

Tiering's Effect on Nutritional Aspects of CACFP Tier 2 Meals

The CACFP works to ensure that children receive healthful meals and snacks while in child care. To achieve this end, the program offers providers a financial benefit in the form of the meal reimbursement, sets standards for the meals and snacks that providers serve, and trains providers to design and prepare nutritionally appropriate meals.

The lower Tier 2 meal reimbursement rate diminished the providers' incentive to participate in the CACFP, as shown in the section above. In theory, it might also reduce the incentive for those who do participate to serve nutritionally appropriate meals and snacks. With lower revenues from meal reimbursements, providers might seek to reduce their operating costs. Cost reduction strategies are likely to focus on food purchases, because this is typically the provider's largest variable expenditure.¹⁹ Thus, Tier 2 providers might respond to the lower reimbursement by not offering certain meals or snacks or by offering fewer items, smaller portions, or less costly foods. Any of these strategies might diminish the CACFP contribution to children's nutritional needs.

The analysis finds no indication that tiering has caused deterioration of the nutrient composition of CACFP meals and snacks. Tier 2 providers in 1999 offered essentially the same pattern of meals and snacks as their counterparts in 1995. The meals and snacks were equally or more compliant with CACFP requirements regarding the types of food to be served. Nutrient composition was at least as appropriate in 1999 as in 1995.

The analysis presented below is based on menu surveys completed by representative samples of 542 Tier 2 providers in 1999 and 501 providers of all types in 1995. The menu surveys indicate the foods and beverages offered at each meal and snack for a sample week, with menus recorded separately for children aged 1-2, 3-5, and 6-12.²⁰ Portion sizes were measured by on-site observers in a subsample of the child care homes (97 in 1999 and 89 in 1995) on two days during the sample week. Models estimated with the observation data were used to impute portion sizes for meals and snacks in the menu surveys for the full sample. Because the 1999 menu survey was conducted only among Tier 2 homes, comparisons with 1995 use regression analyses controlling for two factors used in determining tier assignments: the provider's income relative to the Federal poverty guideline, and the percent of low-income children in the provider's census block group. The analysis methods and results are reported in full in Crepinsek et al., E-FAN-02-006.

¹⁹ Other major costs, such as facility depreciation and utilities, are less susceptible to control. See Fosburg et al., 1981.

²⁰ Menu records were requested for Monday-Friday of the sample week. Some providers did not operate on all 5 days and some failed to record their menu for 1 or more days. Only providers with 3 or more days of menus were included in the analysis.

Meals and Snacks Offered

Nearly all Tier 2 CACFP providers surveyed in 1999 offered lunch, and around 95 percent offered breakfast and an afternoon snack, as shown in Exhibit 10. Over half offered a morning snack, but relatively few offered supper (14 percent) or an evening snack (5 percent).

Two combinations of meals and snacks were particularly common. About 43 percent of providers offered breakfast, lunch, and either the morning or afternoon snack (usually the afternoon snack). Nearly an equal number offered breakfast, lunch, and both morning and afternoon snacks (38 percent).

Tiering does not appear to have affected this pattern. The proportion of Tier 2 providers in 1999 offering each meal, snack, or combination was not significantly different from the proportion of similar providers (resembling them in tier-related characteristics) in 1995. The only exception was the evening snack, which showed a small increase from 1995 to 1999 ($p < 0.10$).

A small proportion of Tier 2 providers may have responded to the reduction in reimbursements by discontinuing the morning snack. Both Tier 1 and Tier 2 providers who had been operating since January 1997 (6 months before tiering took effect) were asked whether they had started or stopped serving any meal or snack between that month and the time of the interview, which occurred in the summer of 1999 (Zotov et al., E-FAN-02-004).²¹ About 11 percent of Tier 2 providers said they had discontinued the morning snack, compared with 5 percent of Tier 1 providers. This net difference of 6 percentage points was the only difference in meals offered that approached statistical significance ($p < 0.10$).

If some Tier 2 providers did indeed discontinue the morning snack as a response to the reduction in reimbursement rates, their action did not lead to a reduction in morning snack service relative to the pattern observed in 1995. The proportion of Tier 2 providers in 1999 who offered a morning snack was not significantly different from the proportion of similar providers offering a morning snack in 1995.²²

²¹ For each meal and snack, providers were asked whether they were serving the meal/snack in January 1997 and whether they were doing so at the time of the interview. A "start" or "stop" was determined by the difference in practice at those two time points.

²² This conclusion is supported by data from the operations survey of Tier 1 and Tier 2 providers in 1999 (Zotov et al., E-FAN-02-004) and the corresponding survey of all providers in 1995 (Glantz et al., 1997). Comparing the complete provider populations in the 2 years shows no significant difference in the proportion saying they serve morning snack.

Exhibit 10
Proportion of Providers Offering Specified Meals and Snacks During the Sample Week

	Tier 2 1999	Difference 1999-1995 ^a
<i>Percent offering specified meal or snack</i>		
Breakfast	94.6%	5.2%
Morning snack	56.4	4.5
Lunch	98.6	-0.9
Afternoon snack	95.6	-0.7
Supper	13.6	-4.4
Evening snack	5.1	4.4*
<i>Percent offering specified combination</i>		
Breakfast, lunch, morning or afternoon snack	42.6	-3.1
Breakfast, lunch, morning and afternoon snack	38.0	5.7
Unweighted sample	542	1,043

^a Differences between values for Tier 2 providers in 1999 and estimated values for similar providers in 1995 were calculated using regression controlling for provider income and percent of low-income children in the census block group in 1990. The technique is described in Crepinsek et al., E-FAN-02-006.

Significance levels:

* = 0.10

** = 0.05

*** = 0.01

Source: Menu records for sample week, 1999 Tier 2 and 1995 all providers.

Compliance with Meal Component Requirements

To qualify for CACFP reimbursement, meals and snacks must contain specified combinations of four major components: milk; fruit, vegetables, and juice; bread and acceptable bread alternates (such as cereal); and meat and acceptable meat alternates (such as cheese and eggs). Lunches and suppers must include all four components and must include two different items in the fruit and vegetable category. Breakfasts must include three components: milk; fruit, vegetables, and juice; and bread and bread alternate. Snacks must include any two of the four components.²³

The vast majority of meals served by Tier 2 providers in 1999 complied with these component requirements. More than 90 percent of all breakfasts, lunches, morning snacks, and afternoon snacks

²³ The meal requirements also specify minimum serving sizes for each component, with the amounts varying according to the age of the child. Compliance with these requirements was not assessed because portion sizes were observed for only a subsample of providers.

complied fully (Exhibit 11). Over 80 percent of suppers and evening snacks did so. It is not known how many, if any, of the noncompliant meals were claimed for CACFP reimbursement.²⁴

Tiering did not reduce compliance with meal component requirements. Compliance rates were generally not significantly different for Tier 2 meals in 1999 than for meals offered by similar providers in 1995. The few statistically significant differences showed better compliance in 1999 than in 1995.

Exhibit 11
Percent of Meals Complying with CACFP Meal Component Requirements

Meal	Unweighted sample ^a	All Ages	
		Tier 2 1999	Difference 1999-1995 ^b
Breakfast	4,480	97.3%	2.3%*
Morning Snack	2,440	96.8	5.4**
Lunch	4,899	91.5	3.4
Afternoon Snack	4,578	95.3	-0.1
Supper	968	82.3	3.2
Evening Snack	219	85.5	12.5

^a Menus are recorded separately for children in three age groups: 1-2; 3-5; and 6-12. Sample size includes all three groups for 1999 and 1995.

^b Regression estimate controlling for provider income and percent of low-income children in the census block group in 1990.

Significance levels:

* = 0.10

** = 0.05

*** = 0.01

Source: Menu records for sample week, 1999 Tier 2 and 1995 all providers.

²⁴ Because CACFP reimburses no more than two meals and one snack (or one meal and two snacks) per child per day, not all meals and snacks served are reimbursed by CACFP. The menu records do not indicate which children received each meal, so it is not possible to determine which meals were candidates for a reimbursement claim for one or more children.

Nutrient Composition of Meals and Snacks Offered

CACFP regulations do not define nutrient standards for meals or snacks. Particular nutrients were selected for study on the basis of previous research and priorities established for the National School Lunch and School Breakfast Programs. Nutrient quantities are examined as a percent of the *Recommended Dietary Allowances* (RDAs) (National Research Council, 1989a) for food energy and five nutrients: protein, vitamin A, vitamin C, calcium, and iron.²⁵ Useful benchmarks come from the school-based programs, which call for breakfast to offer at least one-fourth of the RDA and for lunch to provide at least one-third of the RDA for these dietary elements. The study also examines the percent of food energy from total fat, saturated fat, and carbohydrate, as well as the total amounts of cholesterol and sodium in the meals and snacks offered. Benchmarks for this group of measures are based on recommendations in the current *Dietary Guidelines for Americans* (U.S. Departments of Health and Human Services and Agriculture, 2000) and the National Research Council's *Diet and Health* report (1989b).

Nutrient characteristics of breakfast, lunch, and morning and afternoon snacks were analyzed separately for meals and snacks offered to children in the three age groups distinguished in CACFP meal requirements: ages 1-2, 3-5, and 6-12.²⁶ Exhibit 12 summarizes the results for children aged 3-5, who are the largest group. Results for the other two age groups were quite similar.²⁷

In 1999 the average Tier 2 breakfast offered to children ages 3-5 substantially exceeded the benchmark of one-fourth of the RDA for the five nutrients, but food energy was slightly below that level. Lunch similarly exceeded the benchmark of one-third of the RDA for all nutrient measures except food energy and iron. Morning and afternoon snacks, for which no standard is defined, offered around 30 percent of the RDA for protein and vitamin C and 13-20 percent of the RDA for other nutrients and food energy.

The average composition of Tier 2 breakfasts and snacks offered in 1999 met most other nutrient benchmarks as used in this analysis, but lunch did not. Lunches, on average, substantially exceeded the *Dietary Guidelines* recommendation of less than 10 percent of food energy from saturated fat. The average Tier 2 lunch also fell outside the recommended ranges for percent of energy from total

²⁵ The new *Dietary Reference Intakes* (DRIs) might have been appropriate benchmarks for this study, but they were not available for most nutrients when this analysis was done.

²⁶ Menu data were not collected for infants under 1 year old. Nutrient composition of supper and evening snack are not analyzed because they are offered by only a small fraction of providers, making sample sizes too small for useful analysis.

²⁷ See Crepinsek et al., E-FAN-02-006, for results for all age groups and for additional measures. *Dietary Guidelines* and NRC Recommendations apply only to children age 2 and older. Analyses of these dimensions are limited to children ages 3-5 and 6-12.

Exhibit 12

Nutrient Composition of Meals and Snacks Offered to Children Ages 3-5

	Daily Recommen- dation	Breakfast		Lunch		Morning Snack		Afternoon Snack	
		Tier 2 1999	Differ- ence 1999-95 ^a	Tier 2 1999	Differ- ence 1999-95 ^a	Tier 2 1999	Differ- ence 1999-95 ^a	Tier 2 1999	Differ- ence 1999-95 ^a
% of RDA for:									
Food energy	100%	21.2	1.5***	28.8	2.1***	13.5	1.1**	14.6	1.2***
Protein	100%	54.4	1.5	100.1	4.5	30.1	2.5	31.7	-0.2
Vitamin A	100%	62.9	4.4	74.5	-0.9	18.6	-2.6	17.9	-5.5**
Vitamin C	100%	79.2	2.8	48.4	6.6**	30.9	-7.3	28.8	-1.0
Calcium	100%	37.0	0.7	42.5	1.4	19.4	2.3	18.8	-0.7
Iron	100%	41.1	2.0	26.6	1.5*	14.0	0.4	13.4	0.9
% of food energy from:									
Fat	≤30%	22.0	0.1	37.0	1.0*	27.1	2.3**	28.7	-1.3
Saturated fat	<10%	10.4	0.0	15.4	0.7**	11.2	1.0	11.4	-0.6
Carbohydrate	>55%	66.5	0.5	46.2	-0.3	63.7	-2.4	62.1	2.0*
Milligrams of:									
Cholesterol	≤300	52.9	8.5	59.4	4.0	17.6	1.6	15.5	0.9
Sodium	≤ 2,400	460.1	45.1	936.4	131.8	237.5	23.2	267.2	21.6
Unweighted sample		441	830	483	931	244	460	455	874

a Regression estimate controlling for provider income and percent of low-income children in the census block group in 1990.

Significance levels:

* = 0.10

** = 0.05

*** = 0.01

Data source: Menu records for sample week, 1999 Tier 2 and 1995 all providers.

fat and carbohydrate, and exceeded one-third of the recommended daily maximum amount of sodium. Breakfasts, in contrast, slightly exceeded the recommendation for percent of energy from saturated fat but were within the recommended limits for the other measures.

In most of these respects, Tier 2 meals in 1999 did not differ significantly from those offered by similar providers in 1995. The two most consistent differences were:

- **Food energy** was significantly greater in meals offered by Tier 2 providers in 1999 than those offered by similar providers in 1995. This stems from a general tendency for portion sizes to be larger in 1999.

- Point estimates for **sodium** were consistently greater for Tier 2 providers in 1999 than similar providers in 1995 across all meals and age groups, although the differences were not statistically significant. This pattern reflects differences in the foods served in 1999 as well as larger portion sizes. In particular, increases were observed in 1999 in the proportion of lunches offering high-sodium condiments (such as ketchup), hot dogs, processed cheese (such as American cheese) and breaded fried foods (such as chicken nuggets).

The comparisons between 1999 and 1995 do not suggest that lower meal reimbursement rates led Tier 2 providers, on average, to offer meals and snacks with diminished nutrient content. Portion sizes tended to increase—the opposite of what would be expected from a cost-cutting strategy. The menu changes leading to increased sodium levels seem more likely to represent catering to children’s preferences than economizing. Examining the foods commonly served at each meal, some observed differences between 1995 and 1999 would be consistent with an effort to cut costs (such as a significant reduction in the offering of meat and meat alternates at breakfast). But other differences move in the opposite direction (such as a significant increase in the proportion of lunches including fresh fruit), leaving no clear and consistent pattern.