DOCUMENT RESUME

ED 363 003 EA 025 387

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TITLE The School Nutrition Dietary Assessment Study: Summary of Findings.
INSTITUTION Mathematica Policy Research, Princeton, N.J.
SPONS AGENCY Food and Nutrition Service (DOA), Washington, D.C.
PUB DATE Oct 93
CONTRACT 53-3198-0-16
NOTE 26p.; Colors used in graphs will not reproduce.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Breakfast Programs; Child Health; *Eating Habits; Elementary Secondary Education; Food Standards; *Lunch Programs; *Nutrition

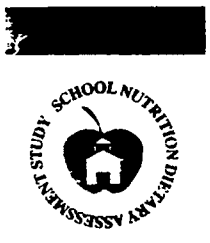
ABSTRACT

This publication, which is based on the School Nutrition Dietary Assessment study, describes the National School Lunch Program (NSLP) and the School Breakfast Program (SBP), presents findings on the nutrients and foods provided in school meals, and describes the dietary intakes of the nation's students on a typical school day. Data were derived from a survey of 545 schools and 3,350 K-12 students, conducted in 1992. Findings show that NSLP lunches do not meet recommendations for total fat and unsaturated fat, sodium, or carbohydrates. SBP breakfasts are close to meeting goals for total fat, cholesterol, and carbohydrates, but not for saturated fat or sodium. On average, students consume more calories per day than the Recommended Daily Requirement (RDA). Students exceed dietary recommendations in their intake of total fat, saturated fat, and sodium. Twenty-three tables are included. (LMI)

The School Nutrition Dietary Assessment Study

SUMMARY OF FINDINGS

Prepared by Mathematica Policy Research, Inc., Princeton, NJ,
under Contract with the
Food and Nutrition Service, U.S. Department of Agriculture



The School Nutrition Dietary Assessment Study

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Barbara Devaney

October 1993

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U.S. Department of Agriculture

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For more information on this summary report or the complete reports on which it is based, write to Director, Office of Analysis and Evaluation, Food and Nutrition Service, U.S. Department of Agriculture, 3101 Park Center Drive, Alexandria, VA 22302.

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Background

The National School Lunch Program (NSLP) and the School Breakfast Program (SBP) are federally sponsored nutrition programs operating daily in our nation's schools. All public and private nonprofit elementary and secondary schools are eligible to participate. In fiscal year 1992, 24.6 million students participated in the lunch program each day, and nearly 5 million participated in the breakfast program. The two programs, which cost the federal government $5.5 billion in fiscal year 1992, make a substantial contribution to what our children eat and represent a large investment of federal dollars.

This publication, which is based on the School Nutrition Dietary Assessment study, describes the National School Lunch Program and the School Breakfast Program, presents findings on the nutrients and foods provided in school meals, and describes the dietary intakes of the nation's students on a typical school day. The School Nutrition Dietary Assessment study collected information from a nationally representative sample of schools and a nationally representative sample of students attending these schools. A total of 545 schools provided information about all meals served during a one-week period between February and May 1992, as well as information about school food service operations. Approximately 3,350 students in grades 1 through 12 provided detailed information about the foods and beverages they consumed during a 24-hour period that included a school day. Parents contributed to the interviews with students in grades 1 and 2; however, students in grades 3 to 12 reported their own food and beverage consumption.

The study compares the nutrients provided in school meals and the nutrients consumed by students with several standards (Figure 1). Recommended Dietary Allowances (RDA) are the daily intake levels of essential nutrients that are adequate to meet the nutrient needs of practically all healthy persons. The RDA are used to plan school meals.

Figure 1

Dietary Standards Used in the School Nutrition Dietary Assessment Study

NSLP and SBP Program Goals

- One-third of the RDA for lunch
- One-fourth of the RDA for breakfast

Dietary Guidelines for Americans

- Limit intake of total fat to 30 percent or less of calories
- Limit intake of saturated fat to less than 10 percent of calories

National Research Council's *Diet and Health* Recommendations

- Limit daily sodium intake to 2,400 milligrams or less
- Limit daily cholesterol intake to 300 milligrams or less
- Increase daily carbohydrate intake to more than 55 percent of calories

The *Dietary Guidelines for Americans* provides broad recommendations and suggests quantitative goals for fat and saturated fat. The Food and Nutrition Service of the U.S. Department of Agriculture (USDA) encourages school food service programs to consider the *Dietary Guidelines*, although it has not implemented regulations requiring them to do so. This study uses the Dietary Guideline goals for fat and saturated fat. Because the *Dietary Guidelines for Americans* does not give quantitative goals for other food components, this study uses the recommendations of the National Research Council, published in *Diet and Health*, as benchmarks for assessing intakes of sodium, cholesterol, and carbohydrate.

Dietary Guidelines for Americans

- Eat a variety of foods
- Maintain healthy weight
- Choose a diet low in fat, saturated fat, and cholesterol
- Choose a diet with plenty of vegetables, fruits, and grain products
- Use sugars only in moderation
- Use salt and sodium only in moderation
- If you drink alcoholic beverages, do so in moderation

NSLP

The National School Lunch Program

Congress authorized the NSLP in 1946 to "safeguard the health and well-being of the nation's children and to encourage the domestic consumption of nutritious agricultural commodities and other foods." USDA subsidizes school lunches by providing cash reimbursements and commodities to schools that serve lunches meeting required nutritional standards. The amount of the cash reimbursement per meal varies according to the size and income of participating children's families. Children whose family incomes are 130 percent or less of the poverty guidelines qualify for free meals, and children whose family incomes are between 130 and 185 percent qualify for reduced-price meals. All other children pay full price, but full-price lunches are also federally subsidized.

In fiscal year 1993, the school lunch subsidy was $.1625 per meal for full-price lunches, $1.2950 for reduced-price lunches, and $1.6950 for free lunches. Schools in which at least 40 percent of the lunches served are free and which have costs greater than the regular rate ("severe need" schools) receive additional assistance of $.02 per lunch. In addition to these cash reimbursements, all schools may receive entitlement commodities, valued at $.14 per lunch in FY 1993.

NSLP lunches are planned to provide approximately one-third of the RDA for specific nutrients over a period of time. Lunch must include five items: meat or a meat alternate (such as cheese or peanut butter), two or more vegetables and/or fruits, whole-grain or enriched bread or a bread alternate, and fluid milk (as a beverage) (Figure 2). Different quantities are recommended for students of different ages and grades. Under offer versus serve (OVS) regulations, students are

Figure 2
National School Lunch Meal Patterns

Component/Item	Required Serving for Students in Grades 4 to 12
Meat or Meat Alternate	1 serving per day
Lean meat, poultry, or fish	2 oz.
Cheese	2 oz.
Large egg(s)	1
Cooked dry beans or peas	1/2 cup
Peanut butter	4 tbsp.
Peanuts, soy nuts, tree nuts, or seeds	1 oz. = 1/2 the requirement
Vegetables and/or Fruits	2 or more servings per day 3/4 cup total
Bread or Bread Alternate	1 serving per day/8 servings per week
Whole-grain enriched bread	1 slice
Whole-grain or enriched biscuit, muffin, roll, etc.	1
Cooked whole-grain or enriched rice, macaroni, noodles, etc.	1/2 cup
Milk	1 serving per day
Fluid milk	1/2 pint (8 fl. oz.)

permitted to refuse one or two items, and the school can still claim federal reimbursement for the lunch. OVS is required in all secondary schools. Federal regulations permit School Food Authorities to use the OVS option below the secondary level. Slightly more than 70 percent of elementary schools and 90 percent of middle schools use OVS.

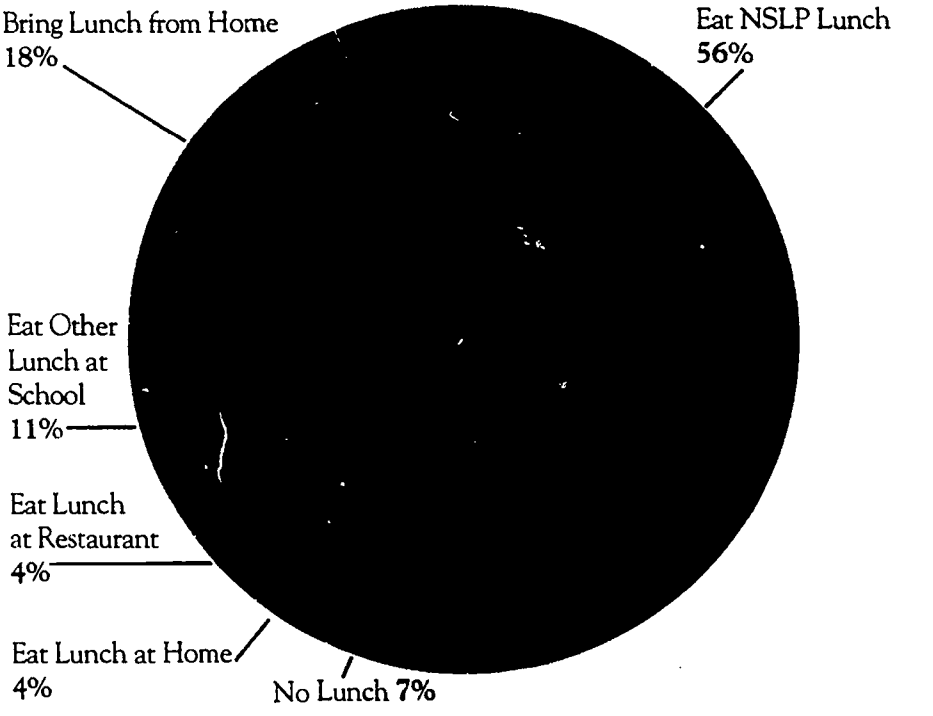
The School Nutrition Dietary Assessment study collected information from a nationally representative sample of 545 schools, including schools that participate in the NSLP and those that do not. Information was collected on: (1) school nutrition program participation, school enrollment, and characteristics of food service operations; (2) all foods and beverages offered as part of the NSLP during a one-week period from February to May 1992; and (3) non-USDA foods offered a la carte at lunch and in vending machines in the schools.

Almost all public schools participate in the NSLP.
Almost 99 percent of public schools and 83 percent of all public and private schools participate in the NSLP. Only a small fraction of schools do not offer either the NSLP or a non-USDA lunch program.

The average full price for a school lunch in the 1991-1992 school year was $1.14, with averages ranging from $1.11 in elementary schools to approximately $1.22 in middle and high schools. The average price of a reduced-price meal was $.38, with no variation across grade levels. Slightly less than 40 percent of the school lunches were provided free, 7 percent were reduced price, and 53 percent were full price.

Students have a variety of lunch options in addition to the NSLP (Figure 3).
A lunch brought from home is the most prevalent non-NSLP lunch choice. Outside schools, lunches at home and at restaurants are the two most prevalent options chosen. Inside schools, vending machines, school stores, and snack bars are

Figure 3
More than Half of Students in Schools with a National School Lunch Program Participate

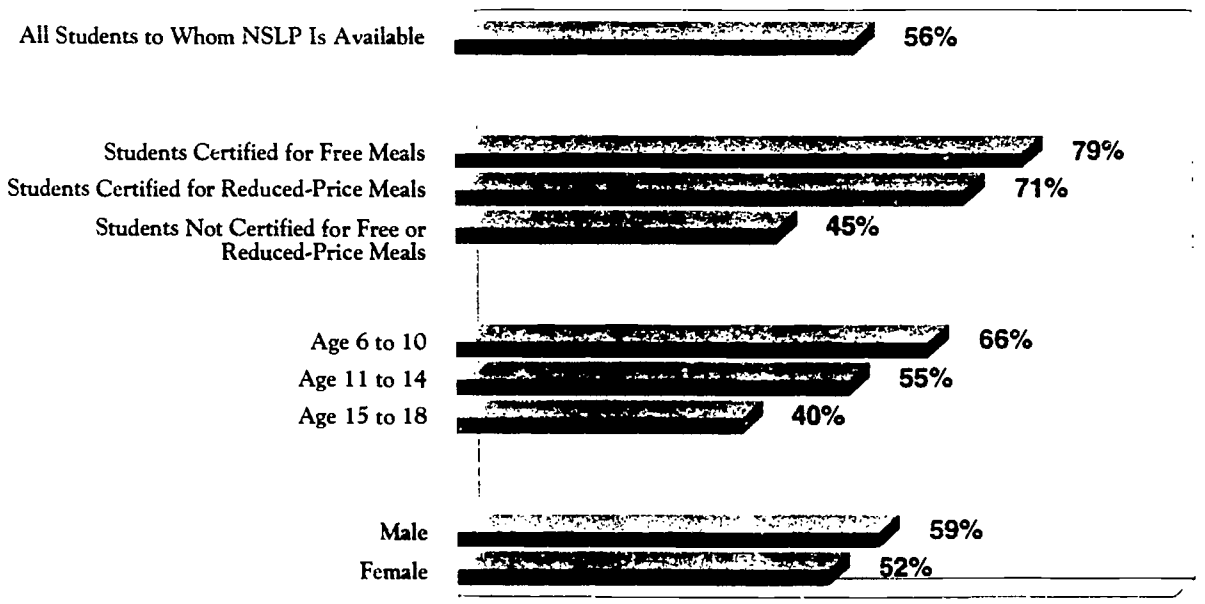


available, and beverages are the food they offer most commonly (soft drinks are the most commonly available beverage). High schools are more likely than either middle or elementary schools to allow students to eat at restaurants and to offer food from vending machines or school stores.

More than half the school cafeterias offer some foods that can be purchased separately (a la carte) in addition to an NSLP meal. This type of arrangement is much more prevalent in middle and high schools than elementary ones. Baked goods (such as cookies and cakes), beverages, frozen desserts, and snack foods are the most commonly offered a la carte items. Nearly 40 percent of high schools participating in the NSLP offer at least one a la carte entree, however. Pizza, cold cut sandwiches, and hamburgers are the a la carte entrees offered most often.

The NSLP is available to 92 percent of all students in the country. On a typical school day, 56 percent of those to whom it is available participate. Some groups of students participate more than others (Figure 4). Participation varies with household income, age, gender, and region. More elementary school students than middle and high school students take part in the program. Students who are certified for free and reduced-price meals are more likely to get an NSLP lunch (although not all do so) than students who are not certified and pay full price. More students participate where the full price is lower, and more boys than girls participate. In rural schools, more students participate than in urban and suburban schools. And students in the Southeast, Southwest, and Mountain states are more likely to participate than students in the Northeast and West. An open-campus policy allowing students to leave school at lunchtime tends to reduce NSLP participation.

Figure 4
NSLP Participation Varies with Household Income, Age, and Gender



Schools offer a variety of food choices under the NSLP.
The NSLP meal pattern requires that every lunch offer one serving each of meat, grains, and milk, and two servings of vegetables and/or fruits. In addition, schools are encouraged to offer a variety of food choices and the opportunity to vary caloric intake.

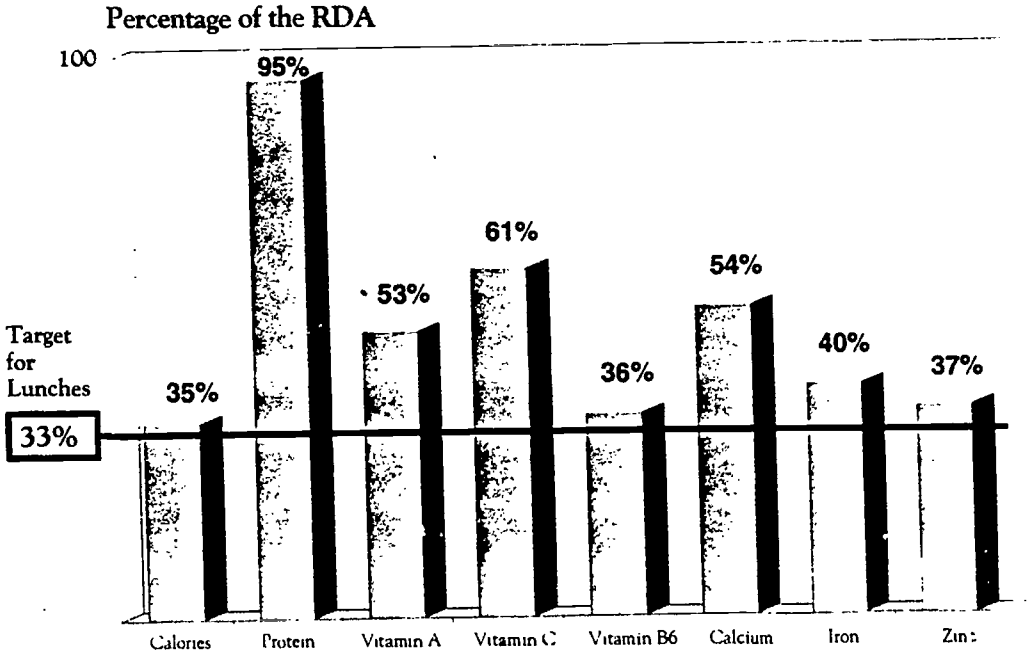
Slightly more than half of all school menus offer a choice of entree each day, 35 percent offer two or three entrees, and 8 percent offer six or more. A large number of choices at lunch is more prevalent in high schools and middle schools than in elementary ones.

Schools also offer food variety and the opportunity to vary caloric intake through self-serve food bars, usually salad bars. About half of high schools and 16 percent of elementary schools offer a food bar at least once a week; many do so more frequently. Salad bars offer an average of two entree choices, seven vegetable/fruit choices, and one bread/bread alternate choice, as well as salad toppings and dressings.

Schools must offer whole milk plus one type of low-fat unflavored milk. Most schools also offer one other type of milk, usually chocolate. About one-fourth offer four types of milk. Although desserts are not required, 39 percent of lunch menus offer dessert.

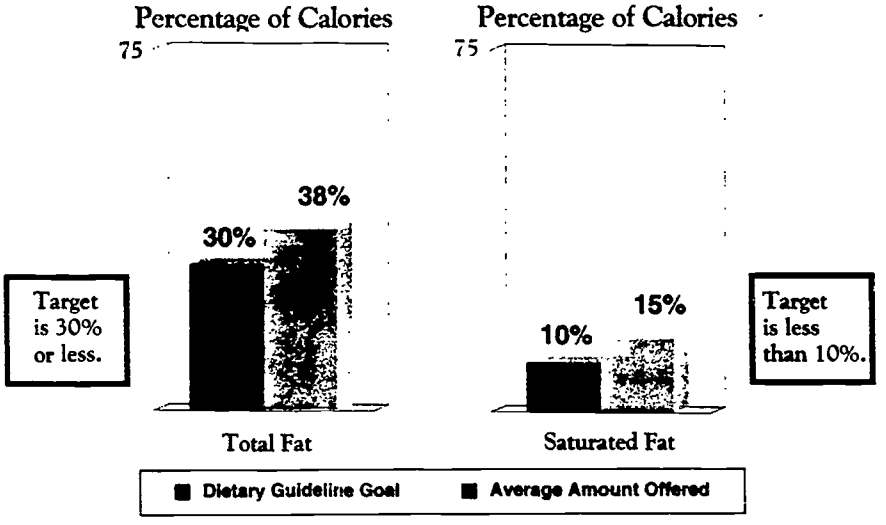
NSLP lunches provide one-third or more of the RDA for key nutrients (Figure 5).
In elementary, middle, and high schools, the amount of most nutrients in the average NSLP meal exceeds the RDA standard of one-third for the age groups at each school level. School lunches fall short of one-third of the RDA in a few cases, however: iron for 11- to 18-year-old females; zinc for 11- to 18-year-old males; and calories and vitamin B6 for 15- to 18-year-old males.

Figure 5
NSLP Lunches Provide One-Third or More of the Daily RDA



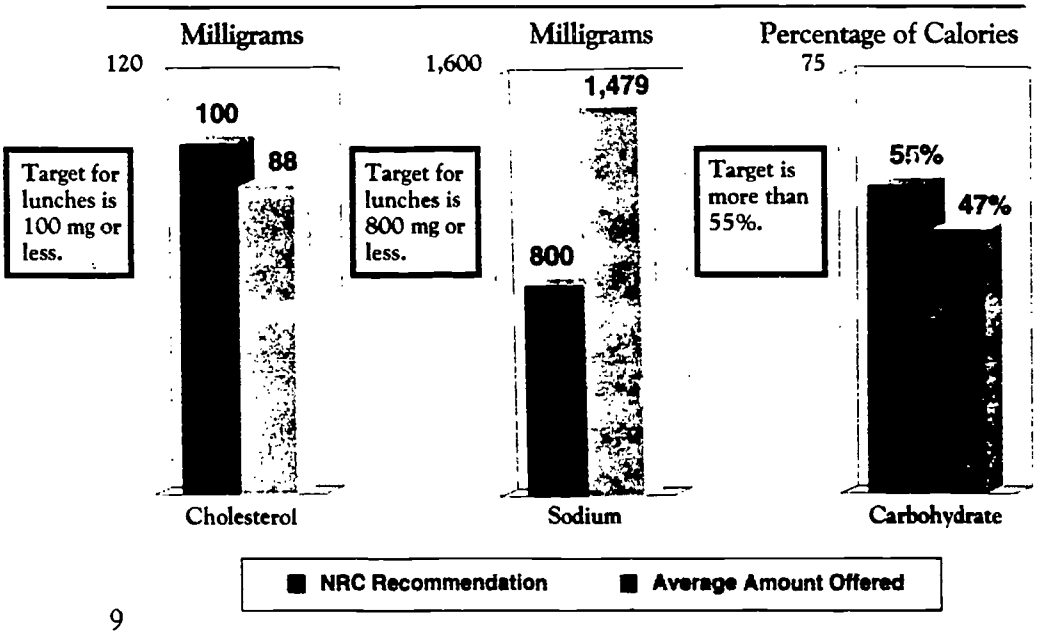
The levels of fat and saturated fat in NSLP lunches exceed the Dietary Guideline goals. (Figure 6A).
The average percentage of calories from total fat is 38 percent, compared with the Dietary Guideline goal of 30 percent or less; the percentage from saturated fat is 15 percent, compared with the Dietary Guideline goal of less than 10 percent.

Figure 6A
NSLP Lunches Do Not Meet the Dietary Guideline Goals for Total Fat and Saturated Fat



The average level of sodium exceeds NRC recommendations, but the average level of cholesterol is within the recommended range (Figure 6B).
The average amount of sodium in NSLP lunches is 1,479 mg, which is nearly two-thirds the NRC recommendation of 2,400 mg per day or less and nearly twice the lunch target of 800 mg or less. The average amount of cholesterol in meals offered is 88 mg, which is less than one-third of the recommended maximum daily intake of 300 mg.

Figure 6B
NSLP Lunches Meet the NRC Recommendation for Cholesterol but Not for Sodium and Carbohydrate

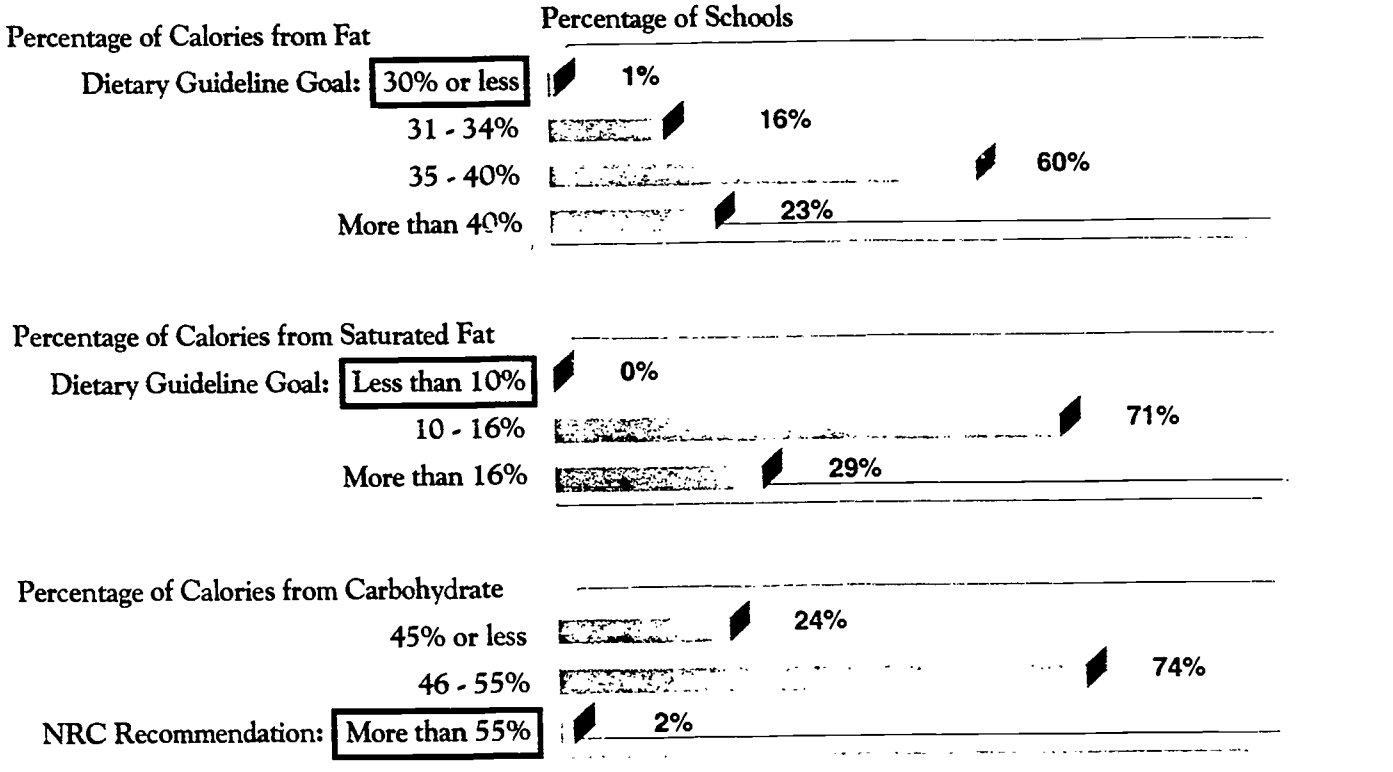


Virtually no schools meet the Dietary Guideline goals for fat and saturated fat (Figure 7).

Only 1 percent of schools offer lunches that provide an average of 30 percent or less of calories from fat. In only one school in the sample did the weekly lunch menu offerings provide an average of less than 10 percent of calories from saturated fat.

Figure 7

Almost No Schools Meet the Dietary Recommendations for Fat, Saturated Fat, and Carbohydrate



Some schools offer at least one low-fat lunch.

In 44 percent of schools, students can select at least one NSLP lunch with the five meal components that meets the goal of 30 percent or less of calories from fat. These low-fat lunches provide fewer calories than the average lunches and provide less than one-third of the RDA, but they contain similar amounts of protein, vitamins, and minerals. In 56 percent of schools, students cannot select an NSLP lunch with the five meal components that provides 30 percent or less of calories from fat.

Schools whose average NSLP lunches come close to meeting the Dietary Guideline goal for total fat follow several menu planning, food purchasing, and food preparation practices to lower fat content.
Schools providing lunches with a relatively low average percentage of calories from fat (less than 32 percent) typically do all of the following:

- Offer ground-beef entrees less often and poultry and meatless entrees more often
- Offer an extra bread item frequently, in addition to the bread or bread alternate included in an entree (for example, bread plus rice or spaghetti)
- Offer vegetables with added fat (particularly deep-fried french fries) less often
- Offer fruit and fruit juice more often and offer juice in addition to other items meeting 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 low-calorie dressing more frequently
- Offer desserts—especially cakes and cookies—less frequently but offer low-fat, high-carbohydrate desserts (such as yogurt, pudding made from skim milk, and gelatin) more frequently

Schools coming close to the Dietary Guideline goal for total fat follow all or most of these practices consistently. Schools that offer higher-fat lunches use some of these practices but not all of them, or follow them less frequently or consistently.

Schools that offer low-fat lunches (an average percentage of calories from fat of less than 32 percent) also provide an average of less than one-third of the RDA for calories.
Both low- and higher-fat lunches meet the RDA standards for most vitamins and minerals. When they fall short, however, they fall short in similar ways. School lunches that provide less than 32 percent of calories from fat provide somewhat less iron. In terms of the percentage of calories from other macronutrients, low-fat lunches are relatively low in saturated fat and high in carbohydrate, but contain almost the same amount of protein.

NSLP participation does not vary with the average percentage of calories from fat, except when the average is less than 32 percent.
NSLP participation rates in schools offering lunches with moderate levels of fat (32 to 35 percent of calories) are the same as the rates in schools offering higher-fat lunches (more than 35 percent). The NSLP participation rate in schools that offer low-fat lunches (35 out of 545 schools) is 6 percentage points lower than the rate in schools offering lunches with an average of 32 to 35 percent of calories from fat, however.

SBP

The School Breakfast Program

In the Child Nutrition Act of 1966, Congress established the School Breakfast Program (SBP) as a pilot program to provide breakfasts to children in low-income areas and areas where children had to travel long distances to school. The 1975 amendments to this act authorized the SBP as a permanent program, and subsequent legislation expanded its coverage.

As with the NSLP, USDA subsidizes school breakfasts in the form of cash reimbursements per meal and commodities to schools that serve breakfasts meeting required nutritional standards. The amount of the cash reimbursement varies according to whether students qualify for free, reduced-price, or full-price meals. For fiscal year 1993, the school breakfast subsidy was $.1875 for full-price breakfasts, $.6450 for reduced-price breakfasts, and $.945 for free breakfasts. In "severe need" schools, however, subsidies increase to $.8225 for reduced-price breakfasts and to $1.1225 for free ones.

SBP breakfasts should provide approximately one-fourth of the RDA for important nutrients. Program regulations specify that each reimbursable school breakfast must include a serving of fluid milk, a serving of fruit or vegetable or a full-strength fruit or vegetable juice, and two servings of either bread or meat or their alternates (Figure 8).

Figure 8
School Breakfast Program Meal Pattern

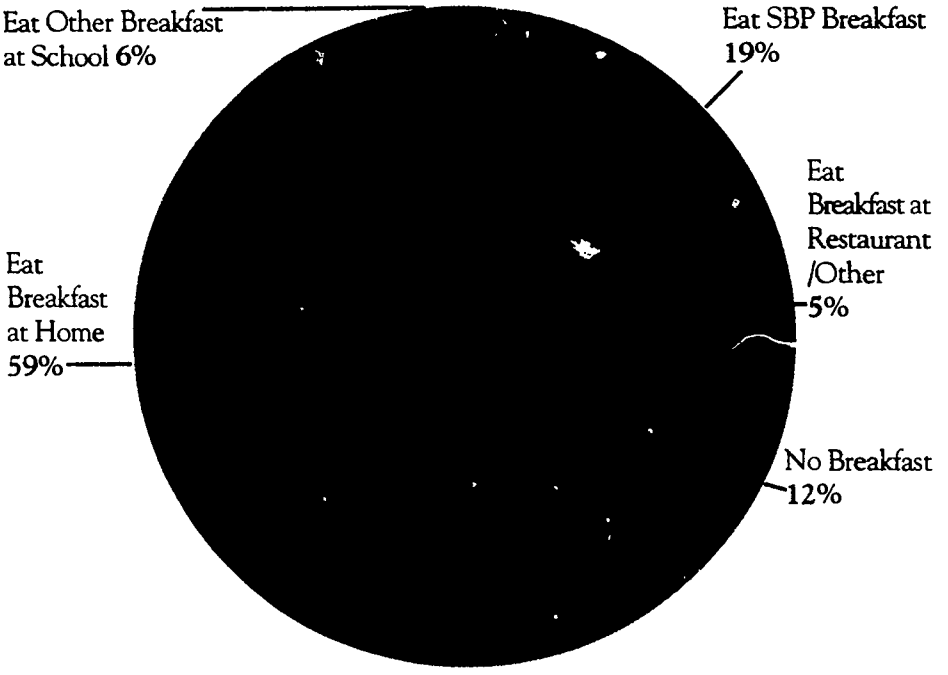
Component/Item	Serving
One Serving from Each of the Following Components	
Milk	
Fluid milk	1/2 pint
Fruit/Vegetable/Juice	
Fruit and/or vegetable or full-strength fruit juice or vegetable juice	1/2 cup
One Serving from Each of the Following Components or Two Servings from One Component	
Bread/Bread Alternate	
Whole-grain or enriched bread	1 slice
Whole-grain or enriched biscuit, roll, muffin, etc.	1 serving
Whole-grain, enriched, or fortified cereal	1 oz.
Meat or Meat Alternate	
Lean meat, poultry, or fish	1 oz.
Cheese	1 oz.
Large egg	1/2
Peanut butter	2 tbsp.
Cooked dry beans or peas	4 tbsp.
Nuts and/or seeds	1 oz.

As noted, the School Nutrition Dietary Assessment study collected information from a nationally representative sample of 545 schools, including schools that participate in the SBP and those that do not. Two types of information related to breakfast were collected: (1) SBP program participation and characteristics of food service operations; and (2) all foods and beverages offered as part of the SBP during a one-week period from February to May 1992.

The SBP is available to slightly more than half of the nation's students, and just less than 20 percent of those to whom it is available participate (Figure 9).

Most students who do not eat an SBP breakfast obtain breakfast at home. Several groups are more likely than others to participate: students certified for free and reduced-price meals, students from low-income families, younger students, male students, African Americans, and students in rural areas. More than 85 percent of SBP breakfasts are served to students whose family income is below 185 percent of the poverty level. The average full price for breakfast in 1991-1992 was $.60, and the average reduced price was $.28. Nearly all SBP breakfasts are provided free or at a reduced price.

Figure 9
About One-Fifth of Students in Schools with a School Breakfast Program Participate



More than half of all schools participate in the SBP. School participation rates are higher among elementary and middle schools than high schools. In another 8 percent of schools, snacks are available to students in the morning, although most of these are not offered by the school cafeteria. Snacks are especially prevalent in high schools.

In nearly 40 percent of nonparticipating schools, principals reported that their school had considered joining the program. The most common reasons given for not doing so were no need for the program, transportation or scheduling problems, resource constraints, and lack of interest or support.

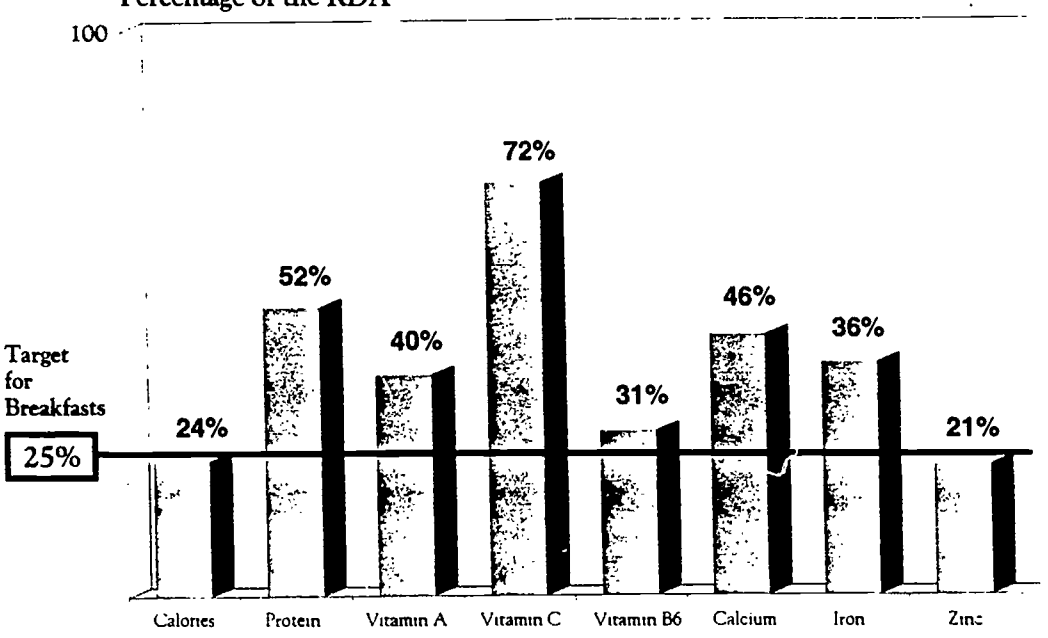
The availability of the SBP does not increase the likelihood that a student will eat breakfast.
On a typical school day, approximately 12 percent of students do not eat breakfast. This percentage is the same for students in schools that participate in the SBP and for students in schools that do not.

Most SBP breakfasts are relatively simple, offering a small number of foods to satisfy the daily meal-pattern requirement.
Most SBP breakfasts offer relatively few choices from the bread and bread alternate category and only one choice from the fruit, vegetable, or juice category. Almost half of the SBP breakfasts offered do not include a meat or meat alternate. The milk options offered at breakfast are usually the same as those offered at lunch.

SBP breakfasts rely heavily on breads and ready-to-eat cereals. Juice is the most frequently offered food item in the fruit, vegetable, or juice category. Citrus juice (almost always orange juice) is offered in 55 percent of all SBP breakfasts, and noncitrus juice is offered in 45 percent.

SBP breakfasts provide one-fourth or more of the daily RDA for most nutrients, with the exception of calories and zinc (Figure 10).
For calories, SBP breakfasts provide less than one-fourth of the RDA for male students over the age of 10. For zinc, SBP breakfasts provide less than one-fourth of the RDA for all age and gender groups.

Figure 10
SBP Breakfasts Provide One-Fourth or More of the Daily RDA, Except for Calories and Zinc



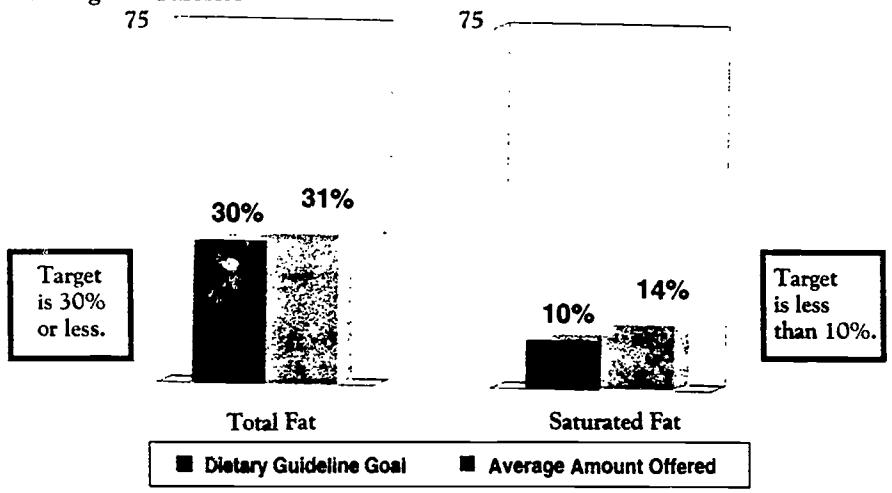
SBP breakfasts are close to meeting the Dietary Guideline goal for total fat but not for saturated fat (Figure 11A).
The average proportion of calories from total fat is 31 percent, slightly above the Dietary Guideline goal of 30 percent or less. In contrast, the percentage of calories from saturated fat in SBP breakfasts is 14 percent, substantially above the

goal of less than 10 percent. Moreover, 44 percent of schools offer SBP breakfasts with 30 percent or less of calories from fat, but only 4 percent offer breakfasts with less than 10 percent from saturated fat.

SBP breakfasts contain less fat than NSLP lunches because schools are not required to serve a meat or meat alternate at breakfast. Almost half of the SBP breakfasts offered do not include a meat item. Breakfasts that do include a meat or meat alternate most frequently offer sausage, eggs, or cheese.

Figure 11A

SBP Breakfasts Are Close to Meeting the Dietary Guideline Goal for Total Fat but Not for Saturated Fat

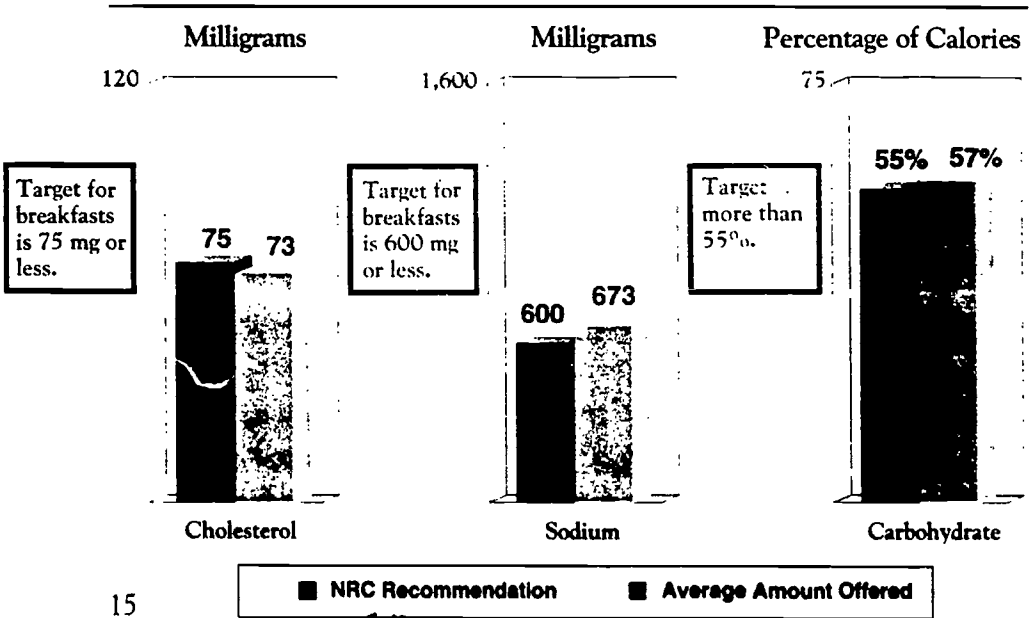


SBP breakfasts meet the NRC recommendations for cholesterol and carbohydrate but not for sodium (Figure 11B).

The mean amount of cholesterol is 73 mg, compared with a goal for breakfast of 75 mg or less. The percentage of calories from carbohydrate is 57 percent, compared with a goal of more than 55 percent. The mean amount of sodium is 673 mg, compared with a goal for breakfast of 600 mg or less.

Figure 11B

SBP Breakfasts Meet the NRC Recommendation for Cholesterol and Carbohydrate but Not for Sodium

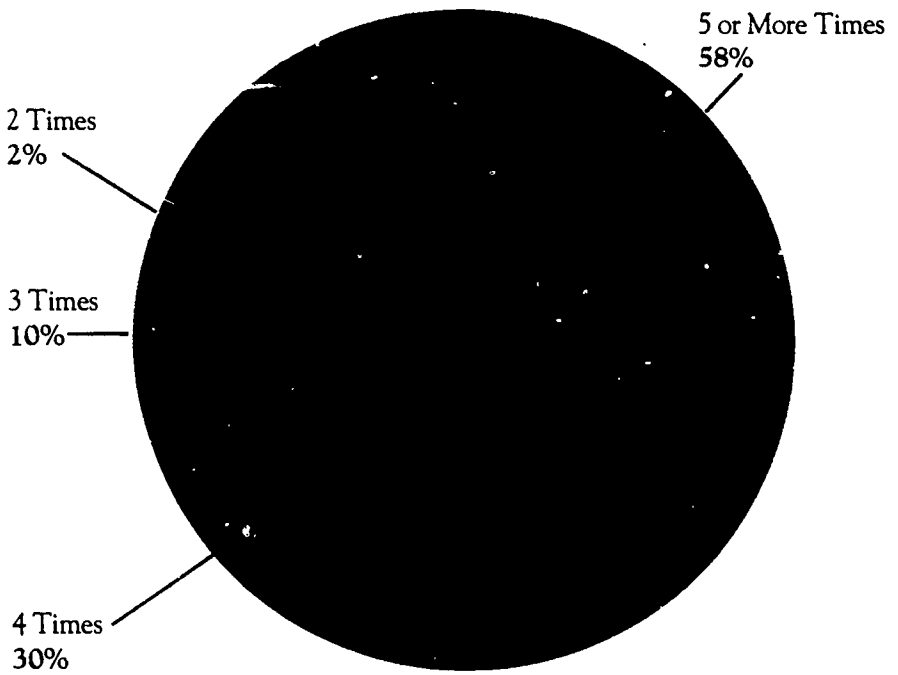


Students' Dietary Intakes

One of the objectives of this study was to examine students' dietary intakes and the contribution of NSLP and SBP meals to these intakes. Data about students' intakes compiled over a 24-hour period that includes a school day complement the material presented earlier on what school meal programs offer to the 3,350 students in the sample. As context for examining the intakes of NSLP and SBP participants, this section describes the intakes of all students nationwide.

Students eat many times during the day (Figure 12).
The vast majority reported eating at least three times a day, and more than half reported eating at least five. Across all age groups, a large percentage of students eat breakfast, lunch, and dinner; 88 percent of all students eat breakfast, 93 percent eat lunch, and 99 percent eat dinner. Two-thirds eat an afternoon snack, and 58 percent eat an evening one. The incidence of morning snacks is much lower, at just 15 percent.

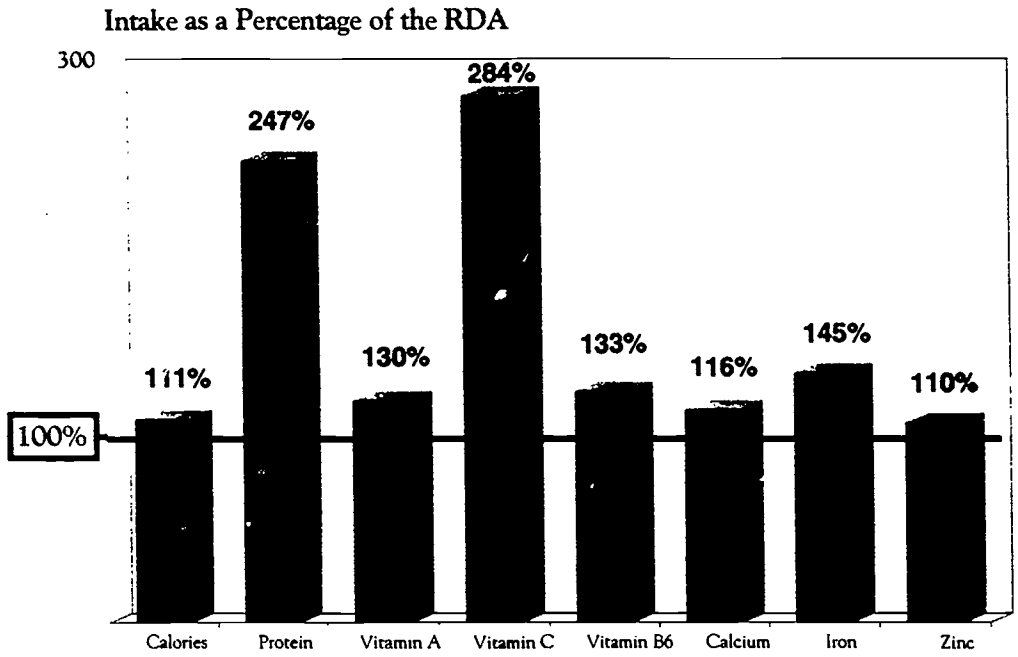
Figure 12
Students Eat Many Times During the Day



On average, students consume more calories per day than the RDA (Figure 13).
The average intake of calories over 24 hours is 111 percent of the RDA. Average intake of calories varies little with family income but does vary with age and gender. Although all age and gender subgroups consume more than the RDA for calories, adolescent males consume about 17 percent more than the RDA, while adolescent females consume only 4 percent more. In contrast, average calorie intake is 109 percent of the RDA for students with family incomes less than the

poverty level, 108 percent for students with family incomes between 100 and 185 percent of the poverty level, and 111 percent for students with family incomes greater than 185 percent of the poverty level.

Figure 13
Students Consume More than the RDA over 24 Hours

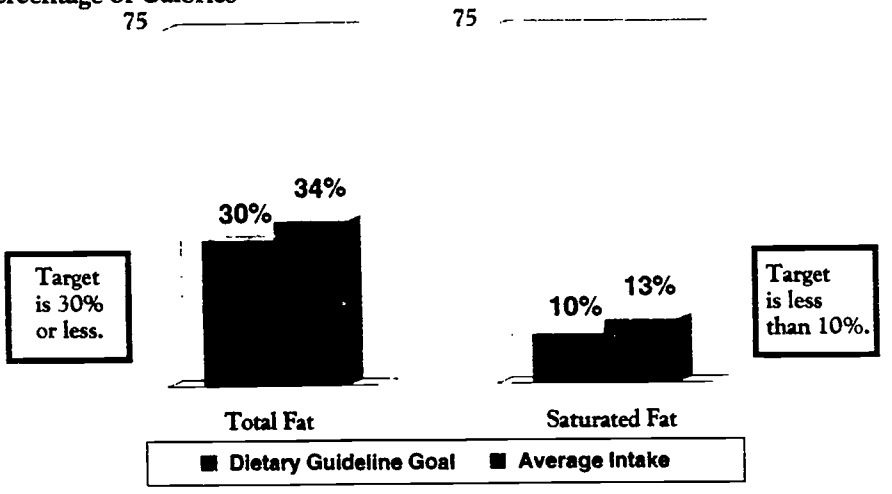


Students' average daily intakes of most vitamins and minerals are at least the RDA, and a majority of students consume at least the RDA for most vitamins and minerals (Figure 13).

Except for adolescent females, vitamin and mineral intakes for all age and gender subgroups exceed the RDA. Adolescent females' intakes of most minerals are slightly below the RDA, and their intakes of calcium are relatively low; average intake of calcium relative to the RDA is 80 percent for females 15 to 18 years old and 87 percent for females 11 to 14 years old.

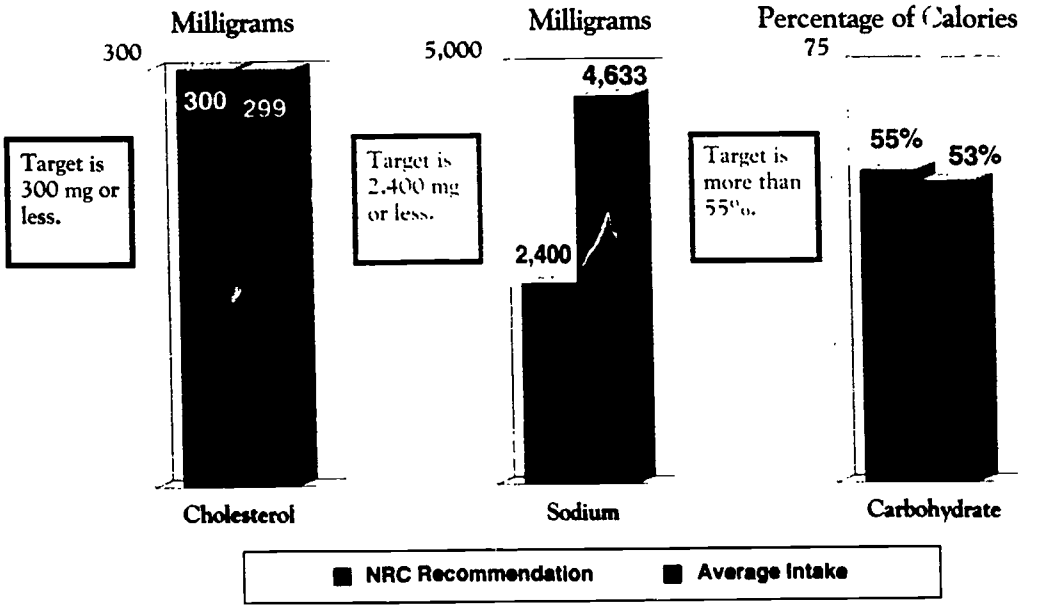
Students' daily intakes of total fat and saturated fat exceed dietary recommendations (Figure 14A).
Daily intakes average 34 percent of calories from fat, compared with the Dietary Guideline goal of 30 percent or less, and 13 percent from saturated fat, compared with the Dietary Guideline goal of less than 10 percent. Intakes of fat and saturated fat vary with family income. Students from low-income families have higher percentages of calories from fat than students from higher-income families.

Figure 14A
Students Consume More Total Fat and Saturated Fat than Recommended over 24 Hours



Students' daily intakes of sodium exceed dietary recommendations, and their intakes of carbohydrate are less than recommended (Figure 14B).
Daily intakes average 53 percent of calories from carbohydrate, compared with the NRC recommendation of more than 55 percent. Average sodium intakes are almost twice the NRC recommendation and are especially high among adolescent males.

Figure 14B
Students Consume More Sodium than Recommended over 24 Hours

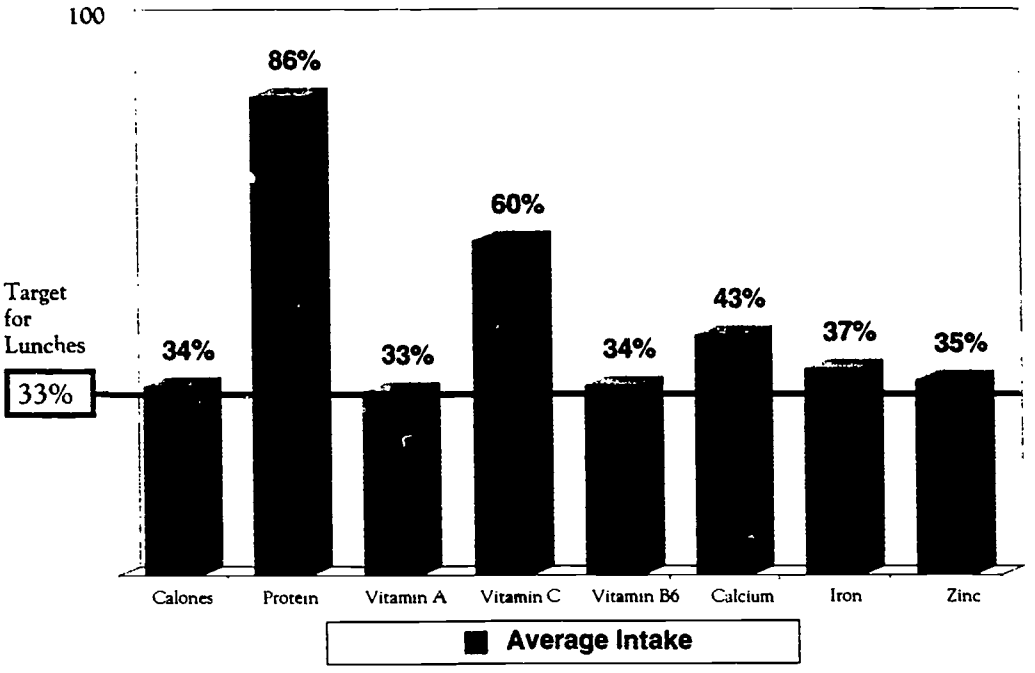


NSLP participants consume about one-third of the daily RDA for calories and most vitamins and minerals at lunch (Figure 15).

For all NSLP participants, the average intakes of calories, vitamin A, vitamin B6, iron, and zinc are approximately one-third of the RDA. The average lunchtime intakes of protein, vitamin C, and calcium are well above one-third of the RDA.

In general, NSLP intakes for participants of different ages and genders are one-third of the RDA for most nutrients. Adolescent female NSLP participants, however, have lower average intakes relative to the RDA than students in other age groups. In particular, lunchtime intakes of iron, magnesium, zinc, vitamin A, and vitamin B6 are less than one-third of the RDA for female NSLP participants 11 to 14 years old.

Figure 15
NSLP Participants Consume One-Third or More of the Daily RDA at Lunch

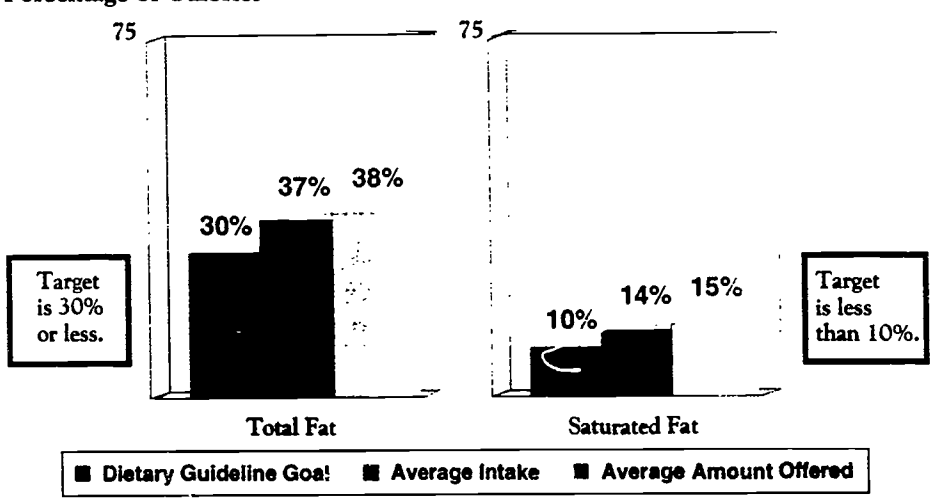


NSLP participants consume more than the recommended maximum amount of fat and saturated fat at lunch (Figure 16A).

NSLP lunches as offered and as consumed are very similar in average fat content. Fat provides 38 percent of the calories in lunches as offered, compared with 37 percent in lunches as consumed. This finding was not necessarily expected given the wide variety of lunch choices available in most schools. Nutrients offered may be more or less than nutrients consumed, depending on what foods students select.

Figure 16A

NSLP Participants Consume More Total Fat and Saturated Fat at Lunch than Recommended

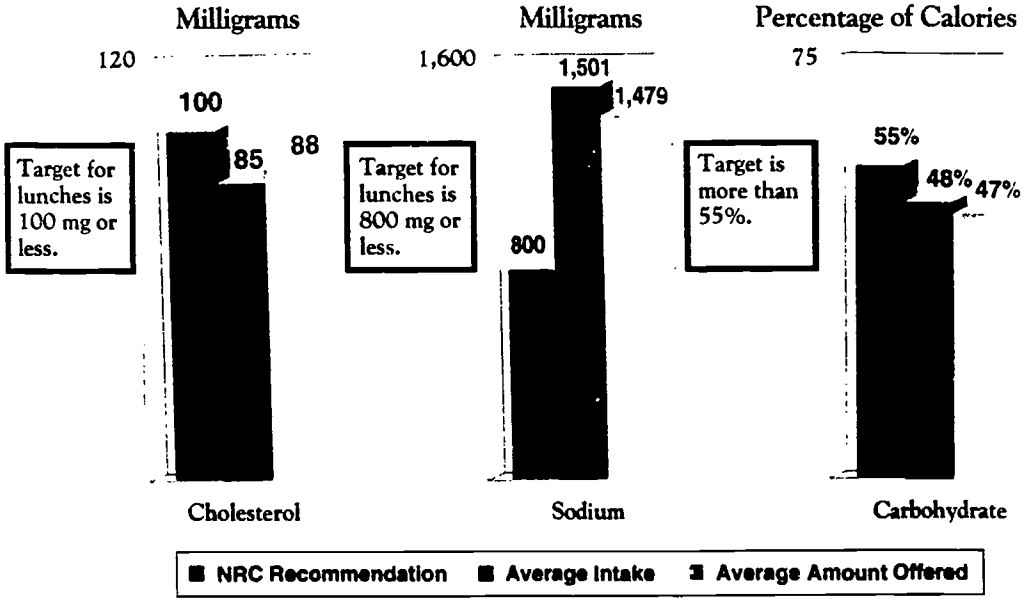


NSLP participants consume more than the recommended maximum amount of sodium at lunch (Figure 16B).

Lunches offered and consumed are very similar in average sodium content—an average of 1,479 mg of sodium offered and 1,501 mg consumed. This finding was also not necessarily expected given the wide variety of lunch choices in most schools.

Figure 16B

NSLP Participants Consume More Sodium at Lunch than Recommended



The use of OVS in schools below the secondary level does not affect the nutrient intakes of NSLP participants.

The use of OVS slightly reduces the chances a student will select each meal component. Waste is somewhat lower in OVS schools, however, which offsets the reduction in the proportion selecting each component. The net effect is that nutrient intake is unaffected. Students in OVS schools are less likely to select milk than students in non-OVS schools but also less likely to waste it. Overall, NSLP participants waste about 12 percent of the calories in the food they are served.

NSLP participation is associated with increased intakes at lunch of some but not all dietary components.

NSLP participants have higher lunch intakes of vitamin A, calcium, and zinc, and lower intakes of vitamin C (although lunchtime intakes of vitamin C average 60 percent of the RDA) than nonparticipants who eat lunch. NSLP participants also consume a higher percentage of calories from fat and saturated fat and a lower percentage from carbohydrate than nonparticipants. For example, the average percentage of calories from fat is 37 percent for NSLP participants, compared with 33 percent for nonparticipants.

Differences in the consumption of specific foods at lunch explain differences in the nutrient intakes of NSLP participants and nonparticipants.

NSLP participants are more than twice as likely as nonparticipants to consume milk and milk products at lunch, which explains their higher intakes of calcium. NSLP participants also consume more meat, poultry, fish, and meat mixtures than nonparticipants, which explains their higher intakes of zinc. NSLP participants' greater consumption of foods from these two food groups also contributes to their higher percentage of calories derived from fat and saturated fat. Intakes of vitamin A are higher for NSLP participants than for nonparticipants, primarily because of their higher consumption of milk and vegetables.

NSLP participants and nonparticipants obtain carbohydrate from different sources. Nonparticipants are more likely to obtain their carbohydrate from sweets and sweetened drinks, while NSLP participants are more likely to obtain their carbohydrate from milk and vegetables.

Calories and nutrients consumed by students who eat non-NSLP lunches vary according to the source of the lunch.

Students who got a *non-NSLP lunch at school*—i.e., food purchased from a vending machine, school store, or a la carte from the cafeteria—consumed just 23 percent of the RDA for calories at lunch. These students also consumed less than 20 percent of the RDA for several nutrients (vitamin A, vitamin B6, calcium, iron, and zinc) and less than one-third of the RDA for many others. Students who got *lunch from home* consumed 31 percent of the RDA for calories. This group consumed less than one-third of the RDA for several vitamins and minerals, including vitamin A, vitamin B6, calcium, and zinc. Students who got *lunch off campus* consumed 34 percent of the RDA for food energy. They also consumed less than one-third of the RDA for several vitamins and minerals—vitamin A, vitamin B6, calcium, and zinc.

Non-NSLP lunches from home and from school have less fat, saturated fat, sodium, and cholesterol than those obtained off campus.

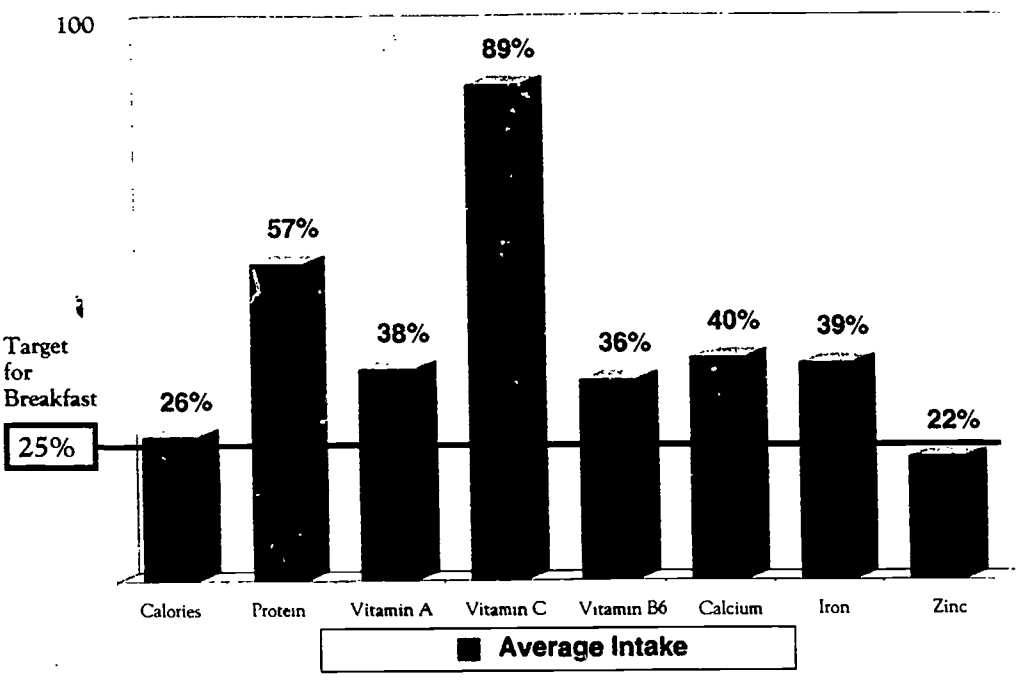
Students who eat non-NSLP lunches either brought from home or obtained at school derive less of their lunchtime intake of calories from fat and more from carbohydrate than students obtaining off-campus meals. The sodium and fat content of off-campus lunches is quite similar to that of NSLP lunches, although off-campus lunches provide lower levels of vitamins and minerals.

Some but not all of the differences between the intakes of NSLP participants and nonparticipants at lunch persist over 24 hours.
NSLP participation is associated with increases in the percentage of calories from fat and saturated fat and decreases in the percentage of calories from carbohydrate, both at lunch and over 24 hours. NSLP participation is also associated with lower intakes of vitamin C both at lunch and over 24 hours, although daily intakes of vitamin C for NSLP participants average 274 percent of the RDA. The relationship between NSLP participation and higher calcium intake at lunch diminishes over 24 hours.

Dietary Intakes of SBP Participants and Nonparticipants

SBP participants consume about one-fourth of the daily RDA for calories and more than one-fourth for almost all vitamins and minerals at breakfast (Figure 17).
Average intakes of all nutrients except calories and zinc are well above the goal of one-fourth of the RDA. The average intake of calories is 26 percent of the RDA, and the average intake of zinc is 22 percent.

Figure 17
SBP Participants Consume One-Fourth of the Daily RDA at Breakfast

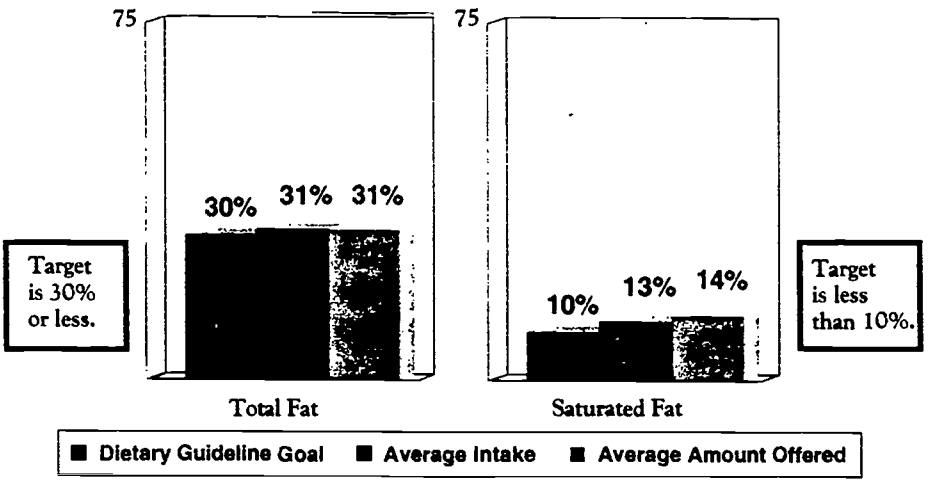


SBP participants' intakes of total fat at breakfast nearly meet the Dietary Guideline goal, but saturated fat intakes are well above it (Figure 18A). SBP participants' breakfast intakes average 31 percent of calories from fat, compared with the Dietary Guideline goal of 30 percent or less, and 13 percent from saturated fat, compared with the Dietary Guideline goal of less than 10 percent.

As with NSLP lunches, the percentage of calories from fat in breakfasts as consumed is similar to the percentage in breakfasts as offered. This finding is less surprising than the analogous finding for lunch, however, because SBP breakfasts generally offer fewer food choices.

Figure 18A

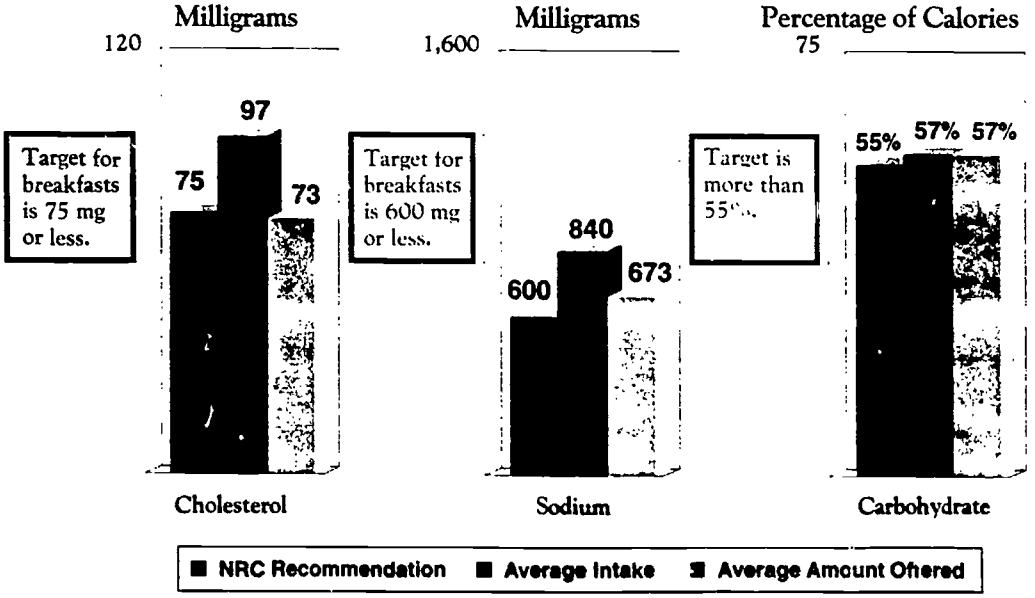
SBP Participants Consume More Saturated Fat at Breakfast than Recommended



Breakfast intakes of cholesterol and sodium are above one-fourth of the maximum daily intakes recommended by the NRC (Figure 18B).

Figure 18B

SBP Participants Consume More Sodium and Cholesterol at Breakfast than Recommended



SBP participation increases intakes at breakfast of some but not all dietary components.

SBP participants have higher average breakfast intakes of calories, protein, and calcium, and derive a greater proportion of calories from fat and saturated fat than nonparticipants. As just noted, SBP participants consume the target of one-fourth of the RDA for calories at breakfast; nonparticipants consume less than one-fourth of the RDA. Although the percentage of calories from fat is higher for SBP participants than for nonparticipants, it is only slightly above the Dietary Guideline goal of 30 percent or less.

Differences in the breakfast consumption of specific types of foods by SBP participants and nonparticipants are consistent with differences in dietary intakes. Although only one-half of SBP breakfasts include a meat or meat alternate, SBP participants are three times more likely than nonparticipants to consume meat, poultry, fish, or meat mixtures at breakfast. SBP participants are also more likely than nonparticipants to consume milk or milk products at breakfast. The higher proportion of SBP participants consuming foods from these two groups explains their higher breakfast intakes of calories, protein, calcium, fat, and saturated fat.

Breakfasts consumed by students at home conform to the dietary targets for breakfast, except for calories and zinc.

They provide one-quarter of the RDA for all vitamins and minerals except zinc. The average levels of fat, saturated fat, cholesterol, and sodium in home breakfasts are at or below the recommended maximum levels, and the protein and carbohydrate levels are within the targeted range. Breakfasts consumed at home provide only 18 percent of the RDA for calories.

SBP participant-nonparticipant differences in breakfast intakes persist over 24 hours, except for intakes of fat, saturated fat, and carbohydrate.

SBP participation is associated with increases in the intake of calories over 24 hours. The calorie difference between the 24-hour intakes of SBP participants and nonparticipants is about the same as the calorie difference in their breakfast intake. The effects of SBP participation on the percentage of calories from fat, saturated fat, and carbohydrate at breakfast disappear over 24 hours. The SBP contributes to higher intakes of protein and calcium, both at breakfast and over 24 hours.