These items contribute substantially to the total nutrient and fat content of school meals.

Schools that offer low-fat lunches are much less likely than schools in the other groups to offer butter, sour cream, salad dressing, and gravy (Table V.6). Furthermore, the salad dressings are much more likely to be low-calorie dressings, which are also low in fat.

Schools that offer low-fat lunches are also less likely to serve dessert. In particular, they are roughly one-half as likely as schools that offer very-high-fat lunches to serve grain-based desserts, such as cookies and cakes (30 percent versus 57 percent).

f. Extent of Menu Choice

Schools that offer low-fat lunches offer approximately the same number of entree choices on their daily lunch menus as do other schools. Furthermore, the distributions of the number of choices offered are similar across groups (Table V.7). Interestingly, schools that offer low-fat lunches are somewhat more likely to offer a larger selection of fruits and vegetables on their regular menu, but are less likely to offer salad bars.

Almost all schools in the low- and moderate-fat groups offer at least one meal that meets the Dietary Guideline goal of 30 percent or less of energy from fat.⁶ In contrast, relatively few schools in the high- or very-high-fat group offer an option that meets this goal on average during the week (35 percent of high-fat-lunch schools, and 21 percent of very-high-fat-lunch schools).

3. Results of the Manual Review of Menus

A nutritionist reviewed menus from 15 schools in each of the four groups of schools defined by the average percentage of food energy from fat in an NSLP lunch. The subsample of schools for this review was selected randomly from all of the schools in each category. This qualitative analysis

⁶The definition of the lowest-fat option is discussed in Chapter III and Appendix A.

TABLE V.6

NONCREDITABLE FOODS, BY LEVEL OF FAT IN NSLP LUNCHES OFFERED
(Percentage of Schools Serving Food at Least Once per Week)

Noncreditable Foods	Level of Fat in NSLP Lunches Offered			
	Low	Moderate	High	Very High
Butter	37	49	77	72
Salad Dressing/Mayonnaise	57	69	70	79
Low-Calorie Salad Dressing/Mayonnaise	22	15	11	10
Gravies with Fat	16	31	27	31
Sour Cream	5	8	5	13
Low-Fat Sour Cream	5	20	13	4
Dessert (All Types)	67	81	82	76
Grain-Based Dessert (Cakes or Cookies)	30	52	65	57
Ice Cream	5	5	7	8
Yogurt	1	14	0	2
Number of Schools (Unweighted)	34	85	260	136

SOURCE: Menu data from the School Nutrition Dietary Assessment study, based on one week of school menus from a nationally representative sample of schools, collected from February to May 1992.

NOTES: Only schools serving NSLP lunches are included in this table. Low percentage of food energy from fat = less than 32 percent; moderate percentage of food energy from fat = 32 to just less than 35 percent; high percentage of food energy from fat = 35 to just less than 40 percent; very high percentage of food energy from fat = 40 percent or more.

Tests of statistical significance were not performed.

TABLE V.7

NUMBER OF CHOICES OFFERED, BY LEVEL OF FAT IN NSLP LUNCHES
(Percentage of Menu Days/Percentage of Schools)

	Level of Fat in NSLP Lunches Offered			
	Low	Moderate	High	Very High
Number of Entrees Offered per Day				
1	47	40	51	51
2-3	58	42	36	27
4-5	5	9	7	9
6+	11	8	5	13
Mean	2.4	2.6	2.1	2.8
Number of Vegetable/Fruit Options (Not on Salad Bar)				
No more than 2	31	23	26	28
3-4	32	39	44	38
5-7	16	25	44	14
8+	22	36	11	20
Mean	5.3	4.7	4.3	4.8
Percentage of Schools Offering Salad Bar				
At least once per week	6	17	13	23
All days	6	11	8	22
Percentage of Schools Offering an Option Providing 30 Percent of Energy or Less from Fat				
	94	86	35	21
Number of Schools (Unweighted)	34	85	260	136

SOURCE: Menu data from the School Nutrition Dietary Assessment study, based on one week of school menus from a nationally representative sample of schools, collected from February to May 1992.

NOTES: Only schools serving NSLP lunches are included in this table. Low percentage of food energy from fat = less than 32 percent; moderate percentage of food energy from fat = 32 to just less than 35 percent; high percentage of food energy from fat = 35 to just less than 40 percent; very high percentage of food energy from fat = 40 percent or more. The category "Percentage of Schools Offering an Option Providing 30 Percent of Energy or Less from Fat" indicates that the lowest-percent-fat option for a full meal provides, on average, less than 30 percent of energy from fat during the survey week.

Tests of statistical significance were not performed.

describes subtle differences in the schools' menu-planning practices that affect the fat content of meals.

The analysis identified the following important differences between schools offering low-fat and higher-fat lunches:

- Schools offering low-fat lunches are more likely to serve bread items, such as crackers, rolls, pretzels, or bread, *in addition* to a pasta- or rice-based entree. Extra bread that was included in the menus of schools offering higher-fat lunches was more likely to be buttered. Low-fat menus are more likely to combine a high-carbohydrate food with higher-fat dishes, for example, baked beans with a hot dog, or a cheeseburger with an additional serving from the vegetable/fruit component.
- Menus providing a lower percentage of food energy from fat are more likely to provide raw and cooked vegetables without added fat. Higher-fat menus are more likely to serve vegetables topped with cheese sauce, sour cream, or butter.
- About one-third of schools offering low-fat lunches offer no vegetables, but do offer fruit juice and canned fruit. Schools offering low-fat lunches are also more likely to offer juice as a third item in the vegetable/fruit component.
- Menus providing a higher percentage of energy from fat include more grain-based desserts, which are more likely to be high in fat (for example, chocolate-chip cookies and pie). Thus, a relatively low-fat menu consisting of a turkey sandwich with vegetable and fruit becomes a high-fat menu with the addition of a chocolate chip cookie.
- Schools offering low-fat lunches are more likely than other schools to serve low-fat desserts, such as flavored gelatin, low-fat yogurt, or low-fat pudding.

C. NUTRIENT CONTENT OF LOW-FAT AND HIGHER-FAT LUNCHES

Because the primary goal of the NSLP is to provide an adequate level of key nutrients, it is important to determine whether schools that offer low-fat lunches achieve this goal. Therefore, the nutrient content of lunches offered was analyzed separately for each of the four school groups defined by the percentage of food energy from fat.

As shown in Table V.8, compared with schools in the other groups, schools that offer low-fat lunches provide much less food energy in their lunches (an average of 674 calories). The two middle groups provide about the same amount of food energy in their lunches (733 and 759

TABLE V.8
MEAN NUTRIENTS, BY AVERAGE LEVEL OF FAT IN NSLP LUNCHES OFFERED

Dietary Component	Level of Fat in NSLP Lunches Offered			
	Low	Moderate	High	Very High
Macronutrients				
Food Energy (calories)	674	733	759	772
Protein (grams)	30	31	31	31
Carbohydrate (grams)	90	93	90	84
Fat (grams)	23	27	32	36
Saturated Fat (grams)	9	11	13	14
Percentage of Food Energy from:				
Protein	18	17	17	16
Carbohydrate	53	50	47	43
Fat	31	34	37	42
Saturated Fat	12	14	15	17
Vitamins				
Vitamin A (mcg RE)	368	454	382	410
Vitamin C (mg)	31	27	30	30
Thiamin (mg)	0.5	0.6	0.6	0.6
Riboflavin (mg)	0.8	0.9	0.9	0.8
Niacin (mg NE)	7	7	7	6
Vitamin B6 (mg)	0.5	0.5	0.5	0.5
Folate (mcg)	81	89	85	81
Vitamin B12 (mcg)	1.7	1.8	1.8	1.8
Minerals				
Calcium (mg)	473	491	497	504
Iron (mg)	4	5	4	4
Phosphorus (mg)	540	573	579	586
Magnesium (mg)	102	105	105	102
Zinc (mg)	4	4	4	4
Other Components				
Sodium (mg)	1,308	1,473	1,475	1,531
Cholesterol (mg)	72	83	87	95
Fiber (grams)	7	7	4	7
Number of Schools (Unweighted)	34	85	260	136

SOURCE: Menu data from the School Nutrition Dietary Assessment study, based on one week of school menus from a nationally representative sample of schools, collected from February to May 1992.

NOTE: Only schools serving NSLP lunches are included in this table. Low percentage of food energy from fat = less than 32 percent; moderate percentage of food energy from fat = 32 to just less than 35 percent; high percentage of food energy from fat = 35 to just less than 40 percent; very high percentage of food energy from fat = 40 percent or more.

mg = milligrams.
mcg = micrograms.
RE = retinol equivalent.
NE = niacin equivalent.

calories), and schools that offer very-high-fat lunches provide the highest level of food energy in their lunches (772 calories).

The lunches of the low-fat schools provide substantially less food energy than do the lunches of other groups, because the low-fat lunches provide less fat but do not increase carbohydrate to offset the resulting reduction in food energy. Lunches in all four groups of schools provide similar levels of protein (30 or 31 grams). The mean carbohydrate content of lunches is highest in schools that offer moderate-fat lunches (93 grams). It is slightly lower in schools that offer low-fat and high-fat lunches (90 grams) and is considerably lower in schools that offer very-high-fat lunches (84 grams). The average fat content in lunches offered varies greatly--from 23 grams in schools that offer low-fat lunches to 36 grams in schools that offer very-high-fat lunches (a 57 percent difference). Saturated fat varies from 9 grams in the low-fat-lunch group to 14 grams in the very-high-fat-lunch group.

Schools in the low-fat-lunch group offer lunches that provide substantially less than one-third of the RDA for food energy for most age/gender groups (Tables V.9.A through V.9.C). For example, for 15- to 18-year-old male students, the average lunch in a low-fat school provides 23 percent of the RDA. On average, low-fat lunches provide one third of the RDA for most vitamins and minerals. The few cases in which low-fat lunches fall short of the lunch target are the same as for higher-fat lunches: zinc, for most children older than 10 years; iron, for female students older than 10 years; and vitamin B6 and magnesium, for 15- to 18-year-old male students. However, schools that offer low-fat lunches are further below the lunch RDA for iron for teenaged females than are schools that offer higher-fat lunches.⁷

⁷Schools that offer very-high-fat lunches also tend to offer lunches that are lower in iron than do the schools in the middle groups (data not shown).

TABLE V.9.A

MEAN NUTRIENTS IN NSLP LUNCHES OFFERED RELATIVE TO THE RDA:
ELEMENTARY SCHOOLS OFFERING LOW-FAT MEALS

Nutrient	Mean Nutrient as a Percentage of the RDA for Each Age/Gender Group		
	7- to 10-Year- Old Students	11- to 14-Year- Old Females	11- to 14-Year- Old Males
The Target for NSLP Lunches Is 33 Percent of the RDA			
Food Energy	31	28	25
Protein	101	61	63
Vitamin A	49	42	34
Vitamin C	59	53	53
Thiamin	49	44	37
Riboflavin	62	57	50
Niacin	49	43	38
Vitamin B6	36	36	30
Folate	71	47	47
Vitamin B12	116	81	81
Calcium	56	37	37
Iron	38	25	32
Phosphorus	64	43	43
Magnesium	56	34	36
Zinc	34	29	23
Number of Schools (Unweighted)	14	14	14

SOURCE: Menu data from the School Nutrition Dietary Assessment study, based on one week of school menus from a nationally representative sample of schools, collected from February to May 1992.

NOTE: Only schools serving NSLP lunches are included in this table.

TABLE V.9.B

MEAN NUTRIENTS IN NSLP LUNCHES OFFERED RELATIVE TO THE RDA:
MIDDLE SCHOOLS OFFERING LOW-FAT MEALS

Nutrient	Mean Nutrient as a Percentage of the RDA for Each Age/Gender Group		
	7- to 10-Year- Old Students	11- to 14-Year- Old Females	11- to 14-Year- Old Males
The Target for NSLP Lunches Is 33 Percent of the RDA			
Food Energy	39	35	31
Protein	115	70	71
Vitamin A	61	53	43
Vitamin C	97	87	87
Thiamin	62	57	48
Riboflavin	71	66	57
Niacin	55	48	43
Vitamin B6	44	44	36
Folate	93	62	62
Vitamin B12	124	87	87
Calcium	64	43	43
Iron	48	32	40
Phosphorus	73	49	49
Magnesium	68	41	43
Zinc	40	34	27
Number of Schools (Unweighted)	9	9	9

SOURCE: Menu data from the School Nutrition Dietary Assessment study, based on one week of school menus from a nationally representative sample of schools, collected from February to May 1992.

NOTE: Only schools serving NSLP lunches are included in this table.

TABLE V.9.C

MEAN NUTRIENTS IN NSLP LUNCHES OFFERED RELATIVE TO THE RDA:
HIGH SCHOOLS OFFERING LOW-FAT MEALS

Nutrient	Mean Nutrient as a Percentage of the RDA for Each Age/Gender Group			
	11- to 14- Year-Old Females	11- to 14- Year-Old Males	15- to 18- Year-Old Females	15- to 18- Year-Old Males
The Target for NSLP Lunches Is 33 Percent of the RDA				
Food Energy	32	28	32	23
Protein	68	70	71	53
Vitamin A	48	39	49	39
Vitamin C	69	69	57	57
Thiamin	53	45	53	39
Riboflavin	64	55	64	46
Niacin	43	38	43	33
Vitamin B6	40	33	37	28
Folate	66	66	55	49
Vitamin B12	84	84	84	84
Calcium	42	42	42	42
Iron	30	38	30	38
Phosphorus	47	47	47	47
Magnesium	38	39	35	26
Zinc	32	26	32	26
Number of Schools (Unweighted)	11	11	11	11

SOURCE: Menu data from the School Nutrition Dietary Assessment study, based on one week of school menus from a nationally representative sample of schools, collected from February to May 1992.

NOTE: Only schools serving NSLP lunches are included in this table.

D. SCHOOL AND SCHOOL FOOD AUTHORITY CHARACTERISTICS ASSOCIATED WITH PROVIDING LOW-FAT NSLP LUNCHES

A key question is whether identifiable school- or district-level characteristics are associated with offering NSLP lunches that provide, on average, a low percentage of food energy from fat. One important factor that could be associated with offering low-fat meals is whether the school's district or state has guidelines in place that are designed to promote the objectives of the Dietary Guidelines. The head of the School Food Authority in each district was asked whether the district had specific guidelines in place, adopted either by the district or the state. The prevalence of specific guidelines in schools offering low-, moderate-, high-, and very-high-fat lunches is shown in Table V.10.

Not surprisingly, schools offering lunches that provide a low or moderate percentage of food energy from fat are more likely than schools offering high- or very-high-fat lunches to have a state or district guideline that total fat be limited to 30 percent to 35 percent of food energy. Forty-two percent of schools in the low-fat and in the moderate-fat groups have such a guideline in place, compared with 32 percent of schools in the high-fat group and 22 percent of schools in the very-high-fat group. Interestingly, however, the majority of schools in the low-fat and moderate-fat groups (58 percent in each group) do not have a formal guideline or policy relating to the fat content of lunches. This finding suggests that serving lower-fat meals is more likely to result from a decision by staff to offer such meals than to follow from the formal adoption of a policy at the state or district level. Although such policies do promote lower-fat lunches, staff commitment appears to be a key factor.

Several other guidelines are associated with offering low-fat meals. First, more schools offering low-fat meals have a guideline relating to the saturated fat content of lunches--40 percent, compared with 22 percent to 33 percent in the other groups. Second, guidelines for increasing the number of servings of vegetables, fruits, and grains are more prevalent among schools offering low-fat meals. For example, 51 percent of schools in the low-fat group have a guideline for increasing the servings of fruit, compared with 31 percent to 41 percent of schools in the moderate- to very-high-fat groups.

TABLE V.10

PREVALENCE OF STATE AND DISTRICT MEAL-PLANNING GUIDELINES
(Percentage of Schools)

Guidelines for Meal Planning	Level of Fat in NSLP Lunches Offered				All Schools
	Low	Moderate	High	Very High	
Limit Food Energy from Total Fat to 30-35 Percent	42	42	32	22	32
Limit Food Energy from Saturated Fat	40	22	33	30	31
Increase the Number of Servings of Fruit	51	31	41	36	39
Increase the Number of Servings of Vegetables	53	27	35	26	33
Increase the Number of Servings of Whole-Grain Products	45	34	31	34	33
Limit the Number of Desserts Served	43	38	37	29	36
Serve a Variety of Foods	55	52	44	43	46
Restrict Competitive Foods	42	37	38	36	38
Limit Dietary Cholesterol	24	29	34	23	30
Increase the Amount of Fiber	42	44	40	36	40
Limit Sodium	42	50	42	40	43
Limit Sugar	43	44	41	41	42
Number of Schools (Unweighted)	34	85	260	136	515

SOURCE: Weighted tabulations, School Characteristics Questionnaire interview with the head of the School Food Authority, School Nutrition Dietary Assessment study.

NOTE: Only schools serving NSLP lunches are included in this table. Low percentage of food energy from fat = less than 32 percent; moderate percentage of food energy from fat = 32 to just less than 35 percent; high percentage of food energy from fat = 35 to just less than 40 percent; very high percentage of food energy from fat = 40 percent or more.

Similarly, 53 percent of schools in the low-fat group have a guideline on increasing the number of servings of vegetables, compared with 26 percent to 35 percent in the moderate- to very-high-fat groups.

Schools in the low-fat group are somewhat more likely than schools in the other groups to have guidelines to limit the number of desserts, serve a variety of foods, and restrict the sale of foods sold in competition with the NSLP lunch. However, the association between these guidelines and the likelihood of providing low-fat lunches is not as strong as are the associations discussed in the previous paragraphs. There appears to be no association between guidelines on dietary cholesterol, fiber, sodium, or sugar and the level of fat in meals offered.

The socioeconomic or locational characteristics of the schools and the types of meal services offered also potentially could be associated with offering low-fat meals. To identify these possible associations, a multivariate regression model was estimated in which several school-level variables were used to explain variations in the likelihood that the average fat content of a school's NSLP lunches places the school in the low-fat group. Table V.11 lists the characteristics examined and shows the increase (+) or decrease (-) in the probability of being in the low-fat group associated with each characteristic. For characteristics that are either present or absent—e.g., offer versus serve (OVS) is used—the estimate indicates the average difference in the proportion of schools with the characteristic and schools with the opposite characteristic in the low-fat group. For example, the percentage of schools using OVS that are in the low-fat group is 7 percentage points larger than the percentage of schools not using OVS that are in the low fat group. For characteristics that vary continuously, such as enrollment or length of the lunch period, rather than indicate presence or absence of a characteristic, Table V.11 shows the increase (+) or decrease (-) in the probability of being in the low-fat group associated with a unit change in the characteristic.

Several meal and food-service characteristics are associated with offering low-fat lunches. Schools offering a cold meal and schools offering a la carte items are more likely to offer low-fat

TABLE V.11

CHARACTERISTICS ASSOCIATED WITH OFFERING LOW-FAT NSLP LUNCHES

Explanatory Variables	Estimated Effect on Probability of Offering Low-Fat NSLP Lunches
Characteristics of Food Service and School Meals	
Characteristics of School Food Service	
OVS used	-7 **
Length of the lunch period	.06
Serving line capacity	.01
Characteristics of NSLP Meal	
Average food energy in meals offered (per 100 calories)	-5 **
Number of entrees offered	.04
Dessert offered	1
Fresh fruit offered	2
Salad bar offered	-.11
Cold meal offered	.11 **
Hot sandwich offered	-.7 *
Alternatives to NSLP Meal	
A la carte available	7 *
Open campus	4
Vending machine/school store available	2
Characteristics of School and Community	
Type of Community (Relative to Rural)	
Suburban	3
Urban	4
Region of Country (Relative to New England)	
Mid-Atlantic	-3
Southeast	3
Midwest	3
Southwest	-0.4
Mountain	-3
West	-5
School Level (Relative to High Schools)	
Elementary school	-4
Middle school	0.3
School Enrollment and Student Characteristics	
Number of students (per 100 students)	-0.002
Percentage of students white	-0.1
Percentage of students certified for a free or reduced-price meal	-.5
Mean (Percentage of Schools Offering Low-Fat NSLP Lunches)	5
Number of Schools (Unweighted)	498

SOURCE: Information from School Characteristics Questionnaire and information on NSLP lunches, School Nutrition Dietary Assessment study.

NOTE: Estimated effects were estimated using weighted least squares.

OVS = offer versus serve.

*/** indicates that the estimate differs significantly from zero at the 95/99 percent confidence level with a two-tailed test.

NSLP lunches. A negative, statistically significant association exists between offering a low-fat lunch and (1) whether the school uses OVS, (2) the average energy content of the school's lunches, and (3) whether the school offers a hot sandwich for lunch.

Of greater interest is the lack of any statistically significant relationship between being in the low-fat group and characteristics of the school and community. Different parts of the country, different types of communities, different levels and sizes of schools, and different racial and socioeconomic compositions of schools (as measured by the percentage of students certified for free or reduced-price meals) are all equally likely, after controlling for the effects of other factors, to be characteristics associated with a school's being in the low-fat group.

VI. MEALS OFFERED IN THE SCHOOL BREAKFAST PROGRAM

This chapter describes the meals offered in the School Breakfast Program (SBP), including their average nutrient content, variety of foods, and specific menu items offered during a typical week. U.S. Department of Agriculture (USDA) breakfasts must conform to the SBP meal pattern, which requires that the breakfasts offer the following components:

- Either one serving of a bread or bread alternate (1 slice of bread or equivalent) and one serving of a meat or meat alternate (1 ounce of meat or equivalent) *or* two servings from either group (which may consist of the same item)¹
- One serving (1/2 cup) of fruit, vegetable, or full-strength fruit or vegetable juice
- One serving (8 ounces) of fluid milk

A student may decline one component if the school uses offer versus serve (OVS). If the school does not use OVS, a student must take all four servings in order for the meal to qualify for federal reimbursement. The nutrients in breakfasts *as consumed* may differ from the nutrients in breakfasts *as offered*, as a result of choice among alternative foods in each component, use of OVS, plate waste, and possible supplementation of school breakfasts with foods purchased elsewhere or consumed at home.

The analysis presented in this chapter compares the nutrients in SBP breakfasts as offered with one-fourth of the Recommended Dietary Allowances (RDA). Although regulations do not specify that SBP breakfasts must meet this target, it is a stated goal of the USDA. Chapter VIII describes the nutrients provided by the foods selected and consumed by students who eat an SBP breakfast.

¹Note that the required serving size for the bread/bread alternate component is the same as or larger than that required for lunch—3/4 cup of cereal is required, compared with 1/2 cup of pasta or rice at lunch—whereas the required serving size for the meat/meat alternate component is one-half that required at lunch.

A. SUMMARY OF FINDINGS ON SBP BREAKFASTS OFFERED

As offered, SBP breakfasts provide one-fourth of the RDA for most nutrients, with the notable exception of food energy for some groups of students. Unlike National School Lunch Program (NSLP) lunches, SBP breakfasts are close to the Dietary Guideline goal for total fat, but are above the Dietary Guideline goal for saturated fat. SBP breakfasts provide average amounts of cholesterol, which conforms to the study reference standards based on National Research Council (NRC) recommendations, and provide average amounts of sodium, which are somewhat above the NRC recommendations.

Most SBP breakfasts are simple, offering few choices within each meal component. More than one-half of all breakfasts offer cereal, and more than one-half offer citrus juice. Less than one-half of breakfasts offer a meat or meat alternate (most commonly, sausage, eggs, or cheese).

B. NUTRIENT CONTENT OF SBP BREAKFASTS OFFERED

This section describes the average nutrient content of SBP breakfasts offered during a typical school week and compares the nutrients with their RDA, with the Dietary Guidelines goals, or with reference standards based on NRC recommendations. The analytical methodology closely parallels the methodology used to analyze the nutrient content of NSLP lunches offered (see Chapter IV and Appendix A). However, some calculations were performed differently, because the meal patterns of the two types of meals differed, and because simpler meals were offered at breakfast.²

²Some breakfasts were defined as "simple breakfasts," that is, breakfasts offering no more than three items from the required categories of meat or meat alternate; bread or bread alternate; and fruit, vegetable, or juice. Because it was assumed that students select each item offered in a "simple breakfast," the nutrients were simply added together. For other breakfasts, all meat and bread items offered were combined, and the average nutrients per serving were computed from this combined group. Because the SBP meal pattern requires two servings of meat and/or bread items, the average nutrients per such serving were multiplied by 2. Next, the nutrients in all fruit/vegetable/juice offerings were averaged and added to the total. Finally, the nutrients in all types of milk offered were averaged and added to the total. (See Section C of Appendix A for additional details on the methodology.)

1. Mean Nutrient Content

SBP breakfasts offered provide an average of 14 percent of food energy from protein, 57 percent from carbohydrate, and 31 percent from total fat (including 14 percent from saturated fat) (Table VI.1). Thus, SBP breakfasts are close to the Dietary Guideline goal of 30 percent of food energy from total fat, but exceed the goal of less than 10 percent of food energy from saturated fat.

In response to the dietary needs of students of different ages, the amount of food energy contributed by SBP breakfasts varies somewhat by grade level. Elementary school breakfasts average 479 calories, middle school breakfasts average 535 calories, and high school breakfasts average 539 calories. However, the percentage of food energy derived from the various macronutrients (protein, carbohydrate, fat, and saturated fat) is similar for the three grade levels of schools.³

SBP breakfasts provide an average of one-fourth of the RDA for most nutrients. Tables VI.2.A, VI.2.B, and VI.2.C show, for each age group attending elementary, middle, and high schools, respectively, the mean nutrients provided in SBP breakfasts relative to the daily RDA for those nutrients. The tables show that SBP breakfasts consistently provide 50 percent to 75 percent of the RDA for vitamin C for the different grade levels and for the different age and gender groups. SBP breakfasts provide between 25 percent and 50 percent of the daily RDA for protein for most age groups, but more than twice the breakfast goal for children 10 years of age or younger. However, they provide less than one-fourth of the daily RDA for food energy for most age and gender groups, particularly for male students older than age 10. The reader should bear in mind that school food service personnel are encouraged to vary portion sizes according to a student's needs. Thus, the average portions offered, which have been used in the calculations, may understate the amounts offered to groups with greater-than-average energy needs. The breakfasts offer less than one-fourth of the RDA for zinc for all students, and less than one-fourth of the RDA for niacin, vitamin B6, and magnesium for 15- to 18-year-old male students.

³Appendix Tables D.1 through D.1.C provide more detailed data on the distributions of nutrients offered.

TABLE VI.1
MEAN NUTRIENTS IN SBP BREAKFASTS OFFERED

Dietary Component	Elementary Schools	Middle Schools	High Schools	All Schools
Macronutrients				
Food Energy (calories)	479	535	539	495
Protein (grams)	16	17	18	17
Carbohydrate (grams)	68	78	77	71
Fat (grams)	16	18	19	17
Saturated Fat (grams)	7	8	8	8
Percentage of Food Energy from:				
Fat	31	30	31	31
Saturated fat	14	13	14	14
Carbohydrate	57	58	57	57
Protein	14	13	13	14
Vitamins				
Vitamin A (mcg RE)	290	305	280	291
Vitamin C (mg)	33	38	37	34
Thiamin (mg)	0.5	0.5	0.5	0.5
Riboflavin (mg)	0.8	0.8	0.8	0.8
Niacin (mg NE)	4	5	5	4
Vitamin B6 (mg)	0.5	0.5	0.5	0.5
Folate (mcg)	85	94	88	87
Vitamin B12 (mcg)	1.3	1.3	1.3	1.3
Minerals				
Calcium (mg)	397	409	410	401
Iron (mg)	4	4	4	4
Phosphorus (mg)	397	411	419	402
Magnesium (mg)	69	70	70	70
Zinc (mg)	2	2	2	2
Other Dietary Components				
Sodium (mg)	654	708	739	673
Cholesterol (mg)	73	68	79	73
Fiber (grams)	3	3	3	3
Number of Schools (Unweighted)	169	49	72	290

SOURCE: Menu data from the School Nutrition Dietary Assessment study, based on one week of school menus from a nationally representative sample of schools, collected from February to May 1992.

NOTE: Only schools serving SBP breakfasts are included in this table. All foods served as part of SBP breakfasts are counted, including noncreditable foods.

mg = milligrams.
mcg = micrograms.
RE = retinol equivalent.
NE = niacin equivalent.

TABLE VI.2.A

MEAN NUTRIENTS IN SBP BREAKFASTS OFFERED RELATIVE
TO THE RDA: ELEMENTARY SCHOOLS

Nutrient	Mean Nutrient as a Percentage of the RDA for Each Age/Gender Group		
	6- to 10-Year- Old Students	11- to 14-Year- Old Females	11- to 14-Year- Old Males
The Goal for SBP Breakfasts Is 25 Percent of the RDA			
Food Energy	24	22	19
Protein	58	36	36
Vitamin A	42	36	29
Vitamin C	73	65	65
Thiamin	50	45	38
Riboflavin	67	62	54
Niacin	33	29	26
Vitamin B6	32	32	27
Folate	86	57	57
Vitamin B12	89	63	63
Calcium	50	33	33
Iron	38	26	32
Phosphorus	50	33	33
Magnesium	41	25	26
Zinc	22	18	15
Number of Schools (Unweighted)	169	169	169

SOURCE: Menu data from the School Nutrition Dietary Assessment study, based on one week of school menus from a nationally representative sample of schools, collected from February to May 1992.

NOTES: Only schools serving SBP breakfasts are included in this table. All foods served as part of SBP breakfasts are counted, including noncreditable foods.

TABLE VI.2.B

MEAN NUTRIENTS IN SBP BREAKFASTS OFFERED RELATIVE
TO THE RDA: MIDDLE SCHOOLS

Nutrient	Mean Nutrient as a Percentage of the RDA for Each Age/Gender Group		
	6- to 10-Year- Old Students	11- to 14-Year- Old Females	11- to 14-Year- Old Males
The Goal for SBP Breakfasts Is 25 Percent of the RDA			
Food Energy	27	24	22
Protein	60	36	37
Vitamin A	44	38	31
Vitamin C	84	75	75
Thiamin	55	50	42
Riboflavin	69	64	55
Niacin	37	32	29
Vitamin B6	35	35	29
Folate	94	63	63
Vitamin B12	92	65	65
Calcium	51	34	34
Iron	43	29	36
Phosphorus	52	34	34
Magnesium	41	25	26
Zinc	24	20	16
Number of Schools (Unweighted)	49	49	49

SOURCE: Menu data from the School Nutrition Dietary Assessment study, based on one week of school menus from a nationally representative sample of schools, collected from February to May 1992.

NOTES: Only schools serving SBP breakfasts are included in this table. All foods served as part of SBP breakfasts are counted, including noncreditable foods.

TABLE VI.2.C

MEAN NUTRIENTS IN SBP BREAKFASTS OFFERED
RELATIVE TO THE RDA: HIGH SCHOOLS

Nutrient	Mean Nutrient as a Percentage of the RDA for Each Age/Gender Group			
	11- to 14- Year-Old Females	11- to 14- Year-Old Males	15- to 18- Year-Old Females	15- to 18- Year-Old Males
The Goal for SBP Breakfasts Is 25 Percent of the RDA				
Food Energy	25	22	25	18
Protein	39	40	40	30
Vitamin A	35	28	35	28
Vitamin C	74	74	62	62
Thiamin	49	42	49	36
Riboflavin	63	55	63	46
Niacin	31	27	31	23
Vitamin B6	33	27	30	23
Folate	59	59	49	44
Vitamin B12	64	64	64	64
Calcium	34	34	34	34
Iron	26	32	26	32
Phosphorus	35	35	35	35
Magnesium	25	26	23	18
Zinc	19	15	19	15
Number of Schools (Unweighted)	72	72	72	72

SOURCE: Menu data from the School Nutrition Dietary Assessment study, based on one week of school menus from a nationally representative sample of schools, collected from February to May 1992.

NOTES: Only schools serving SBP breakfasts are included in this table. All foods served as part of SBP breakfasts are counted, including noncreditable foods.

The average amount of sodium in SBP breakfasts is above the reference standard for breakfast based on NRC recommendations for daily intake (see Table VI.1). The mean amount of sodium is 673 mg, compared with a breakfast reference standard of 600 mg. The mean amount of sodium is greater in middle schools (708 mg) and high schools (739 mg) than in elementary schools (654 mg).

The average amount of cholesterol is consistent with NRC recommendations (see Table VI.1). The mean amount of cholesterol in SBP breakfasts is 73 mg, compared with a breakfast standard of 75 mg. The mean amount of cholesterol is somewhat greater than average in high schools (79 mg) and is less in middle schools (68 mg); in elementary schools, it is the same as the overall average (73 mg).

2. Percentage Distribution of Schools, by Levels of Fat, Carbohydrate, Sodium, and Cholesterol

Table VI.3 shows the percentage of schools whose SBP breakfasts provide various levels of fat, saturated fat, carbohydrate, cholesterol, and sodium. Forty-four percent of schools offer SBP breakfasts that provide 30 percent or less of total food energy from fat; another 33 percent exceed the Dietary Guideline goal by no more than 4 percentage points. However, only 4 percent of breakfasts meet the Dietary Guideline goal of providing less than 10 percent of food energy from saturated fat. SBP breakfasts contain much less fat and saturated fat than do NSLP lunches because schools are not required to serve a meat or meat alternate at breakfast, and, as shown in the next section, because schools serve a meat or meat alternate only about one-half of the time. In addition, the serving size of the meat or meat alternate relative to that of the bread or bread alternate is smaller at breakfast than at lunch. However, as shown in Section D, a high proportion of the meat or meat alternates served in SBP breakfasts are foods high in saturated fat.

Sixty-eight percent of school breakfasts meet the NRC recommendation that more than 55 percent of total food energy should be from carbohydrate. Sixty-four percent provide 75 mg or less of cholesterol, which is one-fourth of the maximum daily cholesterol amount recommended by the

TABLE VI.3
DISTRIBUTION OF FAT AND OTHER KEY DIETARY COMPONENTS
IN AVERAGE SBP BREAKFASTS OFFERED
(Percentage of Schools)

Dietary Component	Elementary Schools	Middle Schools	High Schools	All Schools
Percentage of Food Energy from Fat				
30 Percent or Less	44	49	44	44
31-34 Percent	33	28	39	33
35-36 Percent	9	6	4	8
37-38 Percent	6	6	2	5
39-40 percent	6	1	2	5
More than 40 Percent	2	9	9	4
Percentage of Food Energy from Saturated Fat				
Less than 10 Percent	3	6	5	4
10-12 Percent	25	21	26	25
13-14 Percent	29	37	22	29
15-16 Percent	28	19	34	27
17-18 Percent	6	9	5	6
More than 18 Percent	10	7	8	9
Percentage of Food Energy from Carbohydrate				
Less than 45 Percent	2	4	4	3
45-55 Percent	31	27	25	29
More than 55 Percent	67	69	71	68
Cholesterol				
75 mg or Less	62	73	66	64
76-100 mg	18	14	12	16
More than 100 mg	20	12	22	19
Sodium				
600 mg or Less	32	31	30	32
601-750 mg	44	22	32	39
More than 750 mg	24	47	38	29
Number of Schools (Unweighted)	169	49	72	290

SOURCE: Menu data from the School Nutrition Dietary Assessment study, based on one week of school menus from a nationally representative sample of schools, collected from February to May 1992.

NOTES: Only schools serving SBP breakfasts are included in this table. All foods served as part of SBP breakfasts are counted, including noncreditable foods. Shaded rows show the percentage of schools whose meals, on average, conform to goals. Breakfast goals for cholesterol and sodium are one-fourth of the corresponding daily amounts.

mg = milligrams.

NRC. About 32 percent of SBP breakfasts meet one-fourth of the NRC's daily recommendation for sodium. In contrast, no NSLP lunches meet the sodium recommendation.

C. VARIETY OF FOODS IN SBP BREAKFASTS

Most SBP breakfasts are relatively simple, offering few options among foods that satisfy each meal-pattern requirement (Table VI.4). Breakfast choices are slightly wider at middle schools and high schools than at elementary schools. However, overall breakfast menus are much more similar than lunch menus across the three school levels.

Almost one-half (48 percent) of all SBP breakfasts on a typical day offer no *meat or meat alternate dishes* or no *meat/bread combination dishes*, such as pizza. Thirty-nine percent of breakfasts offer only one food choice from this category per day, 8 percent offer two choices, and 4 percent offer three or more choices. High schools are more likely than either middle or elementary schools to offer a meat or meat/bread choice. Tabulations of distinct meat or meat alternate items offered during one week indicate that 12 percent of schools did not offer any meat or meat alternate item during the week (data not shown).

SBP breakfasts offer relatively few choices from the *bread and bread alternate category* (counting all types of ready-to-eat cereals as a single choice). Ten percent of SBP breakfasts do not offer a separate bread or bread alternate, and 41 percent offer only one choice. Nearly one-half offer at least two bread or bread alternate choices.

One-half of SBP breakfasts offer one food choice from the *fruit, vegetable, or juice* category.⁴ Breakfasts offering multiple fruit, vegetable, or juice choices usually offer two or three choices (19 percent and 13 percent of schools, respectively). Tabulations of the number of days on which fruit juice and fresh fruit were offered show that about 95 percent of schools offer juice at least once per

⁴Tabulations do not include the ingredients in main dishes. The 3 percent of breakfast menus that do not offer fruits, vegetables, or juices may include these foods as part of a meat or bread main dish. These would count toward satisfying the meal-pattern requirement for this category.

TABLE VI.4

PERCENTAGE OF SBP BREAKFASTS OFFERING CHOICES OF FOODS
WITHIN EACH MEAL COMPONENT
(Percentage of All School Days)

Food	Elementary Schools	Middle Schools	High Schools	All Schools
Number of Meats or Meat/Bread Alternates Offered per Day				
None	50	49	34	48
1	40	36	38	39
2	7	11	11	8
3	2	2	12	3
4+	1	2	5	1
Number of Breads/Bread Alternates Offered per Day				
0	11	9	4	10
1	45	39	23	41
2	35	30	41	35
3	6	14	14	8
4+	4	9	17	6
Number of Fruits/Vegetables/Juices Offered per Day				
None ^a	4	2	1	3
1	55	38	43	51
2	18	26	17	19
3	13	13	14	13
4+	10	21	25	14
Number of Types of Milk Offered per Day^b				
1	5	10	1	5
2	26	12	14	23
3	52	62	38	52
4 or 5	17	16	47	21
Number of School Days (Unweighted)	832	236	354	1,422
Number of Schools (Unweighted)	169	49	72	290

SOURCE: Menu data from the School Nutrition Dietary Assessment study, based on one week of school menus from a nationally representative sample of schools, collected from February to May 1992.

NOTE: Only schools serving SBP breakfasts are included in this table. All foods served as part of SBP breakfasts are counted, including noncreditable foods.

^aMenus without a separate vegetable/fruit/juice item may include vegetables as part of an entree. Vegetables in entrees are not included in this count.

^bSchools usually offer the same types of milk each day of the week and therefore were asked to complete a checklist of the types of milk usually offered.

week, and that one-half offer juice daily (data not shown). However, 56 percent of schools never offer fresh fruit, and only 9 percent offer fresh fruit daily.

In contrast with lunch requirements, schools are not required to offer specific types of milk at breakfast. Nevertheless, the same milk options are usually offered at both meals; thus, most schools offer three types of milk at breakfast.

D. FREQUENCY OF SELECTED FOOD ITEMS IN SBP BREAKFASTS

SBP breakfasts rely heavily on breads and ready-to-eat cereals. Ready-to-eat cereal is offered more than one-half of the time, and white bread toast is offered nearly one-fourth of the time (Table VI.5). Sweet rolls, biscuits, and muffins are offered on 10 percent to 14 percent of days; pancakes, doughnuts, and waffles are offered on 6 percent to 9 percent. In contrast, whole-grain breads are offered on only 1 percent of days.

As noted in the previous section, less than one-half of school breakfasts offer a meat or meat alternate. When meats or meat alternates are offered, they are most frequently sausage (served on 17 percent of days), eggs (13 percent), or cheese (8 percent). Breakfasts on 6 percent of days offer french toast and offer peanut butter on 6 percent. Pizza and ham are offered on 3 percent of days. Bacon, which does not count toward satisfying the SBP meal-pattern requirement, is offered on 1 percent of days.

Juice is the most frequently offered item in the fruit/vegetable/juice category. Citrus juice (almost always orange juice) is offered on 55 percent of all school days; non-citrus juice is offered on 45 percent. Fresh and canned fruits are also offered. Fried potatoes (usually hash browns), which are the only vegetable served in more than a few schools, are offered on only 2 percent of days. On about one-third of days, butter or margarine is offered; syrup or honey is offered on 16 percent, and jam or jelly on 15 percent.

Reflecting the relationship between the number of food choices and grade level, high schools generally are more likely than middle schools to offer specific food items, and middle schools are

TABLE VI.5
 FREQUENCY OF SELECTED FOOD ITEMS IN SBP BREAKFASTS
 (Percentage of School Days on Which Item Is Offered)

Food	Elementary Schools	Middle Schools	High Schools	All Schools
Breads/Bread Alternates				
Ready-to-Eat Cereals	48	58	59	51
Toasted White Bread	24	19	20	23
Biscuits	11	16	30	14
Muffins	10	12	18	11
Sweet Rolls	9	11	16	10
Pancakes	8	15	6	9
Doughnuts	4	10	17	7
Waffles	5	6	10	6
Hot Cereal	5	2	9	5
English Muffins	3	5	10	4
Bagels	3	1	11	3
Toasted Whole Wheat Bread	1	0	3	1
Meats/Meat Alternates or Meats/Breads				
Sausages	14	16	30	17
Eggs or Omelettes	12	10	21	13
High-Fat Cheeses	6	8	16	8
French Toast	7	4	5	6
Nut Butters	6	7	6	6
Ham (Lean and Other)	3	3	8	3
Pizza	3	4	4	3
Chicken	1	2	7	2
Bacon ^a	2	1	1	1
Low-Fat Cheeses ^b	1	1	1	1
Fruits/Vegetables/Juices				
Citrus Juice	50	70	68	55
Other Fruit Juice	41	60	55	45
Fresh Oranges	9	6	16	9
Fresh Apples	8	6	16	9
Fresh Bananas	7	5	14	8
Fruit Cocktail	6	4	6	6
Applesauce	6	5	3	6
Canned Pears	5	5	6	5
Canned Peaches	6	1	5	5
Fried Potatoes	2	2	2	2
Fats and Sweets				
Butter	28	42	42	32
Syrup/Honey/Icing	14	26	18	16
Jams/Jellies/Preserves	13	14	25	15
Margarine	2	1	1	2
Number of School Days (Unweighted)	832	236	354	1,422

SOURCE: Menu data from the School Nutrition Dietary Assessment study, based on one week of school menus from a nationally representative sample of schools, collected from February to May 1992.

NOTES: Only schools serving SBP breakfasts are included in this table. This table lists the most common foods served, but is not all-inclusive.

^aBacon is not credited as a meat under USDA rules.

^bLow-fat cheeses include cottage cheese, ricotta, and mozzarella. All others are classified as high-fat cheeses.

more likely than elementary schools to do so. These differences across grade levels are especially large with respect to high-fat cheeses, sausage, eggs, such breads as sweet rolls and biscuits, and fresh fruit. These foods are offered about twice as often in high schools as in elementary schools. Toast, cereal, juice, and canned fruits are offered with similar frequencies across grade levels.