

Food and Nutrient Composition of CACFP Tier 2 Lunches

This section continues the examination of the nutritional characteristics of meals and snacks offered to children in CACFP family child care homes. It examines the food and nutrient composition of lunches in Tier 2 homes in 1999 and compares them with the composition of lunches offered by similar providers (resembling them in tier-related characteristics) in 1995.

Tier 2 providers in 1999 generally offered lunches that supply at least one-third of the RDA for most nutrient measures, the exceptions being food energy and iron. Relatively few providers, however, offered lunches that met the *Dietary Guidelines* recommendations for fat and saturated fat or the NRC recommendations for carbohydrate and sodium.

Comparison of the nutrient profile of Tier 2 1999 lunches with those offered by similar providers in 1995 revealed several significant differences, but none that appear to reflect an impact of the reduced reimbursement rate. Most of the significant differences reflect increases in nutrient levels, which result mainly from a general tendency toward larger portion sizes in 1999. In addition to the larger portions, changes in the specific foods offered at lunch led to some changes in the nutrient profile.

Foods Offered in CACFP Lunches

Lunches that qualify for CACFP reimbursement must include two or more servings of fruit, vegetables, or full-strength juice, plus at least one serving of the other three major meal components: milk, bread or bread alternate, and meat or meat alternate. Practically all Tier 2 lunches in 1999 met this broad requirement, as indicated earlier. Exhibit 15 contains a more detailed description of the foods offered to children aged 3-5 within each meal component category.

Milk. As at breakfast, the most common type of milk offered is white, 2-percent fat milk. It is offered in just over half of all lunches. Whole milk is offered in about one-third of the lunches, and no other kind of milk makes up more than a small percent of the total. The 1999 Tier 2 pattern shows no important difference from the pattern of similar providers in 1995.³⁹

Fruits and Juices. Nearly 9 out of 10 lunches contained a fruit or, less frequently, a fruit juice. Fresh fruits and canned fruits appeared in 46 and 40 percent of the 1999 lunches, respectively. Apples, bananas, grapes, and oranges were the most common fresh fruits, while peaches, pears, applesauce, and fruit cocktail led the list of canned fruits. The fruits in Tier 2 lunches in 1999 were quite like those offered by similar providers in 1995, although applesauce was a bit less common and fresh fruit ($p < 0.10$) slightly more common in 1999.

³⁹ As Exhibit 14 indicates, the 1995 data contain many observations of milk whose exact type was not specified. Such observations were rare in the 1999 data and the difference probably accounts for the higher proportion of whole milk observations in 1999 ($p < 0.10$).

Exhibit 15
Share of Lunches Containing Foods Commonly Offered to Children Aged 3-5^a

	Tier 2 1999	Difference 1999-95 ^b
Percentage of Lunches in which Item is Offered		
Milk	98.9%	2.1%
White, 2%	52.9	-0.6
White, whole	33.1	9.9*
White, 1%,1.5%	7.1	3.0
White, skim	5.6	-0.3
White, no further specification ^c	0.6	-28.7***
Fruits and Juices	87.0	4.1
<i>Any fresh, canned, or dried fruit</i>	86.4	3.8
<i>Any fresh fruit</i>	46.1	6.6*
Apple	14.1	-0.4
Banana	8.3	0.4
Grapes	7.3	1.2
Orange	5.7	-0.7
<i>Any canned fruit</i>	39.9	-3.2
Peaches	9.9	0.0
Pears	8.9	1.7
Applesauce	8.6	-4.1**
Fruit cocktail	6.8	-1.1
Vegetables	92.9	2.6
Potatoes, fried	14.6	2.7
Green beans, cooked	13.4	0.8
Corn	12.9	0.0
Tomatoes, cooked	12.5	3.0**
Peas	7.9	0.2
Broccoli, cooked	4.0	-1.1
Potatoes, mashed, scalloped	4.0	-1.1
Vegetables in mixed dishes	3.4	-1.5
<i>Any raw vegetables</i>	28.8	0.3
Carrots, raw	14.0	0.7
Lettuce, salad mix	6.7	0.3
Bread and Bread Alternates	98.4	0.5
White bread, rolls	60.0	-2.0
Pasta	19.9	1.2
Breading on nuggets, sticks	14.3	3.2**
Tortillas, taco shells, pizza crust	7.7	-0.4
Rice	4.3	-0.6

continued...

Exhibit 15 (continued)
Share of Lunches Containing Foods Commonly Offered to Children Aged 3-5^a

	Tier 2 1999	Difference 1999-95^b
Meat and Meat Alternates	99.3	-0.3
Cheese, not low-fat	20.4	1.8
Hot dogs	11.9	2.4**
Chicken-Turkey, fried	9.3	2.5**
Peanut butter, nuts	8.0	0.2
Chicken-Turkey, roasted	7.1	-1.9
Ham	6.6	1.5
Beef, ground	6.1	-2.6**
Fish, fried, processed	6.0	0.0
Fish, canned	4.5	-0.6
Cheese in mixed dishes	13.3	1.1
Beef in mixed dishes	10.8	1.2
Noncreditable Foods^d	57.5	5.1
High-fat condiments ^e	34.7	-1.7
Low-fat condiments ^f	20.1	7.1***
Jelly	6.7	0.3
Unweighted sample	2,305	4,483

^a Includes only foods offered in at least 5 percent of meals, in either 1995 or 1999.

^b Regression estimate. See Appendix D.

^c Menu survey did not include information on the fat content of milk.

^d Foods that do not contribute to satisfying the CACFP meal pattern.

^e Butter, margarine, salad dressing, mayonnaise, gravy, cream cheese, and other high-fat toppings.

^f Low-fat salad dressing, low-fat mayonnaise, ketchup, mustard, pickles, and other low-fat toppings.

Significance levels:

* = .10

** = .05

*** = .01

Vegetables. Tier 2 providers in 1999 offered a vegetable in 93 percent of all lunches. The most common vegetables were fried potatoes, raw carrots, green beans, corn, and cooked tomatoes (mainly in the form of tomato sauce)—each offered in 13-15 percent of lunches. Raw vegetables appeared in 29 percent of lunches but were much less common than cooked vegetables. No striking differences from 1995 are observed, although cooked tomatoes show a small but statistically significant increase.

Bread and Bread Alternates. By far the most common food item in this group is white bread or rolls, appearing in 60 percent of Tier 2 lunch menus in 1999. Pasta is a distant second, at 20 percent, and third is the breading found in dishes such as chicken nuggets and fish sticks (14 percent). The latter category shows a small but statistically significant increase since 1995.

Meat and Meat Alternates. At least one meat or meat alternate was offered in virtually all lunches in Tier 2 homes in 1999 (99 percent). Cheese, offered in 20 percent of lunches, was the most common and hot dogs were second, at 12 percent. Differences from 1995 were not large, but statistically significant increases occurred for hot dogs and fried chicken or turkey, while ground beef was offered significantly less frequently. Each of these differences represented changes in only 2-3 percent of the lunches.

Noncreditable Foods. Over half of CACFP lunches include some noncreditable items, usually condiments. High-fat condiments, such as bread spreads (mayonnaise, butter, and margarine), salad dressings, and gravy, are offered in more than one-third of lunches. Low-fat condiments, such as ketchup, are in one-fifth of the menus. A significantly larger proportion of Tier 2 providers in 1999 offered low-fat condiments than similar providers in 1995—in fact, this was the largest estimated difference between the 2 years for any single food category. Because many of the low-fat condiments are high in sodium, this turns out to be one source of the increase in sodium levels discussed below.

Nutrient Content of CACFP Lunches Relative to RDAs

The average Tier 2 lunch in 1999 provided more than one-third of the RDA for protein, vitamin A, vitamin C, and calcium (Exhibit 16). For food energy and iron, the average falls somewhat short of one-third of the RDA (29 percent and 26 percent, respectively, when averaged across all age groups). Protein and vitamin A levels are far above the one-third of RDA benchmark, at more than 100 percent and 75 percent, respectively.

This pattern is roughly consistent across age groups, but some variations can be seen. Levels of total food energy, protein, and vitamin A in Tier 2 lunches represent a somewhat smaller proportion of the RDA for older children than for younger children. The pattern is reversed for vitamin C, calcium, and iron, with older children offered lunches with slightly higher proportions of the RDA than younger children. As noted for the breakfast analysis, the main reason for this finding is the disproportionate change in the RDA values relative to the change in portion sizes with increasing

Exhibit 16
Mean Percentage of RDA Offered at Lunch

	Age 1-2		Age 3-5		Age 6-12		All Ages	
	Tier 2 1999	Difference 1999-95	Tier 2 1999	Difference 1999-95	Tier 2 1999	Difference 1999-95	Tier 2 1999	Difference 1999-95
Food energy	30.8%	1.7%**	28.8%	2.1%***	27.2%	1.6%**	29.4%	2.1%***
Protein	114.5	2.8	100.1	4.5	85.2	1.2	104.5	4.9
Vitamin A	78.6	1.6	74.5	-0.9	61.2	-4.0	74.7	1.0
Vitamin C	45.2	5.0	48.4	6.6**	53.4	6.9	47.3	5.1*
Calcium	39.2	1.1	42.5	1.4	44.0	0.3	41.4	1.1
Iron	22.8	1.0	26.6	1.5*	31.4	1.7	25.5	0.9
Un-weighted sample	446	842	483	931	165	358	527	1,013

^a Regression estimate. See Appendix D.

Significance levels:

* = .10

** = .05

*** = .01

age. (There is over 90 percent agreement in the foods offered to each age group when more than one group is served.)

The finding for iron warrants further discussion. The major sources of iron in Tier 2 lunches are enriched breads and grains and mixed dishes that contain enriched grains (e.g., macaroni and cheese, pizza, and burritos). Meats (ground beef, in particular) and vegetables (including legumes) contribute two-thirds to three-quarters as much iron as grain-based items. The smaller contribution of iron from lunches relative to breakfasts is due entirely to the frequent offering of enriched and fortified cereals at breakfast. It is unclear whether Tier 2 lunches should be considered “low” in iron content. As reported previously, Tier 2 providers in 1999 were meeting meal-pattern requirements for the major types of foods offered at lunch. It is possible that a one-third RDA benchmark for this nutrient at lunch is inappropriate given the suggested portion sizes, but the analysis required to confirm this hypothesis would be beyond the scope of this study.⁴⁰ Recall that CACFP providers are not required to offer lunches that provide one-third of the RDA.

Tier 2 providers in 1999 offered lunches with significantly larger amounts of food energy than the lunches offered by similar providers in 1995. A significant increase in the mean percent of RDA for vitamin C was observed for children aged 3-5, but not for children aged 1-2 or 6-12. Other than a small increase in the mean percentage of the RDA for iron in lunches offered to 3-5-year-olds ($p < 0.10$), no other 1999-95 differences were found.

The 1999-95 differences stem in large part from a general tendency to serve larger portions of food in 1999 than 1995. Portion sizes were measured by on-site observers who visited a subsample of the family child care homes included in the menu survey.⁴¹ Multivariate analyses were then used to estimate portion sizes for all menus for each kind of food, controlling for factors such as the number of children and meals offered, provider income, and characteristics of the provider’s location (region, urban/rural, and proportion of low-income children).

The portion size analyses found that Tier 2 providers in 1999 offered significantly larger portions than similar providers in 1995 for three of ten major types of food (meats, breads, and nonmilk beverages). The estimated effects were not statistically significant for most other types of food.

A further analysis was conducted to separate the influence of portion sizes from that of menu choices and other factors in creating the 1995-99 differences in nutrient quantities offered. This analysis indicates, for all nutrient measures, that the 1995-99 differences are less positive (and mostly nonsignificant) when the effects of portion size are removed.

⁴⁰ An analysis conducted for the 1995 study, however, indicated that the mean percentage of RDA for iron in CACFP lunches was lower for each age group when the CACFP minimum portion sizes were used in place of estimated portion sizes. The differences ranged from 4 percent for the 6-10 age group to 10 percent for 1-2 year olds (Abt Associates Inc., unpublished data).

⁴¹ For more information on the meal observations and portion size analysis methodology, see Appendix C.

Percent of Providers Offering at Least One-Third of the RDA at Lunch

Over three-quarters of Tier 2 providers in 1999 offered lunches that supplied, on average, at least one-third of the RDA for protein, vitamin A, calcium, and vitamin C (Exhibit 17). Only 20 percent met this benchmark for food energy, and just 9 percent offered lunches with one-third of the RDA for iron. As discussed above, these goals may not be appropriate for CACFP lunches. Still the small proportion of providers offering one-third of the RDA for iron at lunch, especially to preschool children, is potentially worrisome.⁴² Iron deficiency is the single most prevalent nutrient deficiency in the United States, and young children are considered to be one of the groups most at risk. In the 1994-96, 1998 CSFII, less than half of 1-2-year-olds and two-thirds of 3-5-year-olds met their RDA for iron in all meals and snacks combined (USDA, 1999).

Significantly more Tier 2 providers in 1999 met the one-third of RDA benchmark for food energy in lunches offered to 3-5-year-olds and for all age groups served than did similar providers in 1995. This result is consistent with the significant increase in the average amount of energy in lunches offered as shown in Exhibit 16. Across all age groups the increase in the percentage of providers offering lunches with one-third of the RDA for energy is about 10 percent.

Exhibit 17
Percentage of Providers Offering at Least One-Third of the RDA at Lunch

	Age 1-2		Age 3-5		Age 6-12		All Ages	
	Tier	Difference	Tier	Difference	Tier	Difference	Tier	Difference
	2	1999-95 ^a	2	1999-95 ^a	2	1999-95 ^a	2	1999-95 ^a
Total energy	29.3%	13.1%*	12.8%	7.3%**	6.3%	-1.4%	19.1%	9.6%**
Protein	100.0	0.0	100.0	0.0	100.0	0.0	100.0	0.0
Vitamin A	98.7	3.6	94.7	-4.4	89.5	3.5	96.0	6.8
Vitamin C	73.3	12.3	77.4	15.3	85.3	14.0	76.0	10.7
Calcium	88.1	2.3	93.8	0.2	93.8	-4.5	91.8	2.0
Iron	3.6	2.0	7.8	3.2	33.3	13.0	8.5	3.2
Un-weighted sample	446	842	483	931	165	358	527	1,013

^a Regression estimate. See Appendix D.

Significance levels:

* = .10

** = .05

*** = .01

⁴² As discussed for all nutrients in footnote 28, if the new EAR benchmarks for iron had been used, a much larger proportion of providers would have been found to be offering lunches that meet that lower benchmark for iron. The iron values in the RDAs are 10 mg. for both 1-3-year-olds and 4-8-year-olds while those values in the EARs are 3 mg. for 1-3-year-olds and 4.1 mg. for 4-8-year-olds.

Nutrient Content of CACFP Lunches Relative to *Dietary Guidelines* and NRC Recommendations

The average lunch offered by Tier 2 providers in 1999 did not meet the *Dietary Guidelines* or NRC recommendations for any of the nutrient measures except cholesterol, as shown in Exhibit 18. The average values for lunches offered to children aged 3-5 and 6-12 were similar and well above the recommendations for the percent of energy from fat and saturated fat, and below the recommendation for the percent of energy from carbohydrate. The average amount of sodium was also above the recommended maximum for both age groups.

The situation with regard to these recommendations appears to have worsened somewhat between 1995 and 1999. Average values for the percent of energy from saturated fat in lunches offered for the 3-5 and 6-12 age groups are significantly higher for Tier 2 providers in 1999 than for similar providers in 1995. The mean percent of energy from fat was also slightly higher for the 3-5 age group ($p < 0.10$). Both of these increases were small (1 percentage point or less). Average sodium levels increased by almost 20 percent, climbing well above the NRC benchmark, although this result was not statistically significant.

Because the increase in sodium levels was substantial and consistent across age groups, additional analyses were conducted. The increased sodium levels result partly from the general increase in portion sizes described earlier, but menu choices also played a role. No single food appears to account for the difference, but contributions came from increases in the proportion of lunches including ketchup, hot dogs, processed cheese, and fried breaded meats.

Exhibit 18
Mean Nutrient Levels Relative to *Dietary Guidelines* and NRC Recommendations Offered at Lunch^a

	Recommen- dation	Age 3-5		Age 6-12	
		Tier 2 1999	Difference 1999-95 ^a	Tier 2 1999	Difference 1999-95 ^a
Percent of food energy from:					
Fat (%)	≤ 30%	37.0	1.0*	37.3	0.9
Saturated fat (%)	<10%	15.4	0.7**	15.2	0.8**
Carbohydrate (%)	> 55%	46.2	-0.3	45.9	-0.5
Cholesterol (mg)	≤ 100 mg	59.4	4	71.4	11.2
Sodium (mg)	≤ 800 mg	936.4	131.8	1,132.6	183.5
Unweighted sample		483	931	165	358

^a Note that the *Dietary Guidelines* and NRC recommendations are only applicable to children beginning at 2 years of age and older. This analysis is limited to lunches offered to children 3-5 and 6-12, the only CACFP age groups for which the recommendations fully apply.

^b Regression estimate. See Appendix D.

Significance levels:

* = .10

** = .05

*** = .01

Percent of Providers Meeting the *Dietary Guidelines* and NRC Recommendations for Lunch

As would be expected from the above patterns, few Tier 2 providers meet any of the benchmarks based on the *Dietary Guidelines* and NRC recommendations, with the exception of the recommendation for cholesterol. A large majority meet the recommended maximum for cholesterol (86 percent for children aged 6-12 and 93 percent for ages 3-5), as shown in Exhibit 19. Fewer than 10 percent of providers meet any of the other recommendations, except that 23 percent of providers offer 3-5-year-olds lunches that are within the recommended range for sodium.

There were no significant differences in the proportion of Tier 2 providers in 1999 offering lunches meeting the *Dietary Guidelines* and NRC recommendations for fat, saturated fat, carbohydrate, cholesterol, and sodium compared with similar providers in 1995. This pattern would not be unexpected given the very small and/or nonsignificant increases in average levels for these nutrients, as described earlier.

Exhibit 19
Percentage of Providers Meeting *Dietary Guidelines* and NRC Recommendations at Lunch^a

	Age 3-5		Age 6-12	
	Tier 2 1999	Difference 1999-95 ^a	Tier 2 1999	Difference 1999-95 ^a
Percent of food energy from:				
Fat	7.1%	-2.0%	5.4%	-5.1%
Saturated fat	1.5	-2.4	4.17	1.2
Carbohydrate	2.6	1.1	5.0	2.6
Cholesterol	93.0	-5	86.3	-7.5
Sodium	23.4	-36.3	7.1	-22.4
Unweighted sample	483	931	165	358

^a Note that the *Dietary Guidelines* and NRC recommendations are only applicable to children beginning at 2 years of age and older. This analysis is limited to lunches offered to children 3-5 and 6-12, the only CACFP age groups for which the recommendations fully apply.

^b Regression estimate. See Appendix D.

Significance levels:

* = .10

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*** = .01