

## Chapter Four

### *Meals and Snacks Consumed by CACFP Participants*

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The preceding chapter presented information on the meals and snacks offered in child care homes and centers participating in the CACFP, based on an analysis of the specific foods offered during a five-day period and estimates of the average portions received by children of different ages. The nutritional profile of meals and snacks actually consumed by participating children may differ from what is offered for several reasons. For example, children may decline one or more of the foods offered; the portions taken by children may differ from the average portion; and children may not consume all of the food they take. Thus, to gain a full understanding of the contribution of CACFP meals and snacks to children's energy and nutrient needs, it is important to examine CACFP meals and snacks *as actually consumed* by children.

This chapter examines meals and snacks consumed by CACFP participants. Data were obtained through on-site observations of children attending sampled CACFP sites.<sup>1</sup> Note that for ease in presentation the term *taken* is used throughout this chapter to refer to children's receipt of CACFP foods, e.g., *foods taken at lunch*. In some CACFP sites, children above a certain age actively select and serve foods to themselves. In other sites, children are always served by providers who may or may not allow children to decline foods that are offered. Moreover, some providers use family-style service which allows, and even encourages, second helpings for children who desire them. To avoid the need for repeated use of complex and potentially confusing descriptions of how children acquire CACFP foods, the general term *taken* is used to cover all potential serving situations.

The chapter addresses the following research questions:

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<sup>1</sup>Chapter Two includes an overview of the methodologies used in collecting and analyzing data. Full detail is provided in Appendix A. Appendix H presents results of a special substudy undertaken to assess the reliability, over time, of visual techniques used to estimate children's food selection and consumption.

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- Do meals and snacks taken by children include all required CACFP meal components?
- What proportion of the foods taken by children, and the energy and nutrients available in these foods, is actually consumed?
- How much do the individual CACFP meals and snacks children consume while in care contribute to their energy and nutrient needs? What is the collective energy and nutrient contribution of all CACFP meals and snacks consumed while in care?
- How do the CACFP breakfasts and lunches children consume while in care compare with *Dietary Guidelines* and NRC recommendations? How does the total complement of CACFP meals and snacks consumed while in care compare with *Dietary Guidelines* and NRC recommendations?

Findings for breakfasts, lunches, and snacks are presented separately, followed by a section that examines cumulative nutrient intake from all CACFP meals and snacks consumed while in care. The analyses presented parallel, in large part, those presented in Chapter Three. Additional analyses examine, for each meal and snack, the foods taken and consumed by children, as well as the extent to which energy and nutrients available in the meals and snacks taken are actually consumed. Estimates of food consumption are derived by computing the total amount eaten (the amount taken minus the amount left over) and dividing by the total amount of food taken. The resulting percentage reflects the percentage of available food that was actually consumed. Similar estimates are presented for the percentage of available energy and nutrients actually consumed.

Finally, each section includes a discussion of differences between the nutrient content of meals and snacks *offered* and meals and snacks *consumed*. While the two measures are not completely equivalent (the meals offered estimates are based, for the majority of providers, on meals and snacks offered over a period of five days; the meals consumed estimates consider only two of those five days), it is useful to compare the two estimates and identify nutrients, if any, for which conclusions differ markedly for the two analyses.

All tabulations are weighted and reflect *CACFP participants' nutrient intake from meals and snacks consumed on a typical day*.<sup>2</sup> Reported statistics include means and percentages for children of all ages. Results of separate age group analyses are provided in Appendix C; standard errors are also provided for all nutrient estimates.<sup>3</sup> Instances where a conclusion for a specific age group differs appreciably from the conclusion for all children are noted in the discussion. Unweighted sample sizes (number of child observations) are reported in each exhibit.

While data presentations are stratified by type of provider, for the interested reader, the discussion focuses primarily on findings for *all CACFP participants (children)*, aggregated across all types of providers (see Chapter Two). Discussions about differences between provider groups (family day care homes versus all centers or Head Start centers versus child care centers) are limited to situations where conclusions about major research questions differ appreciably for the two groups.

## **BREAKFASTS CONSUMED**

### ***Foods Taken in CACFP Breakfasts***

The CACFP meal pattern requires that one serving of each of three components be included in CACFP breakfasts: fluid milk; fruit, vegetables, or full-strength juice; and bread or an acceptable bread alternate. On an average day, 83 percent of children participating in the CACFP take breakfasts that include all three required components (Exhibit 4.1).

Average portions taken by children are equivalent to or, in the case of breads and bread alternates, substantially larger than the minimum portions specified in the CACFP meal pattern (Exhibit C.1).

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<sup>2</sup>The methodology used to develop sample weights for the child observations is described in Appendix E.

<sup>3</sup>As noted in Chapter Two, preliminary analyses indicated that findings for each age group were, for the most part, qualitatively similar with regard to the nutrient standards used in this study.

Exhibit 4.1

More Than 80 Percent of CACFP Participants Take Breakfasts That Include All Required Meal Components

| Breakfast Component                       | Children Receiving Care in:                |                       |                    |                    |             |
|---|--|-----------------------|--------------------|--------------------|-------------|
|   | All Children                               | Family Day Care Homes | Head Start Centers | Child Care Centers | All Centers |
|   | Percentage of Children Taking Component(s) |                       |                    |                    |             |
| <i>Three or More Creditable Items</i>     | 83%  | 86%                   | 89%                | 76%                | 81%         |
| Milk                                      | 94   | 96                    | 94                 | 90                 | 92          |
| Fruits, Vegetables, or Juices             | 88   | 89                    | 94                 | 83                 | 87          |
| Breads or Bread Alternates                | 96   | 97                    | 97                 | 95                 | 96          |
| Noncreditable Foods <sup>1</sup>          | 47   | 57                    | 51                 | 32                 | 40          |
| Number of Child Observations (Unweighted) | 1689                                       | 339                   | 818                | 532                | 1350        |

<sup>1</sup>Foods that do not contribute to satisfying the CACFP meal pattern.

### ***Consumption of Foods and Nutrients in CACFP Breakfasts as Taken***

While CACFP breakfasts taken by children include, for the most part, both the components and portions specified in the program meal pattern, many children do not consume all of the food they take. On average, children consume about three-quarters of the portions of food taken at breakfast (Exhibit 4.2). This general pattern is consistent across providers and across age groups (Exhibit C.2). There is little variation in the rate of consumption for different CACFP meal components, indicating that children do not consistently consume more of one breakfast component than another.

As a consequence of not consuming all of the foods taken, children consume only about three-quarters of the energy available in the CACFP breakfasts they take (Exhibits 4.3 and C.3). Consumption of available nutrients parallels consumption of available energy. That is, children consume about three-quarters of the nutrients available in the breakfasts they take. There are no substantial differences in this measure from one nutrient to the next. This is consistent with the finding that the rate of food consumption is roughly equivalent for each of the three breakfast components.

### ***Nutrient Intake from CACFP Breakfasts Relative to RDAs***

On an average day, breakfasts consumed by CACFP participants provide at least one-fourth of the RDA, except for energy and iron (Exhibit 4.4).<sup>4</sup> On average, children's nutrient intake from CACFP breakfasts provides 40 percent or more of the RDA for protein, vitamin A, and vitamin C. Calcium is consumed at levels equivalent to, on average, 26 percent of the RDA. Iron intake from CACFP breakfasts approximates one-fourth of the RDA (24%) and energy intake averages 15 percent of the RDA.

This pattern is generally consistent across providers. The only nutrient for which conclusions vary appreciably by type of provider (homes versus centers or Head Start centers versus child care centers) is iron. CACFP breakfasts consumed by children receiving care in homes provide

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<sup>4</sup>Data on actual mean energy and nutrient intake from CACFP breakfasts are presented, by age group, in Exhibit C.4. Standard errors for the estimates presented in Exhibit 4.4 are provided, along with age-group-specific estimates, in Exhibit C.5.

Exhibit 4.2

**CACFP Participants Consume About Three-quarters of the Portions of Food Taken at Breakfast**

| Breakfast Component                                    | Children Receiving Care in:                                |                       |                    |                    |             |
|--|--|-----------------------|--------------------|--------------------|-------------|
|  | All Children   | Family Day Care Homes | Head Start Centers | Child Care Centers | All Centers |
|  | Mean Percentage of Breakfast Portion Consumed <sup>1</sup> |                       |                    |                    |             |
| Milk   | 75%  | 80%                   | 70%                | 73%                | 72%         |
| Fruits, Vegetables, and Juices                         | 77   | 80                    | 76                 | 75                 | 75          |
| Breads and Bread Alternates                            | 76   | 81                    | 71                 | 73                 | 72          |
| Noncreditable Foods <sup>2</sup>                       | 79   | 83                    | 74                 | 74                 | 74          |
| Number of Child Observations (Unweighted) <sup>3</sup> | 1689   | 339                   | 818                | 532                | 1350        |

<sup>1</sup>Breakfast portion defined as total amount taken, including second helpings in family-style service.

<sup>2</sup>Foods that do not contribute to satisfying the CACFP meal pattern.

<sup>3</sup>Total number of child observations. Actual sample size varies for each meal component because children did not necessarily receive all components.

Exhibit 4.3

**CACFP Participants Actually Consume About Three-quarters  
of the Energy and Nutrients Available in the Breakfasts They Take**

|   | Children Receiving Care in: |                       |                    |                    |             |
|---|-----------------------------|-----------------------|--------------------|--------------------|-------------|
|   | All Children                | Family Day Care Homes | Head Start Centers | Child Care Centers | All Centers |
| <b>Mean Percentage of Available Nutrients Actually Consumed<sup>1</sup></b> |                             |                       |                    |                    |             |
| Total Energy  | 77%                         | 81%                   | 73%                | 75%                | 74%         |
| Total Fat   | 76                          | 80                    | 72                 | 74                 | 74          |
| Saturated Fat   | 76                          | 80                    | 72                 | 74                 | 73          |
| Carbohydrate  | 77                          | 81                    | 73                 | 75                 | 74          |
| Protein   | 76                          | 80                    | 71                 | 74                 | 73          |
| Vitamin A   | 76                          | 82                    | 71                 | 73                 | 72          |
| Vitamin C   | 78                          | 81                    | 75                 | 77                 | 76          |
| Calcium   | 76                          | 81                    | 71                 | 73                 | 72          |
| Iron  | 76                          | 80                    | 73                 | 74                 | 74          |
| Cholesterol   | 76                          | 80                    | 72                 | 73                 | 73          |
| Sodium  | 76                          | 81                    | 72                 | 73                 | 73          |
| Number of Child Observations (Unweighted)                                   | 1689                        | 339                   | 818                | 532                | 1350        |

<sup>1</sup>Available nutrients defined as nutrients in total amount of food taken, including second helpings in family-style service.

Exhibit 4.4

Breakfasts Consumed by CACFP Participants Provide More Than One-fourth of the RDA, Except for Energy and Iron

|   | Children Receiving Care in: |                       |                    |                    |             |
|---|-----------------------------|-----------------------|--------------------|--------------------|-------------|
|   | All Children                | Family Day Care Homes | Head Start Centers | Child Care Centers | All Centers |
| Mean Percentage of RDA from CACFP Breakfasts Consumed |                             |                       |                    |                    |             |
| Total Energy  | 15%                         | 17%                   | 14%                | 13%                | 13%         |
| Protein   | 41                          | 46                    | 39                 | 35                 | 37          |
| Vitamin A   | 40                          | 48                    | 34                 | 35                 | 34          |
| Vitamin C   | 48                          | 42                    | 50                 | 53                 | 52          |
| Calcium   | 26                          | 29                    | 26                 | 24                 | 25          |
| Iron  | 24                          | 28                    | 20                 | 22                 | 21          |
| Number of Child Observations (Unweighted)             | 1689                        | 339                   | 818                | 532                | 1350        |



more than one-fourth of the RDA for iron (28%), while breakfasts consumed in center-based care provide less than one-fourth of the RDA (21%) (Exhibit 4.4).

There are at least two potential explanations for this finding. First, children in homes consume a larger percentage of the iron available in the breakfasts they take (Exhibit C.3). Second, breakfasts *offered* in homes tend to be higher in iron than breakfasts offered in centers. A greater percentage of homes than centers [76% versus 65%, respectively (Exhibit 3.4)] offer breakfasts that provide an average of one-fourth or more of the RDA for iron. Moreover, mean iron content of breakfasts offered is higher for homes than for centers [36% of the RDA versus 33% (Exhibit 3.3)]. As discussed in Chapter Three, homes offer ready-to-eat cereals, which can dramatically influence iron content, more often than Head Start centers. Homes are also more likely than either type of center to offer two or more servings of breads or acceptable bread alternates at breakfast [breads and bread alternates provide 83% of the iron in CACFP breakfasts (Exhibit 3.7)].

Findings are also generally consistent across age groups. The only exceptions are calcium intake among one- and two-year-olds and, to a lesser extent, three-year-olds (somewhat less than one-fourth of the RDA); and iron intake among six-to-ten-year-olds (well above one-fourth of the RDA) (Exhibit C.5).<sup>5</sup> It is worth noting that calcium and iron are the two nutrients examined in this study for which the RDA is consistent for children aged one through ten, despite differences in recommended energy intake that range from 1,300 calories to 2,000 calories. Clearly, in order to satisfy the RDA for these nutrients, concentrations of calcium and iron (per calorie) must be higher in diets consumed by younger children.

### ***Nutrient Intake from CACFP Breakfasts Relative to Dietary Guidelines and NRC Recommendations***

Breakfasts consumed by CACFP participants five years of age and older are largely consistent with *Dietary Guidelines* and NRC recommendations (Exhibit 4.5). On average, intakes from CACFP breakfasts meet recommendations for the percentage of energy from total fat,

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<sup>5</sup>Statistic for six- to ten-year-olds may be unreliable due to small sample size (n=57 child observations).

Exhibit 4.5

Breakfasts Consumed by CACFP Participants Five Years of Age and Older Are Largely Consistent with *Dietary Guidelines* and NRC Recommendations

|   | Recommendation | Children Receiving Care in:       |                       |                    |                    |             |
|---|----------------|-----------------------------------|-----------------------|--------------------|--------------------|-------------|
|   |                | All Children                      | Family Day Care Homes | Head Start Centers | Child Care Centers | All Centers |
|   |                | Mean Intake from CACFP Breakfasts |                       |                    |                    |             |
| Percent of Energy from Fat (%)            | ≤ 30%          | 24                                | 23                    | 26                 | 21                 | 24          |
| Percent of Energy from Saturated Fat (%)  | < 10%          | 11                                | 10                    | 13                 | 11                 | 12          |
| Percent of Energy from Carbohydrate (%)   | ≥ 55%          | 64                                | 64                    | 60                 | 67                 | 63          |
| Percent of Energy from Protein (%)        | ≤ 15%          | 14                                | 14                    | 15                 | 14                 | 14          |
| Cholesterol (mg)                          | ≤ 75 mg        | 38                                | 52                    | 40                 | 22                 | 31          |
| Sodium (mg)                               | ≤ 600 mg       | 356                               | 452                   | 347                | 263                | 305         |
| Number of Child Observations (Unweighted) |                | 563                               | 89                    | 333                | 141                | 474         |

Note: *Dietary Guidelines* and NRC recommendations have been applied only to children five years of age and older (see Chapter Two).

carbohydrate, and protein, as well as recommendations for total cholesterol and sodium intake. Average saturated fat intake, however, expressed as a percentage of total energy intake (11%), does not meet recommendations. There is little evidence of a gradual decrease in the amount of fat and saturated fat consumed as children age (Exhibits C.4 and C.6).<sup>6</sup>

This pattern is generally consistent across providers and for five-year-olds (Exhibit C.6). Six- to ten-year-olds actually meet the *Dietary Guidelines* and NRC recommendation for the percentage of energy from saturated fat (9% versus the recommendation of less than 10%).<sup>7</sup>

In keeping with the findings reported in Chapter Three, the average amount of saturated fat in CACFP breakfasts is not excessive in comparison to the amount of saturated fat allowable in an “ideal” breakfast that provides both one-fourth of the RDA for food energy and less than 10 percent of the energy from saturated fat. Five- to ten-year-olds consume an average of 3.5 gm of saturated fat from CACFP breakfasts (Exhibit C.4). This is less than three-quarters of the amount of saturated fat allowable in an “ideal” breakfast for this age group (up to 5.0 gm).<sup>8</sup> Thus, the reason that breakfasts consumed by CACFP participants five years of age and older do not meet *Dietary Guidelines* and NRC recommendations for the percentage of energy from saturated fat has more to do with the minimal energy contribution of CACFP breakfasts than with excessive amounts of saturated fat.

As noted in Chapter Three, the *Dietary Guidelines* and NRC recommendation for energy from saturated fat could be satisfied if children consumed more food energy, specifically energy from carbohydrate-rich foods such as juice, fruit, and low-fat breads and cereals. Such a change may be difficult to accomplish, however, since, as discussed above, children are already wasting about 25 percent of the foods they take at breakfast.

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<sup>6</sup>Six- to ten-year-olds do consume substantially less energy from fat and saturated fat than younger children, however this estimate is likely to be unreliable due to small sample size (n=57 observations).

<sup>7</sup>The sample size for this group is small (n=57 observations). Separate estimates for six- to ten-year-olds are less reliable than those based on larger samples.

<sup>8</sup>Based on one-fourth of RDA for energy [1933 calories (weighted average of RDA for four- to six-year-olds and RDA for seven- to ten-year-olds)] and 9.4% of food energy (operational definition of “less than 10 percent”) from saturated fat.

If energy intake from CACFP breakfasts is not appreciably increased, some reduction in saturated fat intake will be necessary in order to meet the saturated fat recommendation. As noted in Chapter Three, a potentially useful modification would be to substitute 1% and skim milk for whole and 2% milk. Milk provides 61 percent of the saturated fat in CACFP breakfasts (Exhibit 3.7) and 2% and whole milk are the milks offered most frequently (Exhibit 3.2). The food energy (calories) lost as a result of saturated fat reduction should be replaced with energy from carbohydrate-rich foods, as described above.

### ***Differences Between Breakfasts Offered and Breakfasts Consumed***

CACFP breakfasts *as consumed* provide smaller percentages of the RDA than CACFP breakfasts *as offered* (described in Chapter Three). This is consistent with expectations given that CACFP participants do not always take all of the foods offered, may take portions of food that differ from the averages used in the meals offered analysis, and consume only about three-quarters of the nutrients available in the breakfast foods they do take. Overall means for energy and nutrients in breakfasts *consumed*, expressed as average percentages of the RDA (Exhibit 4.4), are roughly equivalent to or greater than three-quarters of the means for breakfasts *offered* (Exhibit 3.3), with the exception of vitamin C. The same is true for sodium and cholesterol, expressed in actual units (mg) (Exhibits 4.5 and 3.5).

Mean vitamin C intake from CACFP breakfasts (as a percentage of the RDA), although well above one-fourth of the RDA, is substantially less than three-quarters of the mean for CACFP breakfasts offered. A potential explanation for this finding is that, as noted above, the component most often missing from breakfasts taken by children is the fruit, vegetable, or juice component (Exhibit 4.1). This component accounts for 71 percent of the vitamin C in breakfasts offered (Exhibit 3.7). Thus, one would expect omission of this component to have a significant effect on vitamin C intake.

With regard to sources of food energy, the profiles for breakfasts *offered* (Exhibit 3.5) and breakfasts *consumed* (Exhibit 4.5) are virtually identical. The average percentage of energy from fat in breakfasts offered and consumed is 23 percent and 24 percent, respectively. The

percentage of energy from saturated fat, protein, and carbohydrate (11%, 14%, and 64%, respectively) are identical for the two breakfast measures. The comparability of sources of food energy in breakfasts offered and consumed is consistent with the finding that children tend to consume the different types of food included in CACFP breakfasts in roughly equivalent proportions.

## **LUNCHES CONSUMED**

### ***Foods Taken in CACFP Lunches***

The CACFP meal pattern requires that five specific components be included in CACFP lunches: fluid milk; two (or more) different types of fruit, vegetables, or full-strength juice; bread or an acceptable bread alternate; and meat or an acceptable meat alternate. On a typical day, approximately four out of five children consuming CACFP lunches take lunches that include all five components (Exhibit 4.6). The specific component most often missing is the second serving of fruit, vegetables, or juice.<sup>9</sup>

The average portions taken at lunch, like those taken at breakfast, are generally equivalent to or greater than the minimum portions specified in the CACFP meal pattern (Exhibit C.7).

### ***Consumption of Foods and Nutrients in CACFP Lunches as Taken***

With the exception of vegetables, children consume, on average, more than 70 percent of the portions of food they take at lunch (Exhibit 4.7). There is more variation in the consumption of lunch foods than breakfast foods. Mean consumption of vegetables (59% of portion taken) is markedly lower than any other food group.<sup>10</sup> Mean consumption of milk (83% of portion taken) is somewhat higher than other food groups. This general pattern is consistent across all types of providers as well as across age groups (Exhibit C.8). There is a noticeable tendency for older children to consume more of their foods than younger children.

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<sup>9</sup>Full-strength juice may be used for only one of the two required servings in this group.

<sup>10</sup>Mean consumption was calculated separately for fruits (including juices) and vegetables at lunch because preliminary analysis indicated that children consumed the two types of food at substantially different rates.

Exhibit 4.6

More Than 80 Percent of CACFP Participants Take Lunches That Include All Required Meal Components

| Lunch Component                            | Children Receiving Care in: |                       |                    |                    |             |
|--|-----------------------------|-----------------------|--------------------|--------------------|-------------|
|  | All Children                | Family Day Care Homes | Head Start Centers | Child Care Centers | All Centers |
| Percentage of Children Taking Component(s) |                             |                       |                    |                    |             |
| <i>Five or More Creditable Items</i>       | 82%                         | 83%                   | 82%                | 81%                | 81%         |
| Milk                                       | 96                          | 95                    | 95                 | 97                 | 96          |
| Fruits, Vegetables, or Juices              | 99                          | 99                    | 97                 | 99                 | 98          |
| Two or more servings                       | 91                          | 91                    | 88                 | 92                 | 90          |
| Only one serving                           | 99                          | 99                    | 97                 | 99                 | 98          |
| Breads or Bread Alternates                 | 95                          | 93                    | 96                 | 96                 | 96          |
| Meats or Meat Alternates                   | 96                          | 98                    | 95                 | 95                 | 95          |
| Noncreditable Foods <sup>1</sup>           | 37                          | 36                    | 36                 | 38                 | 38          |
| Number of Child Observations (Unweighted)  | 2174                        | 412                   | 1050               | 712                | 1762        |

<sup>1</sup>Foods that do not contribute to satisfying the CACFP meal pattern.

Exhibit 4.7

With the Exception of Vegetables, CACFP Participants Consume More Than 70 Percent of the Portions of Food Taken at Lunch

| Lunch Component  | Children Receiving Care in: |                       |                    |                    |             |
|--|-----------------------------|-----------------------|--------------------|--------------------|-------------|
|  | All Children                | Family Day Care Homes | Head Start Centers | Child Care Centers | All Centers |
| <b>Mean Percentage of Lunch Portion Consumed<sup>1</sup></b> |                             |                       |                    |                    |             |
| Milk   | 83%                         | 82%                   | 81%                | 84%                | 83%         |
| Fruits and Juices  | 78                          | 76                    | 78                 | 80                 | 80          |
| Vegetables   | 59                          | 60                    | 58                 | 60                 | 59          |
| Breads and Bread Alternates                                  | 70                          | 76                    | 66                 | 69                 | 68          |
| Meats and Meat Alternates                                    | 76                          | 78                    | 69                 | 79                 | 75          |
| Mixed Entrees <sup>2</sup>                                   | 73                          | 75                    | 69                 | 73                 | 72          |
| Noncreditable Foods <sup>3</sup>                             | 76                          | 74                    | 79                 | 76                 | 77          |
| Number of Child Observations (Unweighted) <sup>4</sup>       | 2174                        | 412                   | 1050               | 712                | 1762        |

<sup>1</sup>Lunch portion defined as total amount taken, including second helpings in family-style service.

<sup>2</sup>Entree items including two or more components, most often meat and bread.

<sup>3</sup>Foods that do not contribute to satisfying the CACFP meal pattern.

<sup>4</sup>Total number of child observations. Actual sample size varies for each meal component because children did not necessarily receive all components.

Children actually consume, on average, only about three-quarters of the energy available in the CACFP lunches they take (Exhibit 4.8). Consumption of available nutrients generally parallels consumption of available energy. That is, children consume about three-quarters of the nutrients available in the lunches they take. Slight variations, consistent with the food consumption patterns described above, are noted for some nutrients. For example, average consumption of available saturated fat and calcium are somewhat higher than other nutrients. One-third of the saturated fat in CACFP lunches and about two-thirds of the calcium are supplied by milk (Exhibit B.14), which is the component with the highest proportion consumed at lunch. Available vitamins A and C are consumed at somewhat lower rates than other nutrients. Vegetables, the component with the lowest proportion consumed at lunch, supply 50 percent of the vitamin A and 40 percent of the vitamin C in the average lunch offered (Exhibit B.14). The observed patterns of consumption of available nutrients is generally consistent across all types of providers as well as across age groups (Exhibit C.9). In keeping with the pattern noted above, there is a trend for older children to consume a somewhat larger proportion of available nutrients than younger children.

#### ***Nutrient Intake from CACFP Lunches Relative to RDAs***

On an average day, lunches consumed by CACFP participants provide one-third or more of the RDA, except for energy and iron (Exhibit 4.9).<sup>11</sup> Children consuming CACFP lunches receive, on average, more than three-quarters of the RDA for protein and more than one-half of the RDA for vitamin A. Intakes of vitamin C and calcium approximate one-third of the RDA. The relative RDA contribution of CACFP lunches, as consumed, is 23 percent for energy and 22 percent for iron.

This general pattern is consistent across all types of providers. The only nutrient for which conclusions vary appreciably by type of provider (homes versus centers and Head Start centers versus child care centers) is vitamin C. CACFP lunches consumed by children receiving care in homes provide less than one-third of the RDA for vitamin C (31%), on average, while

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<sup>11</sup>Data on actual mean energy and nutrient intake from CACFP lunches are presented, by age group, in Exhibit C.10. Standard errors for the estimates presented in Exhibit 4.9 are provided, along with age-group-specific estimates, in Exhibit C.11.



**Exhibit 4.8**

**CACFP Participants Actually Consume About Three-quarters  
of the Energy and Nutrients Available in the Lunches They Take**

|   | Children Receiving Care in: |                       |                    |                    |             |
|---|-----------------------------|-----------------------|--------------------|--------------------|-------------|
|   | All Children                | Family Day Care Homes | Head Start Centers | Child Care Centers | All Centers |
| <b>Mean Percentage of Available Nutrients Actually Consumed<sup>1</sup></b> |                             |                       |                    |                    |             |
| Total Energy  | 76%                         | 77%                   | 73%                | 76%                | 75%         |
| Total Fat   | 76                          | 77                    | 73                 | 76                 | 75          |
| Saturated Fat   | 78                          | 78                    | 75                 | 78                 | 77          |
| Carbohydrate  | 75                          | 77                    | 73                 | 75                 | 75          |
| Protein   | 76                          | 77                    | 74                 | 77                 | 76          |
| Vitamin A   | 73                          | 73                    | 72                 | 73                 | 72          |
| Vitamin C   | 71                          | 72                    | 70                 | 72                 | 71          |
| Calcium   | 79                          | 80                    | 78                 | 80                 | 79          |
| Iron  | 73                          | 75                    | 69                 | 73                 | 72          |
| Cholesterol   | 77                          | 79                    | 74                 | 78                 | 77          |
| Sodium  | 74                          | 76                    | 71                 | 74                 | 73          |
| Number of Child Observations (Unweighted)                                   | 2174                        | 412                   | 1050               | 712                | 1762        |

<sup>1</sup>Available nutrients defined as nutrients in total amount of food taken, including second helpings in family-style service.

Exhibit 4.9

Lunches Consumed by CACFP Participants Provide One-third  
or More of the RDA, Except for Energy and Iron

|  | Children Receiving Care in:                        |                       |                    |                    |             |
|--|--|-----------------------|--------------------|--------------------|-------------|
|  | All Children                                       | Family Day Care Homes | Head Start Centers | Child Care Centers | All Centers |
|  | Mean Percentage of RDA from CACFP Lunches Consumed |                       |                    |                    |             |
| Total Energy                                 | 23%  | 24%                   | 21%                | 23%                | 22%         |
| Protein                                      | 87   | 90                    | 79                 | 90                 | 86          |
| Vitamin A                                    | 61   | 58                    | 68                 | 59                 | 63          |
| Vitamin C                                    | 35   | 31                    | 35                 | 37                 | 37          |
| Calcium                                      | 34   | 33                    | 36                 | 34                 | 35          |
| Iron   | 22   | 21                    | 23                 | 22                 | 22          |
| Number of Child Observations<br>(Unweighted) | 2174   | 412                   | 1050               | 712                | 1762        |

lunches consumed in center-based care provide more than one-third of the RDA (37%) (Exhibit 4.9).

This is consistent with information on the mean vitamin C content of lunches offered, as reported in Chapter Three. Mean vitamin C content of lunches offered is higher for centers than for homes [59% of the RDA versus 50% (Exhibit 3.10)] and the percentage of providers offering lunches that supply an average of one-third or more of the RDA for vitamin C is higher for centers than for homes [90% versus 74%, respectively (Exhibit 3.11)]. One factor that may contribute to this pattern is a lower frequency of fruits, vegetables, and juices (major contributors of vitamin C in CACFP lunches offered) in lunches offered by family day care providers (Exhibit 3.9).

Findings are also generally consistent across age groups. The only exception is vitamin C intake among one- and two-year-olds (somewhat less than one-third of the RDA) and calcium intake among one- and two-year-olds and three-year-olds (less than one-third of the RDA) (Exhibit C.11). Lower vitamin C intake among one- and two-year-olds is entirely attributable to children in family day care homes, which is consistent with the findings discussed above. Lower calcium intake among one- and two-year-olds and three-year-olds is noted in both homes and child care centers.

#### ***Nutrient Intake from CACFP Lunches Relative to Dietary Guidelines and NRC Recommendations***

Lunches consumed by CACFP participants five years of age and older meet recommendations for cholesterol and sodium intake, but do not meet recommendations for the percentage of energy from fat, saturated fat, protein, or carbohydrate (Exhibit 4.10). With the exception of sodium, discussed below, this pattern is generally consistent across all types of providers. Moreover, age-group-specific results show no evidence of a definitive decline in consumption of fat and saturated fat among children ages two through five (Exhibits C.10 and C.12), as recommended in the *Dietary Guidelines*.

Exhibit 4.10

**Lunches Consumed by CACFP Participants Five Years of Age and Older  
Meet Recommendations for Cholesterol and Sodium Intake but  
Do Not Meet Recommendations for the Percentage of Energy  
From Fat, Saturated Fat, or Carbohydrate**

|   | Recommendation | All Children | Children Receiving Care in: |                    |                    |             |
|---|----------------|--------------|-----------------------------|--------------------|--------------------|-------------|
|   |                |              | Family Day Care Homes       | Head Start Centers | Child Care Centers | All Centers |
| <b>Mean Intake from CACFP Lunches</b>     |                |              |                             |                    |                    |             |
| Percent of Energy from Fat (%)            | ≤ 30%          | 35           | 36                          | 34                 | 36                 | 35          |
| Percent of Energy from Saturated Fat (%)  | < 10%          | 15           | 14                          | 15                 | 16                 | 16          |
| Percent of Energy from Carbohydrate (%)   | ≈ 55%          | 46           | 46                          | 46                 | 45                 | 46          |
| Percent of Energy from Protein (%)        | ≤ 15%          | 20           | 19                          | 21                 | 20                 | 20          |
| Cholesterol (mg)                          | ≤ 100 mg       | 55           | 56                          | 50                 | 59                 | 55          |
| Sodium (mg)                               | ≤ 800 mg       | 772          | 836                         | 682                | 812                | 753         |
| Number of Child Observations (Unweighted) |                | 700          | 83                          | 426                | 191                | 617         |

Note: NRC recommendations have been applied only to children five years of age and older (see Chapter Two).

The average amount of fat actually consumed by five-to-ten-year-olds (16.8 gm) is not excessive in comparison to the amount of fat allowable in an “ideal” lunch that provides one-third of the RDA for energy and no more than 30 percent of total energy from fat (up to 21.5 gm).<sup>12</sup> This indicates that the reason CACFP lunches, as consumed, do not meet the *Dietary Guidelines* and NRC recommendation for the percentage of energy from fat has more to do with the fact that lunches provide too little energy, specifically energy from carbohydrate, than with provision of excessive amounts of fat.

The same can not be said about levels of saturated fat in CACFP lunches. Lunches consumed by CACFP participants five years of age and older, like lunches offered to this age group by providers, are indeed high in saturated fat. The average amount of saturated fat actually consumed by five- to ten-year-olds (7.1 gm) exceeds the upper boundary of the saturated fat allowable in an “ideal” lunch (6.7 gm). Consequently, the only way to meet the recommendation for energy from saturated fat is to decrease actual intake of saturated fat and to replace food energy lost in this process with energy from carbohydrate-rich foods.

Achieving the desired balance in sources of food energy, that is, increasing consumption of energy from carbohydrate while, at the same time, decreasing consumption of saturated fat may be difficult since children do not consume all of the foods presently taken at lunch. Since young children’s appetites are self-limiting, it may be more reasonable to offset calories from fat consumed at lunch with carbohydrate calories in a snack that precedes or follows lunch.

The only component for which conclusions vary appreciably by type of provider is sodium. The mean sodium intake of children five and older consuming CACFP lunches in homes and child care centers does not meet the recommendation for sodium, while the intake of children consuming lunches in Head Start centers does meet the recommendation. This difference appears to be due to differences in food consumption. Five-year-olds in Head Start centers consume less food (an average of 380 calories) at lunch than five-year-olds in either homes (423

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<sup>12</sup>Based on one-third of RDA for energy [1933 calories (weighted average of RDA for four- to six-year-olds and RDA for seven- to ten-year-olds)] and 30% of food energy from fat.

calories) or child care centers (426 calories) (Exhibit C.10). [All groups consume less than one-third of the RDA for energy (Exhibit C.11)]. Six-year-olds in homes, who consume even more food at breakfast (505 calories) also contribute to a higher overall mean sodium intake for five- to ten-year-olds among children receiving care in homes.

### ***Differences Between Lunches Offered and Lunches Consumed***

CACFP lunches *as consumed* provide smaller percentages of the RDA, on average, than lunches *as offered* (described in Chapter Three). This is not unexpected since children do not always take all of the foods offered, may take portions of food that differ from the averages used in the analysis of meals offered, and consume only about three-quarters of the energy and nutrients available in the portions of food they do take.

Overall means for energy and nutrients in lunches *consumed*, expressed as average percentages of the RDA (Exhibit 4.9), are roughly equivalent to or greater than three-quarters of the means for lunches *offered* (Exhibit 3.10), with the exception of vitamin A and, to a lesser extent, vitamin C. Mean sodium and cholesterol intakes, expressed in actual units (mg) (Exhibits 4.10 and 3.12), are also equivalent to or greater than three-quarters of the mean for lunches offered.

Mean lunch intake of vitamin A (as a percentage of the RDA), although well above one-third of the RDA, is substantially less than three-quarters of the mean for lunches offered. Mean intake of vitamin C is also somewhat less than three-quarters of the mean for lunches offered. A potential explanation for the comparatively lower levels of vitamins A and C, relative to energy and other nutrients, in lunches as consumed is that, as noted above, the component most often missing from lunches taken by children is the second serving of fruit, vegetable, or juice (Exhibit 4.6). This component accounts for 54 percent of the vitamin A and 69 percent of the vitamin C in lunches as offered (Exhibit 3.16). Thus, omission of a part of this component is likely to have an impact on mean intakes of vitamins A and C.

Macronutrient profiles, expressed as percentage contributions to total energy intake, for lunches *offered* (Exhibit 3.12) and lunches *consumed* (Exhibit 4.10) are virtually identical. The average

percentage of energy from fat is 35 percent for both lunches offered and lunches consumed. The average percentage of energy derived from saturated fat (14% and 15%), carbohydrate (47% and 46%), and protein (20% for both) are also virtually identical. This result was not necessarily expected because mean rates of consumption vary somewhat for different meal components. These differences (greater consumption of milk and lesser consumption of vegetables) are apparently not large enough to cause substantial shifts in the overall nutrient profile of CACFP lunches.

## **SNACKS CONSUMED**

Children's food and nutrient intakes from morning and afternoon CACFP snacks are described in this section.<sup>13</sup> The organization of the discussion is similar to preceding sections except that intake from CACFP snacks is not compared to *Dietary Guidelines* and NRC recommendations. As discussed in Chapter Two, these recommendations are for total diets; it is inappropriate to apply them to small eating occasions such as snacks.

### ***Foods Taken in CACFP Snacks***

The CACFP meal pattern requires that two of the four traditional meal components (fluid milk; fruit, vegetables, or full-strength juice; bread or an acceptable bread alternate; and meat or an acceptable meat alternate) be included in each snack. The majority of children consuming CACFP snacks on an average day (84% for morning snacks and 87% for afternoon snacks) actually take snacks that include two creditable items (Exhibit 4.11). Portions taken for CACFP snacks, like those taken for breakfast and lunch, are consistent with, or greater than, the minimum portions specified in the CACFP meal pattern (data not shown).

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<sup>13</sup>Less than 5 percent of all children receive evening snacks. Because of this small sample size, data for evening snacks have not been tabulated separately. Energy and nutrients contributed by evening snacks, when consumed, are included in measures of total nutrient intake from all CACFP meals and snacks, discussed in the next section.

Exhibit 4.11

More Than 80 Percent of CACFP Participants Take Snacks That Include All Required Components

| Snack Component                            | Children Receiving Care in: |                       |                    |                    |             |
|--|-----------------------------|-----------------------|--------------------|--------------------|-------------|
|  | All Children                | Family Day Care Homes | Head Start Centers | Child Care Centers | All Centers |
| <b>Morning Snack</b>                       |                             |                       |                    |                    |             |
| Percentage of Children Taking Component(s) |                             |                       |                    |                    |             |
| <i>Two or More Creditable Items</i>        | 84%                         | 84%                   | 82%                | 85%                | 84%         |
| Milk                                       | 42                          | 39                    | 24                 | 48                 | 45          |
| Fruits, Vegetables, or Juices              | 70                          | 76                    | 74                 | 65                 | 66          |
| Breads and Bread Alternates                | 73                          | 72                    | 75                 | 74                 | 74          |
| Meats and Meat Alternates                  | 14                          | 19                    | 12                 | 9                  | 10          |
| Noncreditable Foods <sup>1</sup>           | 20                          | 9                     | 22                 | 29                 | 28          |
| Number of Child Observations (Unweighted)  | 431                         | 137                   | 124                | 170                | 294         |
| <b>Afternoon Snack</b>                     |                             |                       |                    |                    |             |
| Percentage of Children Taking Component(s) |                             |                       |                    |                    |             |
| <i>Two or More Creditable Items</i>        | 87%                         | 91%                   | 94%                | 82%                | 84%         |
| Milk                                       | 47                          | 53                    | 34                 | 45                 | 43          |
| Fruits, Vegetables, or Juices              | 64                          | 64                    | 72                 | 61                 | 64          |
| Breads and Bread Alternates                | 76                          | 74                    | 84                 | 75                 | 77          |
| Meats and Meat Alternates                  | 21                          | 22                    | 26                 | 19                 | 21          |
| Noncreditable Foods <sup>1</sup>           | 17                          | 16                    | 12                 | 19                 | 17          |
| Number of Child Observations (Unweighted)  | 1564                        | 399                   | 495                | 670                | 1165        |

<sup>1</sup>Foods that do not contribute to satisfying the CACFP meal pattern.



### ***Consumption of Foods and Nutrients in CACFP Snacks as Taken***

Children tend to consume a somewhat larger percentage of snack foods than either breakfast or lunch foods. On average, children consume 80 percent or more of the portions of all foods taken at snack (Exhibit 4.12).<sup>14</sup> Mean consumption is consistently higher for morning snacks, ranging from a low of 81 percent of the portion taken for breads and bread alternates to a high, for creditable foods, of 88 percent for fruits, vegetables, and juices and meats and meat alternates.

On a typical day, children consume more than 80 percent of the energy and nutrients available in the CACFP snacks they take (Exhibit 4.13). As noted above, consumption is consistently higher for morning snacks. This general pattern is consistent across age groups and across different types of providers (Exhibits C.13 and C.14).

### ***Nutrient Intake from CACFP Snacks Relative to RDAs***

A primary reason for serving snacks in the CACFP is to provide toddlers and preschoolers, whose appetites may be erratic and self-limiting at meal time, with additional opportunities to consume needed energy and nutrients. Data from this study indicate that CACFP snacks are fulfilling this intended purpose.

Snacks consumed by CACFP participants provide, on average, about 10 percent of the RDA for energy and comparable or greater percentages of the RDA for all key nutrients except iron (Exhibit 4.14).<sup>15</sup> Snacks make the most concentrated contribution to children's vitamin C intake, providing an average of 30 percent (afternoon snacks) to 44 percent (morning snacks) of the RDA.

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<sup>14</sup>Age-group-specific results for this analysis are not reported for snacks because most of the cells in the exhibits (morning and afternoon snacks) had sample sizes of fewer than 25 observations. The large number of cells with insufficient samples is due to the relatively small number of observations available (morning snack) and the fact that, since the meal pattern requires that just two meal components be offered, only two of the four meal component rows in the exhibit apply to any one snack.

<sup>15</sup>Data on actual mean energy and nutrient intakes from morning and afternoon snacks are presented, by age group, in exhibits C.15 and C.17, respectively. Standard errors for the estimates presented in Exhibit 4.14 are provided, along with age-group-specific estimates, in exhibits C.16 and C.18.

Exhibit 4.12

CACFP Participants Consume 80 Percent or More of the Portions of Food Taken at Snack

| Snack Component  | Children Receiving Care in:  |                       |                    |                    |             |
|--|--|-----------------------|--------------------|--------------------|-------------|
|  | All Children   | Family Day Care Homes | Head Start Centers | Child Care Centers | All Centers |
| <b>Morning Snacks</b>                                  | <b>Mean Percentage of Morning Snack Portion Consumed<sup>1</sup></b>   |                       |                    |                    |             |
| Milk   | 86%  | 86%                   | n/a                | 86%                | 86%         |
| Fruits, Vegetables, and Juices                         | 88   | 87                    | 89%                | 88                 | 88          |
| Breads and Bread Alternates                            | 81   | 85                    | 88                 | 77                 | 79          |
| Meats and Meat Alternates                              | 88   | n/a                   | n/a                | n/a                | n/a         |
| Noncreditable Foods <sup>2</sup>                       | 91   | n/a                   | n/a                | 91                 | 91          |
| Number of Child Observations (Unweighted) <sup>3</sup> | 431  | 137                   | 124                | 170                | 294         |
| <b>Afternoon Snacks</b>                                | <b>Mean Percentage of Afternoon Snack Portion Consumed<sup>1</sup></b> |                       |                    |                    |             |
| Milk   | 82%  | 84%                   | 80%                | 82%                | 81%         |
| Fruits, Vegetables, and Juices                         | 82   | 86                    | 82                 | 78                 | 79          |
| Breads and Bread Alternates                            | 82   | 86                    | 74                 | 81                 | 80          |
| Meats and Meat Alternates                              | 82   | 84                    | 81                 | 82                 | 82          |
| Noncreditable Foods <sup>2</sup>                       | 80   | 88                    | 84                 | 73                 | 75          |
| Number of Child Observations (Unweighted) <sup>3</sup> | 1564   | 399                   | 495                | 670                | 1165        |

n/a = Fewer than 25 child observations.

<sup>1</sup>Snack portion defined as total amount taken, including second helpings in family-style service.

<sup>2</sup>Foods that do not contribute to satisfying the CACFP meal pattern.

<sup>3</sup>Total number of child observations. Actual sample size varies for each snack component because children did not necessarily receive all components.

**Exhibit 4.13**

**CACFP Participants Actually Consume More Than 80 Percent of the Energy and Nutrients Available in the Snacks They Take**

| Snack/Nutrient                            | Children Receiving Care in:   |                       |                    |                    |             |
|---|---|-----------------------|--------------------|--------------------|-------------|
|   | All Children  | Family Day Care Homes | Head Start Centers | Child Care Centers | All Centers |
| <b>Morning Snacks</b>                     | <b>Mean Percentage of Available Nutrients Actually Consumed<sup>1</sup></b> |                       |                    |                    |             |
| Total Energy                              | 85%   | 87%                   | 89%                | 83%                | 84%         |
| Protein                                   | 85  | 86                    | 86                 | 84                 | 84          |
| Vitamin A                                 | 85  | 87                    | 85                 | 84                 | 84          |
| Vitamin C                                 | 87  | 87                    | 87                 | 87                 | 87          |
| Calcium                                   | 85  | 86                    | 89                 | 84                 | 85          |
| Iron                                      | 86  | 87                    | 88                 | 85                 | 85          |
| Number of Child Observations (Unweighted) | 431   | 137                   | 124                | 170                | 294         |
| <b>Afternoon Snacks</b>                   | <b>Mean Percentage of Available Nutrients Actually Consumed<sup>1</sup></b> |                       |                    |                    |             |
| Total Energy                              | 82%   | 84%                   | 79%                | 81%                | 81%         |
| Protein                                   | 81  | 84                    | 78                 | 80                 | 80          |
| Vitamin A                                 | 82  | 84                    | 80                 | 81                 | 81          |
| Vitamin C                                 | 82  | 85                    | 83                 | 79                 | 80          |
| Calcium                                   | 82  | 84                    | 79                 | 81                 | 80          |
| Iron                                      | 81  | 84                    | 78                 | 80                 | 80          |
| Number of Child Observations (Unweighted) | 1564  | 399                   | 495                | 670                | 1165        |

<sup>1</sup>Available nutrients defined as nutrients in total amount of food taken, including second helpings in family-style service.

Exhibit 4.14

**Snacks Consumed by CACFP Participants Provide About  
10 Percent of the RDA for Energy and Comparable or Greater  
Percentages of the RDA for All Key Nutrients**

| Snack/Nutrient                            | Children Receiving Care in:  |                       |                    |                    |             |
|---|--|-----------------------|--------------------|--------------------|-------------|
|   | All Children   | Family Day Care Homes | Head Start Centers | Child Care Centers | All Centers |
| <b>Morning Snacks</b>                     | <b>Mean Percentage of RDA from CACFP Morning Snacks Consumed</b>   |                       |                    |                    |             |
| Total Energy                              | 10%  | 12%                   | 8%                 | 10%                | 9%          |
| Protein                                   | 22   | 25                    | 13                 | 21                 | 20          |
| Vitamin A                                 | 11   | 11                    | 8                  | 12                 | 11          |
| Vitamin C                                 | 44   | 32                    | 55                 | 53                 | 53          |
| Calcium                                   | 13   | 15                    | 8                  | 12                 | 12          |
| Iron                                      | 9  | 9                     | 8                  | 9                  | 9           |
| Number of Child Observations (Unweighted) | 431  | 137                   | 124                | 170                | 294         |
| <b>Afternoon Snacks</b>                   | <b>Mean Percentage of RDA from CACFP Afternoon Snacks Consumed</b> |                       |                    |                    |             |
| Total Energy                              | 11%  | 12%                   | 9%                 | 10%                | 10%         |
| Protein                                   | 23   | 25                    | 19                 | 22                 | 21          |
| Vitamin A                                 | 15   | 18                    | 14                 | 13                 | 13          |
| Vitamin C                                 | 30   | 29                    | 32                 | 31                 | 31          |
| Calcium                                   | 16   | 17                    | 12                 | 15                 | 15          |
| Iron                                      | 9  | 10                    | 8                  | 8                  | 8           |
| Number of Child Observations (Unweighted) | 1564   | 399                   | 495                | 670                | 1165        |

## **ALL MEALS AND SNACKS CONSUMED**

The vast majority of children participating in the CACFP receive more than one meal or snack through the program. To gain a full appreciation of the contributions CACFP meals and snacks make toward ensuring that children receive the energy and nutrients they need for growth and good health, it is important to examine children's total nutrient intake from CACFP meals and snacks over the course of a typical day in care. Because the number of meals and snacks available to children is influenced by the amount of time spent in care, data are presented separately for children in care *at least* four but *less than* eight hours per day and for children in care eight or more hours per day. School-age-children (six- to ten-year-olds) are excluded from this analysis because most of these children are in care before- and/or after-school and their patterns of consumption are substantially different from other children in care.

### ***Children in Care Four to Eight Hours per Day***

Most children in care four to eight hours per day (children in part-day care) consume at least two CACFP meals and/or snacks while in care (Exhibit 4.15). About one-quarter of these children receive lunch and one snack while in care; and an equivalent proportion receive breakfast, lunch, and one snack. About one-quarter also receive breakfast and lunch (23%). Eighteen percent of non-school-age children in care four to eight hours per day consume only one meal or snack. This is particularly true among children attending child care centers, where 36 percent of part-day children receive only one meal or snack.

***Nutrient Intake from All CACFP Meals and Snacks Consumed Relative to RDAs.*** On a typical day, children in care *at least* four but *less than* eight hours per day consume, from CACFP meals and snacks, an average of more than three-quarters of the RDA for protein, vitamin A, and vitamin C; one-half of the RDA for calcium; and about one-third of the RDA for energy and iron (Exhibit 4.16).<sup>16</sup> Overall, these findings are consistent with Head Start performance standards which recommend that children in part-day care receive meals and snacks that provide at least one-third of the RDA.

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<sup>16</sup>Data on actual mean energy and nutrient intake are presented, by age group, in Exhibit C.19. Standard errors for the estimates presented in Exhibit 4.16 are provided, along with age-group-specific estimates, in Exhibit C.20.

Exhibit 4.15

Most Children in Care Four to Eight Hours per Day  
Consume at Least Two CACFP Meals and/or Snacks

| Meal/Snack Combination                                     | Children Receiving Care in |                       |                    |                    |             |
|--|----------------------------|-----------------------|--------------------|--------------------|-------------|
|  | All Children               | Family Day Care Homes | Head Start Centers | Child Care Centers | All Centers |
| Percentage of Children in Care Four to Eight Hours per Day |                            |                       |                    |                    |             |
| Lunch and one snack  | 24%                        | 34%                   | 18%                | 24%                | 21%         |
| Breakfast, lunch, and one snack                            | 25                         | 24                    | 34                 | 15                 | 26          |
| Breakfast and lunch  | 23                         | 6                     | 42                 | 9                  | 27          |
| Morning snack only   | 6                          | 0                     | 0                  | 17                 | 8           |
| Lunch only   | 7                          | 10                    | 2                  | 10                 | 6           |
| Lunch and two snacks                                       | 7                          | 15                    | 0                  | 10                 | 4           |
| Afternoon snack only                                       | 3                          | 3                     | 0                  | 6                  | 3           |
| Breakfast, lunch, and two snacks                           | 3                          | 6                     | 2                  | 3                  | 2           |
| Breakfast Only   | 2                          | 1                     | 1                  | 3                  | 2           |
| Other meals, snacks, or combinations                       | 2                          | 1                     | 1                  | 4                  | 2           |
| Number of Child Observations (Unweighted)                  | 1200                       | 80                    | 904                | 216                | 1120        |

Notes: School-age children (six- to ten-year-olds) not included in tabulations.

Detail may not sum to 100 percent due to rounding.

**Exhibit 4.16**

**CACFP Meals and Snacks Consumed by Children in Care Four to Eight Hours per Day Make Substantial Contributions to Daily Nutrient Needs**

|  | Children Receiving Care in: |                       |                    |                    |             |
|--|-----------------------------|-----------------------|--------------------|--------------------|-------------|
|  | All Children                | Family Day Care Homes | Head Start Centers | Child Care Centers | All Centers |
| <b>Mean Percentage of RDA in All CACFP Meals and Snacks Consumed</b> |                             |                       |                    |                    |             |
| Total Energy   | 34%                         | 39%                   | 36%                | 29%                | 33%         |
| Protein  | 108                         | 116                   | 118                | 91                 | 106         |
| Vitamin A  | 80                          | 81                    | 100                | 55                 | 80          |
| Vitamin C  | 86                          | 84                    | 94                 | 77                 | 87          |
| Calcium  | 53                          | 56                    | 62                 | 41                 | 53          |
| Iron   | 37                          | 37                    | 43                 | 30                 | 37          |
| Number of Child Observations (Unweighted)                            | 1200                        | 80                    | 904                | 216                | 1120        |

Note: School-age children (six- to ten-year-olds) not included in tabulations.

Mean intakes are notably lower, however, among children receiving care in child care centers. This is not surprising, given that 23 percent of these children receive only one snack and another 10 percent receive only lunch (Exhibit 4.15).

***Nutrient Intake from All Meals and Snacks Consumed Relative to Dietary Guidelines and NRC Recommendations.*** The total complement of CACFP meals and snacks typically consumed by five-year-old children in care four to eight hours per day meets recommendations for the percentage of calories from total fat and carbohydrate. Average total intake from CACFP meals and snacks exceeds recommendations for the percentage of calories from saturated fat and protein, however (Exhibit 4.17). Saturated fat provides an average of 12 percent of total energy, compared to the recommended level of less than 10 percent; protein provides 16 percent of total energy, compared to the recommendation of 15 percent or less.

Cumulative intake of sodium and cholesterol from all CACFP meals and snacks is evaluated with respect to the cumulative contribution to the RDA for energy. Ideally, relative contributions to recommended daily intakes of energy, cholesterol, and sodium should be comparable. Five-year-olds in part-day care consume, on average, 32 percent of the RDA for energy from CACFP meals and snacks (Exhibit C.20). These meals and snacks also contribute 23 percent of the recommended daily limit of cholesterol [(70 mg (mean intake)/300 mg (suggested daily limit)] (Exhibit C.21), an acceptable level in light of the mean contribution to recommended energy intake. Mean contribution to the recommended daily limit for sodium intake is 37 percent [(893 mg (mean intake)/2,400 mg (suggested daily limit)] (Exhibit C.21), a level that exceeds the contribution to recommended daily energy intake.

#### ***Children in Care Eight or More Hours per Day***

About three-quarters of the children in care eight or more hours per day (full-day care) consume breakfast, lunch, and one or two snacks while in care (Exhibit 4.18). As noted in Chapter Three, breakfast, lunch, and one snack and breakfast, lunch, and two snacks are the two most common combinations of meals and snacks offered by CACFP providers. An additional 19



Exhibit 4.17

**CACFP Meals and Snacks Consumed by Five-Year-Old Children  
in Care Four to Eight Hours Per Day Meet Recommendations  
for Total Fat, Carbohydrate, and Cholesterol but Not for  
Saturated Fat, Protein, or Sodium**

|  |                | Children Receiving Care in: |                       |                    |                    |             |
|--|----------------|-----------------------------|-----------------------|--------------------|--------------------|-------------|
|  | Recommendation | All Children                | Family Day Care Homes | Head Start Centers | Child Care Centers | All Centers |
| <b>Mean Intake from All CACFP Meals and Snacks</b> |                |                             |                       |                    |                    |             |
| Percent of Energy from Fat (%)                     | ≤ 30%          | 29                          | n/a                   | 32                 | 25                 | 29          |
| Percent of Energy from Saturated Fat (%)           | < 10%          | 12                          | n/a                   | 14                 | 10                 | 12          |
| Percent of Energy from Carbohydrate (%)            | ≥ 55%          | 56                          | n/a                   | 52                 | 63                 | 57          |
| Percent of Energy from Protein (%)                 | ≤ 15%          | 16                          | n/a                   | 18                 | 38                 | 66          |
| Cholesterol (% <sup>1</sup> )                      | n.s.           | 70                          | n/a                   | 84                 | 38                 | 66          |
| Sodium (% <sup>1</sup> )                           | n.s.           | 893                         | n/a                   | 1008               | 575                | 839         |
| Number of Child Observations (Unweighted)          |                | 440                         | 13                    | 366                | 61                 | 427         |

n/a = Fewer than 25 child observations.

Notes: *Dietary Guidelines* and NRC recommendations apply only to children five years of age and older (see Chapter Two).

School-age children (six- to ten-year-olds) not included in part-day tabulations.

n.s. = Not specified.

Exhibit 4.18

Most Children in Care Eight or More Hours per Day  
Receive Breakfast, Lunch, and One or Two Snacks

| Meal/Snack Combination                       | Children Receiving Care in:                                |                       |                    |                    |             |
|--|--|-----------------------|--------------------|--------------------|-------------|
|  | All Children   | Family Day Care Homes | Head Start Centers | Child Care Centers | All Centers |
|  | Percentage of Children in Care Eight or More Hours per Day |                       |                    |                    |             |
| Breakfast, lunch, and one snack              | 57%  | 53%                   | 83%                | 58%                | 60%         |
| Breakfast, lunch, and two snacks             | 18   | 22                    | 2                  | 16                 | 15          |
| Breakfast and lunch                          | 4  | 6                     | 11                 | 2                  | 3           |
| Lunch and two snacks                         | 10   | 9                     | 0                  | 13                 | 12          |
| Lunch and one snack                          | 9  | 8                     | 3                  | 11                 | 10          |
| Other combinations                           | 1  | 2                     | 2                  | 1                  | 1           |
| Number of Child Observations<br>(Unweighted) | 845  | 310                   | 57                 | 478                | 535         |

Note: School-age children (six- to ten-year-olds) not included in full-day tabulations.  
Detail may not sum to 100 percent due to rounding.

percent of children consume lunch and one or two snacks, while another 4 percent consume breakfast and lunch.

***Nutrient Intake from All CACFP Meals and Snacks Relative to RDAs.*** Children in full-day care consume an average of more than 100 percent of the RDA for protein, vitamin A, and vitamin C; about three-quarters of the RDA for calcium; and about one-half of the RDA for energy and iron (Exhibit 4.19).<sup>17</sup> This pattern, which is generally consistent across providers and across age groups, is consistent with Head Start performance standards which suggest that children in care eight or more hours per day receive one-half to two-thirds of daily energy and nutrient needs.

***Nutrient Intake from All CACFP Meals and Snacks Relative to Dietary Guidelines and NRC Recommendations.*** On average, the total complement of meals and snacks consumed by five-year-old children in full-day care does not meet *Dietary Guidelines* and NRC recommendations for the percentage of energy from fat, saturated fat, carbohydrate, or protein (Exhibit 4.20). The mean percentage of energy from fat and saturated fat is 32 percent and 15 percent, respectively, compared to recommendations of no more than 30 percent and less than 10 percent. There is little evidence that children's fat intake from CACFP meals and snacks declines with age (Exhibit C.24). In fact, in both homes and child care centers, five-year-olds have higher fat intakes, as a percentage of total energy, than younger children.

As noted in the preceding section on part-day care, intake of cholesterol and sodium should, ideally, be consistent with contributions to daily energy needs. Five-year-old children in full-day care consume an average of 47 percent of the RDA for energy (Exhibit C.23). Mean cholesterol intake, equivalent to 33 percent of the suggested daily limit [98 mg (mean intake)/300 mg (suggested daily limit)], is in line with contributions to recommended daily energy intake. Mean sodium intake is equivalent to 52 percent of the suggested daily limit for sodium [1244 mg (mean intake)/2,400 mg (suggested daily limit)] (Exhibit C.24), a level which exceeds the contribution to energy needs.

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<sup>17</sup>Data on actual energy and nutrient intake are presented in Exhibit C.22. Standard errors for means presented in Exhibit 4.19 are shown in Exhibit C.23.

Exhibit 4.19

**CACFP Meals and Snacks Consumed by Children in Care Eight or More Hours per Day Provide 50 to 100 Percent of Children's Energy and Nutrient Needs**

|   | Children Receiving Care in:  |                       |                    |                    |             |
|---|--|-----------------------|--------------------|--------------------|-------------|
|   | All Children   | Family Day Care Homes | Head Start Centers | Child Care Centers | All Centers |
|   | <b>Mean Percentage of RDA in All CACFP Meals and Snacks Consumed</b> |                       |                    |                    |             |
| Total Energy                              | 49%  | 53%                   | 47%                | 47%                | 47%         |
| Protein                                   | 155  | 163                   | 160                | 145                | 147         |
| Vitamin A                                 | 112  | 118                   | 99                 | 107                | 106         |
| Vitamin C                                 | 106  | 96                    | 111                | 116                | 116         |
| Calcium                                   | 73   | 74                    | 79                 | 71                 | 72          |
| Iron                                      | 52   | 55                    | 46                 | 49                 | 49          |
| Number of Child Observations (Unweighted) | 845  | 310                   | 57                 | 478                | 535         |

Note: School-age children (six- to ten-year-olds) not included in full-day tabulations.

Exhibit 4.20

With the Exception of Cholesterol, CACFP Meals and Snacks Consumed by Five-Year-Old Children in Care Eight or More Hours per Day Do Not Meet Dietary Guidelines and NRC Recommendations

|   | Recommendation | Children Receiving Care in: |                       |                    |                    |             |
|---|----------------|-----------------------------|-----------------------|--------------------|--------------------|-------------|
|   |                | All Children                | Family Day Care Homes | Head Start Centers | Child Care Centers | All Centers |
| Mean Intake from All CACFP Meals and Snacks |                |                             |                       |                    |                    |             |
| Percent of Energy from Fat (%)              | ≤ 30%          | 32                          | 32                    | n/a                | 33                 | 32          |
| Percent of Energy from Saturated Fat (%)    | < 10%          | 14                          | 13                    | n/a                | 15                 | 15          |
| Percent of Energy from Carbohydrate (%)     | ≥ 55%          | 53                          | 53                    | n/a                | 52                 | 53          |
| Percent of Energy from Protein (%)          | ≤ 15%          | 17                          | 16                    | n/a                | 17                 | 17          |
| Cholesterol (% <sup>1</sup> )               | n.s.           | 98                          | 104                   | n/a                | 94                 | 95          |
| Sodium (% <sup>1</sup> )                    | n.s.           | 1244                        | 1322                  | n/a                | 1228               | 1219        |
| Number of Child Observations (Unweighted)   |                | 170                         | 42                    | 18                 | 110                | 128         |

n/a = Fewer than 25 child observations.

Notes: Dietary Guidelines and NRC recommendations apply only to children five years of age and older (see Chapter Two).

School-age children (six- to ten-year-olds) not included in part-day tabulations.

n.s. = Not specified.

## Chapter Five

### *Nutrition Knowledge and Food Service Practices*

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This chapter examines the nutrition knowledge of individuals with primary responsibility for food preparation in CACFP sites (food preparers), as well as the practices used by CACFP providers in procuring and preparing foods for CACFP meals and snacks. The analysis focuses, in part, on knowledge and practices related to the *Dietary Guidelines for Americans*. While, as noted in Chapter Two, CACFP providers are not required to meet the *Dietary Guidelines* in planned meals, program guidance materials encourage providers to consider the *principles* of the *Dietary Guidelines*—less fat, sugar, and salt and more fruits, vegetables, and fiber—when planning and preparing meals.

The following research questions are addressed:

- **Nutrition Knowledge.** Do food preparers have an understanding of key principles of good nutrition? Do food preparers know how to implement the principles of the *Dietary Guidelines for Americans*?
- **Food Service Practices.** Do CACFP providers consider the principles of the *Dietary Guidelines* when purchasing foods? Do they use menu planning and food preparation practices that are consistent with the *Dietary Guidelines for Americans*? Do food purchasers examine nutrition labels on packaged foods when making purchasing decisions?

#### DATA SOURCES

Data for this analysis are drawn from the Food Preparer Interview, a brief survey that was administered over the telephone or, for sites included in the on-site visits, in a face-to-face interview. All interviews were completed between January and June, 1995; response rates were over 85 percent for all provider groups (see Appendix F).

For family day care homes, the provider was almost always the respondent. For most centers, the respondent was the center cook. In cases where meals were prepared off-site, whether for homes or for centers, the respondent was the responsible cook in the off-site preparation facility.

Survey items related to menu planning practices were phrased so that the food preparer could answer them even if he/she was not directly responsible for planning menus, e.g., statements were phrased with reference to how often particular types of foods are actually served rather than whether specific principles are considered when menus are planned. Survey items related to food purchasing were left blank if the food preparer had no direct involvement in food purchasing. Thus, findings reported in this chapter reflect the nutrition knowledge of food preparers and the food service practices of CACFP providers, as reported by food preparers. This information may be useful to program planners in designing future training and technical assistance materials.

Items included in the survey instrument were based primarily on principles stressed in CACFP guidance materials and/or included on a checklist of quality food purchasing and preparation practices developed by the Child Nutrition Division of the California State Department of Education. Survey items are described in detail in the following sections, which address, in turn, nutrition knowledge of CACFP food preparers and reported food service practices (meal planning, preparation, and food purchasing).

### **NUTRITION KNOWLEDGE OF CACFP FOOD PREPARERS**

Food preparers answered a series of 37 items designed to assess knowledge of key principles of good nutrition (19 items) as well as knowledge of the *Dietary Guidelines* principles (18 items). The general nutrition items assessed knowledge of the following: the relationship between diet and disease; the food pyramid; sources of vitamin A, vitamin C, and iron (key nutrients emphasized in program guidance materials); and basic concepts related to feeding young children. The *Dietary Guidelines* items assessed knowledge of food selection, preparation, and service practices consistent with the principles of the *Dietary Guidelines*.

With the exception of the items assessing knowledge of the food pyramid, items were constructed as true/false statements. Knowledge of the food pyramid was assessed with an item that asked whether respondents had ever seen or heard of the food pyramid and an open-ended

question, answered only by respondents who indicated familiarity with the food pyramid, that asked respondents to name the food groups.

A total knowledge score, reflecting the percentage of items answered correctly, was computed for each respondent. Missing, don't know, and, for the first food pyramid question, negative responses were considered incorrect answers. Each of the five food groups in the pyramid was counted as a separate item and respondents were considered to have given a correct answer if the food group was named and an incorrect answer if the food group was not named. In addition to the overall knowledge score, separate scores were generated for general nutrition knowledge and for *Dietary Guidelines*-related knowledge. Results are shown in Exhibit 5.1.

As the exhibit shows, overall, food preparers have a reasonably high level of nutrition knowledge. Across all providers, the mean score for the entire nutrition knowledge battery is 73 percent, indicating that, on average, respondents answered 73 percent of the items correctly.

CACFP food preparers are more knowledgeable about ways to implement the *Dietary Guidelines* than they are about general principles of good nutrition, as measured in this study. Across all providers, the overall score for the 19 items dealing with general nutrition knowledge was 69 percent, compared to a score of 77 percent for the 18 *Dietary Guidelines* items. Differences among the three types of providers are larger for the general nutrition knowledge score than for the *Dietary Guidelines* score, with food preparers in Head Start centers scoring higher than food preparers in either homes or child care centers.

### ***General Nutrition Knowledge***

Exhibit 5.2 presents results for each of the general nutrition knowledge items. As the exhibit shows, almost all CACFP food preparers are aware that dietary intake can influence disease risk and most are familiar with the food pyramid. Food preparers have some misconceptions,



Exhibit 5.1

**CACFP Food Preparers Have a Reasonably High Level of Nutrition Knowledge**

|   | All Providers | Family Day<br>Care Homes | Center-Based Care     |                       |             |
|---|---------------|--------------------------|-----------------------|-----------------------|-------------|
|   |               |                          | Head Start<br>Centers | Child Care<br>Centers | All Centers |
| Mean Score (Percentage of Items Correct)  |               |                          |                       |                       |             |
| Overall Knowledge Score                   | 73%           | 72%                      | 77%                   | 74%                   | 75%         |
| General nutrition knowledge score         | 69            | 68                       | 74                    | 69                    | 71          |
| <i>Dietary Guidelines</i> knowledge score | 77            | 77                       | 80                    | 79                    | 79          |
| Number of Food Preparers (Unweighted)     | 2010          | 529                      | 888                   | 593                   | 1481        |

**Exhibit 5.2**

**CACFP Food Preparers Are Familiar with the Food Guide Pyramid But Have Some Misconceptions About the Nutrient Content of Foods**

|  | All Providers | Family Day Care Homes | Center-Based Care  |                    |             |
|--|---------------|-----------------------|--------------------|--------------------|-------------|
|  |               |                       | Head Start Centers | Child Care Centers | All Centers |
| <b>Percentage of Food Preparers with Correct Response</b>    |               |                       |                    |                    |             |
| <b>Relationship between diet and disease<sup>1</sup></b>     | 93%           | 94%                   | 92%                | 91%                | 91%         |
| <b>Food Guide Pyramid</b>                                    |               |                       |                    |                    |             |
| Knows Food Guide Pyramid                                     | 85            | 85                    | 91                 | 86                 | 88          |
| Named milk, yogurt, cheese group                             | 72            | 72                    | 79                 | 72                 | 75          |
| Named bread, cereal, rice, and pasta group                   | 80            | 79                    | 85                 | 78                 | 80          |
| Named fruit group  | 77            | 77                    | 80                 | 75                 | 77          |
| Named vegetable group  | 80            | 81                    | 86                 | 77                 | 80          |
| Named meat, poultry, fish, dried beans, eggs, and nuts group | 77            | 77                    | 83                 | 77                 | 80          |
| <b>Sources of Vitamin A</b>                                  |               |                       |                    |                    |             |
| Potatoes are a good source of vitamin A <sup>2</sup>         | 19            | 17                    | 35                 | 28                 | 31          |
| Carrots are a good source of vitamin A <sup>3</sup>          | 83            | 82                    | 89                 | 86                 | 87          |
| Celery is a good source of vitamin A <sup>2</sup>            | 19            | 18                    | 28                 | 24                 | 25          |
| <b>Sources of Vitamin C</b>                                  |               |                       |                    |                    |             |
| Orange juice is a good source of vitamin C <sup>3</sup>      | 100           | 100                   | 100                | 100                | 100         |
| Broccoli is a good source of vitamin C <sup>3</sup>          | 77            | 75                    | 88                 | 80                 | 83          |
| Grapes are a good source of vitamin C <sup>2</sup>           | 19            | 18                    | 25                 | 22                 | 23          |

<sup>1</sup>A single true/false item (true as stated) regarding the fact that what you eat can affect chances of getting certain diseases.

<sup>2</sup>Statement is false.

<sup>3</sup>Statement is true.

Exhibit 5.2  
(continued)

|   | All Providers | Family Day<br>Care Homes | Center-Based Care     |                       |             |
|---|---------------|--------------------------|-----------------------|-----------------------|-------------|
|   |               |                          | Head Start<br>Centers | Child Care<br>Centers | All Centers |
| <b>Percentage of Food Preparers with Correct Response</b>                                       |               |                          |                       |                       |             |
| <b>Sources of Iron</b>  |               |                          |                       |                       |             |
| Red meat is a good source of iron <sup>3</sup>  | 71%           | 70%                      | 77%                   | 71%                   | 73%         |
| Whole grain breads are a good source of iron <sup>3</sup>                                       | 71            | 71                       | 79                    | 70                    | 73          |
| Milk is a good source of iron <sup>2</sup>  | 27            | 27                       | 33                    | 28                    | 30          |
| <b>Feeding Children</b>   |               |                          |                       |                       |             |
| Children need a variety of foods every day <sup>3</sup>   | 95            | 95                       | 95                    | 95                    | 95          |
| Picky eaters should be served the same foods every day <sup>2</sup>                             | 93            | 92                       | 94                    | 93                    | 93          |
| Children should not eat too many starchy foods because these foods make people fat <sup>2</sup> | 67            | 68                       | 61                    | 65                    | 63          |
| Number of Food Preparers  | 2010          | 529                      | 888                   | 593                   | 1481        |

<sup>2</sup>Statement is false.

<sup>3</sup>Statement is true.

however, about food sources of key nutrients, particularly vitamin A.<sup>1</sup> Food preparers in Head Start centers are somewhat more likely than family day care providers or food preparers in child care centers to have answered questions about nutrient content correctly.

While more than 80 percent of CACFP food preparers know that carrots are a good source of vitamin A, fewer than 20 percent know that potatoes and celery are *not* good sources of vitamin A. All food preparers are aware that orange juice is a good source of vitamin C, and about three-quarters know that broccoli is also a good source of vitamin C. However, fewer than 20 percent of CACFP food preparers know that grapes are *not* a good source of vitamin C. Finally, 71 percent of all CACFP food preparers know that red meat and whole grain breads are good sources of iron; only 27 percent of food preparers know, however, that milk is *not* a good source of iron.

Almost all food preparers are aware that children need to consume a variety of foods and that new foods should be offered to picky eaters. One-third of all food preparers are misinformed about the importance of carbohydrates, however, believing that children's intake of "starchy" foods should be limited because they are "fattening."

### ***Knowledge About Implementing the Dietary Guidelines***

Exhibit 5.3 presents item-level results for *Dietary Guidelines* knowledge. As noted above, CACFP food preparers are very knowledgeable about techniques that can be used to implement the *Dietary Guidelines*. In general, food preparers are most knowledgeable about ways to decrease sodium. Nine out of ten food preparers know that flavoring foods with herbs and spices instead of salt is a good way to decrease the amount of sodium in children's meals and that serving canned vegetables instead of fresh vegetables will *not* decrease sodium content. Similarly, 84 percent of food preparers know that serving processed foods like chicken nuggets and hot dogs less often is another way to lower the amount of sodium in children's meals.

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<sup>1</sup>Correct answers regarding "good" nutrient sources are based on information provided in program guidance materials [*Child and Adult Care Food Program: Nutrition Guidance for Child Care Centers* (1995) and *Child and Adult Care Food Program: Nutrition Guidance for Child Care Homes* (1995)].

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Exhibit 5.3

CACFP Food Preparers Know a Lot About How to Implement the *Dietary Guidelines*

|  | All Providers | Family Day Care Homes | Center-Based Care  |                    |             |
|--|---------------|-----------------------|--------------------|--------------------|-------------|
|  |               |                       | Head Start Centers | Child Care Centers | All Centers |
| <b>Percentage of Food Preparers with Correct Response</b>                |               |                       |                    |                    |             |
| <b>Ways to Decrease Sugar</b>  |               |                       |                    |                    |             |
| Serve fruit for dessert instead of cakes or cookies <sup>1</sup>         | 99%           | 99%                   | 100%               | 99%                | 99%         |
| Use honey instead of sugar to sweeten foods <sup>2</sup>                 | 20            | 20                    | 25                 | 17                 | 20          |
| Use fruit canned in juice rather than heavy syrup <sup>1</sup>           | 98            | 98                    | 99                 | 98                 | 99          |
| <b>Ways to Increase Carbohydrates</b>                                    |               |                       |                    |                    |             |
| Serve larger portions of fruits and vegetables <sup>1</sup>              | 70            | 69                    | 75                 | 76                 | 76          |
| Serve foods like chili, baked beans, bean soups <sup>1</sup>             | 66            | 66                    | 69                 | 66                 | 67          |
| Serve cold, unsweetened cereal or popcorn for snacks <sup>1</sup>        | 63            | 61                    | 73                 | 69                 | 70          |
| <b>Ways to Increase Fiber</b>  |               |                       |                    |                    |             |
| Serve whole wheat bread instead of white bread <sup>1</sup>              | 98            | 97                    | 98                 | 99                 | 99          |
| Serve eggs and fish more often <sup>2</sup>                              | 52            | 51                    | 60                 | 54                 | 56          |
| Serve raw vegetables for snacks <sup>1</sup>                             | 96            | 96                    | 98                 | 96                 | 97          |
| <b>Ways to Decrease Fat</b>  |               |                       |                    |                    |             |
| Serve fried chicken instead of hamburgers <sup>2</sup>                   | 85            | 85                    | 88                 | 88                 | 88          |
| Serve fresh fruit for snacks instead of cheese and crackers <sup>1</sup> | 97            | 97                    | 97                 | 96                 | 96          |
| Serve cream cheese on bread or toast instead of jelly <sup>2</sup>       | 63            | 63                    | 57                 | 64                 | 61          |

<sup>1</sup>Statement is true.

<sup>2</sup>Statement is false.

**Exhibit 5.3  
(continued)**

|   | All Providers | Family Day<br>Care Homes | Center-Base Care      |                       | All Centers |
|---|---------------|--------------------------|-----------------------|-----------------------|-------------|
|   |               |                          | Head Start<br>Centers | Child Care<br>Centers |             |
| <b>Percentage of Food Preparers with Correct Response</b>         |               |                          |                       |                       |             |
| <b>Ways to Decrease Saturated Fat</b>                             |               |                          |                       |                       |             |
| Use corn oil instead of butter <sup>1</sup>                       | 84%           | 83%                      | 92%                   | 87%                   | 89%         |
| Serve lowfat milk to children over the age of three <sup>1</sup>  | 85            | 83                       | 92                    | 89                    | 90          |
| Serve cheese as a snack food <sup>2</sup>                         | 51            | 51                       | 50                    | 49                    | 49          |
| <b>Ways to Decrease Sodium</b>                                    |               |                          |                       |                       |             |
| Use herbs and spices instead of salt to flavor foods <sup>1</sup> | 90            | 89                       | 93                    | 94                    | 94          |
| Serve processed, convenience items less often <sup>1</sup>        | 84            | 84                       | 84                    | 83                    | 83          |
| Serve canned vegetables instead of fresh vegetables <sup>2</sup>  | 93            | 92                       | 96                    | 95                    | 95          |
| Number of Food Preparers  | 2010          | 529                      | 888                   | 593                   | 1481        |

<sup>1</sup>Statement is true.

<sup>2</sup>Statement is false.

Food preparers are also very knowledgeable about ways to increase fiber and to decrease fat, saturated fat, and sugar, however, some providers have inaccurate perceptions about the fiber or fat content of particular foods. Virtually all food preparers know that serving whole wheat bread and raw vegetables are good ways to increase fiber in child care meals. However, only about one-half of CACFP food preparers know that serving meat and eggs more often will *not* increase the fiber content of child care meals.

Most food preparers know that fried chicken is not a good substitute for hamburgers when the goal is to lower fat content and that fresh fruit as a snack is a good substitute for cheese and crackers. However, more than one-third of food preparers believe, incorrectly, that serving cream cheese in place of jelly will lower fat content. With regard to saturated fat, most food preparers are cognizant of the saturated-fat content of butter and whole milk and aware of appropriate substitutes, however, many are apparently not aware that cheese is also high in saturated fat. About one-half of all respondents indicated that serving cheese as a snack food would lead to decreased levels of saturated fat.

Finally, almost all providers know that serving fruit instead of baked desserts and using fruit canned in juice rather than fruit in heavy syrup are recommended techniques for decreasing sugar in child care meals. Eighty percent of food preparers, however, believe that substituting honey for white sugar is a useful means of decreasing sugar content.

Food preparers are least knowledgeable about techniques for increasing carbohydrate content of child care meals. For each of the techniques included in the survey (serving larger portions of fruits and vegetables; serving foods made with dried beans and peas; and serving cold, unsweetened cereal or popcorn for snacks), close to one-third (or more) of CACFP food preparers gave the wrong answer.

## **FOOD SERVICE PRACTICES**

Food preparers provided information on the extent to which the *Dietary Guidelines* principles are considered when meals are planned, prepared, and served. Those who were able to answer

questions about food purchasing practices also reported on the extent to which nutrition labels are consulted when packaged foods are purchased and on the specific factors considered when food purchasing decisions are made. Results for each of these analyses are presented in the following sections.

### ***Implementation of the Dietary Guidelines***

Respondents were asked about how often desirable food service practices were used. Survey items queried practices relative to sugar (six items); fiber (two items); fat (nine items); and sodium (three items). Response categories for all items were: often, sometimes, rarely, and never. An overall *Dietary Guidelines* practice score was computed for each CACFP provider; the score reflects the percentage of desirable practices that are actually used in the CACFP site. Survey items presented both desirable and undesirable practices. In computing scores, reported practices were considered consistent with the *Dietary Guidelines* if, in the case of desirable practices, such as modifying recipes to decrease sugar content, the response was often or sometimes, or, in the case of undesirable practices, such as frying meat, chicken, or fish, the response was rarely or never.

According to food preparers, CACFP sites are implementing many food service practices that are consistent with *Dietary Guidelines* principles (Exhibit 5.4). Overall, CACFP providers reportedly use, at least some of the time, close to three-quarters of the desired practices assessed in this study. Approximately 80 percent or more of all providers modify recipes or menus to decrease sugar content; keep sugar bowls, butter/margarine, and salt shakers off the table(s) where children eat; avoid use of sweetened cereals; offer foods made with dried beans or peas; offer lean meat, chicken, or fish; remove skin from chicken before cooking; offer low-fat or skim milk to children over the age of three; and use herbs and spices rather than salt to flavor foods.

Specific practices that have the lowest rate of utilization (i.e., are reportedly used by fewer than 50 percent of all CACFP providers) include: avoiding use of jelly on sandwiches; offering



Exhibit 5.4

According to Food Preparers, CACFP Providers Are Implementing Many Food Service Practices That Are Consistent with the *Dietary Guidelines*

|  | All Providers | Family Day<br>Care Homes | Center-Based Care     |                       | All Centers |
|--|---------------|--------------------------|-----------------------|-----------------------|-------------|
|  |               |                          | Head Start<br>Centers | Child Care<br>Centers |             |
| <b>Mean Percentage of Desirable Practices Actually Implemented</b>   |               |                          |                       |                       |             |
| <b>Overall <i>Dietary Guidelines</i> Practices Score</b>             | 71%           | 71%                      | 72%                   | 69%                   | 70%         |
| <b>Practices to Decrease Sugar</b>                                   |               |                          |                       |                       |             |
| <b>Percentage of Providers Using Desired Practices</b>               |               |                          |                       |                       |             |
| Often or sometimes change recipes or menus to decrease sugar content | 79            | 78                       | 86                    | 85                    | 85          |
| Rarely or never serve brownies, cookies, cakes                       | 71            | 72                       | 76                    | 63                    | 68          |
| Rarely or never serve canned fruit packed in syrup                   | 54            | 55                       | 48                    | 45                    | 46          |
| Rarely or never add jelly to peanut butter sandwiches                | 33            | 31                       | 53                    | 36                    | 42          |
| Rarely or never keep sugar bowls on table                            | 98            | 98                       | 98                    | 98                    | 98          |
| Rarely or never serve sweetened cereals                              | 81            | 81                       | 86                    | 80                    | 82          |
| <b>Practices to Increase Fiber</b>                                   |               |                          |                       |                       |             |
| Rarely or never serve white bread                                    | 35            | 34                       | 42                    | 39                    | 40          |
| Often or sometimes offer foods made with dried beans                 | 82            | 82                       | 89                    | 83                    | 85          |
| <b>Practices to Decrease Fat</b>                                     |               |                          |                       |                       |             |
| Rarely or never add butter/margarine to vegetables                   | 49            | 51                       | 38                    | 41                    | 40          |
| Rarely or never fry chicken, meat, or fish                           | 73            | 72                       | 80                    | 78                    | 79          |
| Often or sometimes offer low-fat cheeses                             | 69            | 69                       | 66                    | 67                    | 67          |
| Rarely or never keep butter/margarine on table                       | 89            | 90                       | 80                    | 89                    | 86          |
| Often or sometimes serve lean meat, fish, and chicken                | 96            | 97                       | 97                    | 90                    | 92          |

**Exhibit 5.4  
(continued)**

|  | All Providers | Family Day<br>Care Homes | Center-Based Care     |                       |             |
|--|---------------|--------------------------|-----------------------|-----------------------|-------------|
|  |               |                          | Head Start<br>Centers | Child Care<br>Centers | All Centers |
| <b>Practices to Decrease Fat<br/>(continued)</b>                                   |               |                          |                       |                       |             |
| Often or sometimes remove skin from chicken before cooking                         | 87%           | 90%                      | 71%                   | 71%                   | 71%         |
| Rarely or never serve hot dogs, cold cuts, or sausages                             | 43            | 41                       | 54                    | 46                    | 49          |
| Rarely or never buy regular ground beef rather than lean or extra-lean ground beef | 65            | 67                       | 52                    | 53                    | 53          |
| Often or sometimes serve low-fat or skim milk to children over the age of three    | 79            | 79                       | 88                    | 76                    | 81          |
| <b>Practices Related to Sodium</b>   |               |                          |                       |                       |             |
| Rarely or never keep salt shakers on table   | 96            | 95                       | 98                    | 99                    | 99          |
| Often or sometimes use herbs and spices in place of salt                           | 84            | 83                       | 88                    | 86                    | 87          |
| Rarely or never buy processed, convenience foods                                   | 60            | 61                       | 53                    | 50                    | 51          |
| Number of Food Preparers   | 2010          | 529                      | 888                   | 593                   | 1481        |

breads other than white bread; avoiding the addition of butter or margarine to cooked vegetables; and using fewer processed, convenience items.

### ***Use of Nutrition Labels***

CACFP food preparers with responsibility for food purchasing make good use of nutrition labels (Exhibit 5.5). More than nine out of ten CACFP food preparers always or sometimes read the nutrition information on food package labels and consider nutrient content when making food purchasing decisions. Almost all food preparers compare the nutrient content of different brands and review ingredient lists.

### ***Factors Considered in Purchasing Foods***

CACFP food preparers who have at least some purchasing responsibility were asked about the extent to which 12 different factors are considered when purchasing decisions are made. Response options were often, sometimes, rarely, and never. Exhibit 5.6 summarizes the major factors considered by CACFP food preparers (i.e., the factors that are reported to be considered *often*). Results indicate that, overall, the needs of children and food service considerations are paramount in food purchasing decisions in the CACFP. The single most important factor is an interest in providing a variety of foods to children; 87 percent of all CACFP food preparers consider the need for variety when making food purchasing decisions. More than two-thirds of all CACFP food preparers consider children's feeding and eating abilities and food preferences, and nearly two-thirds consider the need to introduce children to new foods.

Sanitation considerations are also important to food purchasing decisions in the CACFP. More than three quarters of all food preparers consider possible sanitation/cleanliness problems when deciding whether or not to purchase a particular food item. Required preparation time is also a consideration for 50 percent of CACFP food preparers.

With regard to nutrient content, sugar is a major concern of CACFP food preparers. Cited by 81 percent of all respondents, it is the second most common purchasing consideration. Other aspects of nutrient content receive somewhat less focus, particularly fiber and vitamin C.

Cost is a comparatively less important consideration in CACFP food purchasing decisions. Less than one-half of all providers included cost on the list of factors they consider regularly (often) when making purchasing decisions.

**Exhibit 5.5**

**Food Preparers with Food Purchasing Responsibility  
Make Good Use of Nutrition Labels**

|  | All Providers | Family Day<br>Care Homes | Center-Based Care     |                       |             |
|--|---------------|--------------------------|-----------------------|-----------------------|-------------|
|  |               |                          | Head Start<br>Centers | Child Care<br>Centers | All Centers |
| <b>Percentage of Food Preparers Reporting Desired Practices</b>  |               |                          |                       |                       |             |
| Always or sometimes consider the nutrition information on label  | 93%           | 92%                      | 93%                   | 94%                   | 94%         |
| Always or sometimes compare nutrient content of different brands | 90            | 90                       | 89                    | 89                    | 89          |
| Always or sometimes read ingredient list                         | 93            | 93                       | 96                    | 95                    | 95          |
| Number of Food Preparers (Unweighted)                            | 1930          | 529                      | 836                   | 565                   | 1401        |

Note: Includes only food preparers with purchasing/shopping responsibilities.

Exhibit 5.6

**Food Preparers Give Paramount Consideration to Needs of Children,  
Sugar Content of Foods, and Sanitation Considerations  
When Making Food Purchasing Decisions**

|  | All Providers                               | Family Day<br>Care Homes | Center-Based Care     |                       |             |
|--|---|--------------------------|-----------------------|-----------------------|-------------|
|  |   |                          | Head Start<br>Centers | Child Care<br>Centers | All Centers |
|  | Percentage Who Consider Factor <sup>1</sup> |                          |                       |                       |             |
| <b>Cost</b>                              | 49%   | 46%                      | 63%                   | 65%                   | 64%         |
| <b>Nutrient Content</b>                  |   |                          |                       |                       |             |
| Sugar content                            | 81  | 81                       | 85                    | 81                    | 82          |
| Fat content                              | 70  | 69                       | 80                    | 74                    | 76          |
| Fiber content                            | 43  | 41                       | 61                    | 52                    | 55          |
| Vitamin C content                        | 52  | 49                       | 77                    | 66                    | 70          |
| Salt/sodium content                      | 64  | 62                       | 81                    | 73                    | 76          |
| <b>Children's Needs</b>                  |   |                          |                       |                       |             |
| Interest in introducing new foods        | 63  | 62                       | 71                    | 62                    | 65          |
| Interest in providing variety of foods   | 87  | 87                       | 91                    | 86                    | 88          |
| Children's food preferences              | 71  | 71                       | 73                    | 68                    | 70          |
| Children's feeding/eating abilities      | 78  | 77                       | 85                    | 82                    | 83          |
| <b>Food Service Considerations</b>       |   |                          |                       |                       |             |
| Possible sanitation/cleanliness problems | 80  | 78                       | 88                    | 87                    | 87          |
| Required preparation time                | 50  | 48                       | 70                    | 58                    | 62          |
| Number of Food Preparers (Unweighted)    | 1930  | 529                      | 836                   | 565                   | 1401        |

<sup>1</sup>Consider factor often (as opposed to sometimes, rarely, or never).

Note: Includes only food preparers with purchasing/shopping responsibilities.

## ***References***

*Child and Adult Care Food Program: Nutrition Guidance for Child Care Centers* (1995).  
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