



E-FAN-04-006-2

June 2004

# Maternal Employment and Children's Nutrition

## Volume II, Other Nutrition-Related Outcomes

By Mary Kay Crepinsek and Nancy R. Burstein, Abt Associates Inc.

ERS project representative: Linda M. Ghelfi, 202-694-5437,  
lghelfi@ers.usda.gov.

### Abstract

The higher income of households with working mothers is related to lower participation in USDA's Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) and School Breakfast and Food Stamp Programs. In contrast, children of working mothers are more likely to participate in the National School Lunch Program. This study analyzed differences in nutrition and nutrition-related outcomes among children whose mothers work full time, part time, and not at all (homemakers). This report focuses on indirect nutrition-related outcomes, including food program participation, children's eating patterns, household food acquisition and sufficiency, and children's physical activity and risk of overweight. Study results indicate that households with working mothers spend more on food and have higher levels of food sufficiency than households without working mothers. Working mothers, however, participate less in meal planning, shopping, and food preparation. The children of working mothers are more likely to skip morning meals, rely more on away-from-home food sources, spend more time watching TV and videos, and face significantly greater risk of overweight.

### Acknowledgments

Linda Truitt and Ellie Lee, Abt Associates Inc., contributed to this report.

**This report was prepared by Abt Associates Inc. under a research agreement from the Economic Research Service. The views expressed are those of the authors and not necessarily those of ERS or USDA.**

# Contents

- Executive Summary** ..... 1
- Chapter 1: Children's Eating Patterns** ..... 3
  - Number of Eating Occasions ..... 3
  - Frequency of Meal Skipping ..... 6
    - Skipping the Morning Meal ..... 6
    - Skipping the Midday and Evening Meals ..... 9
  - Food Away from Home ..... 9
  - Composition of Carry-out and Prepared Foods ..... 14
    - Carry-out Foods ..... 15
    - Prepared Entrees ..... 15
- Chapter 2: Household Food Acquisition and Sufficiency** ..... 18
  - Meal Planning, Food Purchasing, and Food Preparation ..... 19
    - Participation in Meal Planning ..... 19
    - Participation in Food Purchasing ..... 22
    - Participation in Food Preparation ..... 24
  - Household Food Expenditures ..... 26
  - Food Sufficiency ..... 30
- Chapter 3: Food Assistance Program Participation** ..... 35
  - Special Supplemental Nutrition Program for Women, Infants, and Children ..... 35
  - Food Stamp Program ..... 40
  - School Breakfast Program ..... 43
  - National School Lunch Program ..... 49
  - Summary ..... 54
- Chapter 4: Children's Physical Activity and Risk of Overweight** ..... 56
  - Physical Activity Level ..... 57
  - Body Mass Index and Risk of Overweight ..... 62
  - Summary ..... 64
- References** ..... 65

# Executive Summary

Labor force participation among women in the United States has increased dramatically over the past three decades. A majority of women with children are now employed outside the home. At the same time, there is evidence from national surveys that children's diets are less healthful than they should be, and that children are becoming increasingly overweight. Economic theory suggests that families in which mothers work outside the home must trade off the advantages of greater income against the disadvantages of less time for home food production and supervision of children's activities. This tradeoff may result in positive, negative, or no net impacts on children's nutritional well-being. The loss of home production time and the gain in income were expected to work in opposite directions, with the net effect unknown.

Although considerable research has been done on the relationship between maternal employment and breastfeeding, few studies to date have investigated the relationships between mother's work status and other child nutrition outcomes. Using extant data from nationally representative samples of children and their mothers in the mid-1990s, this study was conducted to explore the relationships between maternal employment and direct and indirect measures of children's nutrition outcomes. Volume 1 of this study presents results of analyses of differences in direct nutrition outcomes among children age 0 to 17 years whose mothers work full-time, part-time, and not at all. It also reports on the role that USDA's Child and Adult Care Food Program (CACFP) serves in meeting the nutrition needs of participating children, especially for those whose mothers are working. Measures of nutrition outcomes analyzed include the healthy eating index, food energy and selected nutrients, and consumption of soft drinks, added sugars, and fried potatoes.

This volume presents results of analyses of more indirect nutrition-related outcomes. Here we investigate children's eating patterns, household food acquisition and sufficiency, food program participation, and children's physical activity and risk of overweight. Major findings in this volume are:

- Income relative to poverty tends to be higher in households with working mothers. Consequently these households are less likely to participate in the means-tested food assistance programs, the Special Supplemental Nutrition Program for Women, Infants and Children, the Food Stamp Program, and the School Breakfast Program (SBP). (Although SBP is in principle available to children of all incomes, in practice it predominantly serves low-income children.) National School Lunch Program participation, in contrast, is higher among children of working mothers.
- The effects of greater income among households of working mothers is also seen in their greater expenditures on food per adult male equivalent; and their higher levels of food sufficiency. The effects of time pressures are seen in working mothers' reduced participation in meal planning, shopping, and food preparation; in the increased prevalence of morning meal skipping by teenage girls; and the heavier reliance on away-from-home food sources.
- This study also found that children of full-time working mothers spend more time watching TV and videos than children of homemakers. The frequency of engaging in vigorous exercise, however, does not differ across employment groups. Among 12-

14-year olds, children with full-time working mothers are at significantly greater risk of overweight (Body Mass Index above the 85<sup>th</sup> percentile) than children whose mothers are homemakers.

- Unfortunately, available data on exercise level were self-reported and obtained only from older children (12 to 17 years). In addition, reliable data on weight status were not available for children under 12 years old. The possibility that maternal employment is related to the physical activity level and risk of overweight for younger children cannot be ruled out

# Chapter 1

## Children's Eating Patterns

The potential implications for the nutritional quality of children's diets makes the relationship between maternal employment and children's eating patterns worth exploring. Reduced supervision of meals by mothers employed outside the home may lead to meal skipping or more frequent snacking among their children. On the other hand, these diet patterns could be improved by increased financial resources. The trade-off between income and time constraints on home food preparation for working mothers may also result in children consuming more food prepared outside the home, including carry-out and prepared (e.g., heat-and-serve) meals.

This chapter explores various aspects of children's eating patterns and their association with maternal employment status. All dietary patterns are examined for children age 1 to 17, by age group (and, for 13- to 17-year-olds, by gender), income category, and number of adults in the household. Two days of dietary intake data were available from the CSFII for almost all children (96 percent). Values for most outcome measures were averaged over the two days before computing means and proportions. For the small share of children with only one day of data, the Day 2 value was, in effect, assumed to be the same as Day 1.

For many of the eating patterns examined, findings for children with full-time working mothers are less positive than those for children whose mothers work part-time or are homemakers. Children of full-time working mothers, especially teenage girls, are considerably more likely to skip the morning meal than children of nonworking mothers; the prevalence of morning meal skipping by children of part-time working mothers falls in between these two groups. In addition, children of both full-time and part-time working mothers consume a greater proportion of their meals and snacks from food prepared outside the home. This may have an adverse effect on diet quality, and thus has policy implications for targeting nutrition education to working women regarding food choices when eating out and shopping for easy-to-prepare meals. Results do not suggest a strong or consistent relationship between maternal employment and the other dietary patterns examined.

### Number of Eating Occasions

The relationship between maternal employment and the number of times children eat a meal or snack in a day is of interest given the widespread problem of overweight and obesity in children. The total number of eating occasions may be considered an indicator of indiscriminate snacking, or "grazing," which could lead to excess food energy intake.<sup>1</sup> Reduced child supervision, depending on the age of the child (i.e., as it relates to his ability to access food and feed himself), could render frequent snacking more likely. On the other hand, if children of working mothers are in child care, where an adult generally controls access to food, children may be no more likely to snack frequently over the course of the day than their counterparts with homemaker mothers.

---

<sup>1</sup> Conversely, the number of times a child eats during the day could be an indicator of undernutrition, especially in households where access to food is constrained by lack of financial resources.

The mean number of eating occasions per day for all children (1 to 17 years of age) is just under 5 (4.7; Exhibit 1.1).<sup>2</sup> This is somewhat higher than mean values reported for the U.S. population age 2 and over in 1995: 2.6 meals and 1.6 snacks per day (Lin *et al.*, 1999). The data show that as children get older they tend to eat, on average, fewer times per day (Exhibit 1.2). The mean number of eating occasions per day ranges from 5.6 for toddlers 1 to 2 years old to 4.1 for 13- to 17-year-old females. Allowing for the typical pattern of three meals per day, these values do not suggest particularly excessive snacking overall or for any of the age groups.

---

## Exhibit 1.1

### Number of Eating Occasions per Day

|                                 | Maternal Employment Status |           |           | All Children |
|---------------------------------|----------------------------|-----------|-----------|--------------|
|                                 | Full-Time                  | Part-Time | Homemaker |              |
| <b>All children</b>             |                            |           |           |              |
| Mean number of eating occasions | 4.6**                      | 4.8       | 4.8       | 4.7          |
| Maximum sample size             | 3,900                      | 1,859     | 3,023     | 8,782        |
| <b>By age group</b>             |                            |           |           |              |
| 1 to 2 years                    |                            |           |           |              |
| Mean number of eating occasions | 5.6                        | 5.7       | 5.7       | 5.7          |
| Maximum sample size             | 723                        | 367       | 828       | 1,918        |
| 3 to 4 years                    |                            |           |           |              |
| Mean number of eating occasions | 5.2                        | 5.3       | 5.3       | 5.2          |
| Maximum sample size             | 1,442                      | 712       | 1,145     | 3,299        |
| 5 to 8 years                    |                            |           |           |              |
| Mean number of eating occasions | 4.7*                       | 4.8       | 4.8       | 4.8          |
| Maximum sample size             | 836                        | 393       | 631       | 1,860        |
| 9 to 12 years                   |                            |           |           |              |
| Mean number of eating occasions | 4.4**                      | 4.7       | 4.7       | 4.5          |
| Maximum sample size             | 428                        | 206       | 238       | 872          |
| 13 to 17 years, male            |                            |           |           |              |
| Mean number of eating occasions | 4.3                        | 4.4       | 4.2       | 4.3          |
| Maximum sample size             | 232                        | 86        | 99        | 417          |
| 13 to 17 years, female          |                            |           |           |              |
| Mean number of eating occasions | 4.1                        | 4.2       | 4.1       | 4.1          |
| Maximum sample size             | 239                        | 95        | 82        | 416          |
| <b>By income category</b>       |                            |           |           |              |
| Under 130% of poverty           |                            |           |           |              |
| Mean number of eating occasions | 4.3**                      | 4.5       | 4.5       | 4.4          |
| Maximum sample size             | 874                        | 477       | 1,231     | 2,582        |
| 130 to 185% of poverty          |                            |           |           |              |
| Mean number of eating occasions | 4.5**                      | 4.8       | 4.8       | 4.7          |
| Maximum sample size             | 529                        | 270       | 476       | 1,275        |

---

<sup>2</sup> Eating occasions were defined on the basis of self- or proxy-reported meal and snack times. Food and beverages consumed at the same time or within 10 minutes of each other were considered one eating occasion.

**Exhibit 1.1**

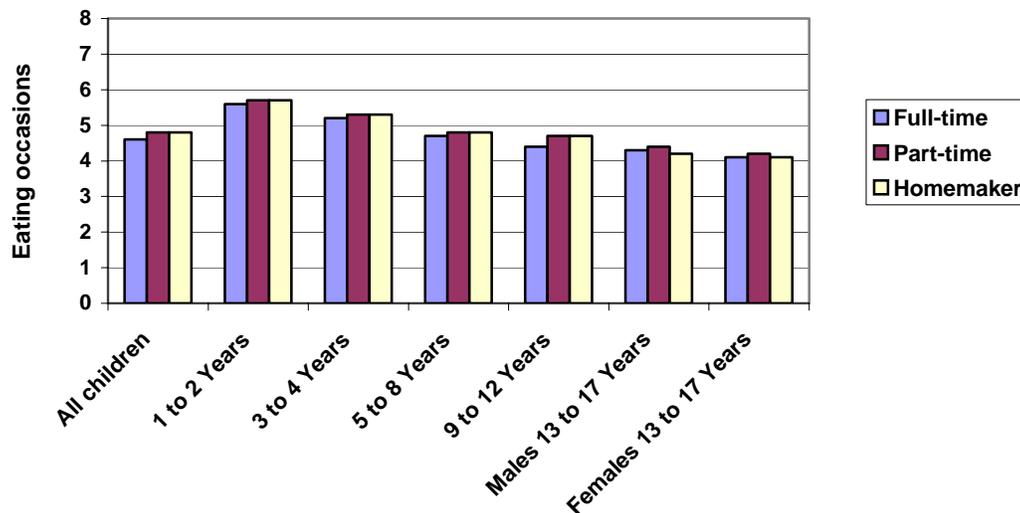
**Number of Eating Occasions per Day**

|                                 | Maternal Employment Status |           |           | All Children |
|---------------------------------|----------------------------|-----------|-----------|--------------|
|                                 | Full-Time                  | Part-Time | Homemaker |              |
| Over 185% of poverty            |                            |           |           |              |
| Mean number of eating occasions | 4.8***                     | 4.9       | 5.0       | 4.9          |
| Maximum sample size             | 2,497                      | 1,112     | 1,316     | 4,925        |
| <b>By number of adults</b>      |                            |           |           |              |
| One                             |                            |           |           |              |
| Mean number of eating occasions | 4.4                        | 4.3       | 4.3       | 4.4          |
| Maximum sample size             | 601                        | 193       | 285       | 1,079        |
| Multiple                        |                            |           |           |              |
| Mean number of eating occasions | 4.7**                      | 4.9       | 4.8       | 4.8          |
| Maximum sample size             | 3,299                      | 1,666     | 2,738     | 7,703        |

\*\*\* Statistically significant difference from children whose mothers are homemakers at the 1 percent level  
 \*\* Statistically significant difference from children whose mothers are homemakers at the 5 percent level  
 \* Statistically significant difference from children whose mothers are homemakers at the 10 percent level

**Exhibit 1.2**

**Number of Eating Occasions, by Maternal Employment Status**



When employment status is considered, no differences are seen in the frequency of meal and snack consumption between children of mothers working part-time and homemaker mothers. Children of mothers who work full-time, however, eat significantly **fewer** times per day than children with homemaker mothers (4.6 *versus* 4.8 times per day). This difference is small and is concentrated among school-age children 5 to 12 years old and children in households with multiple adults.

As household income increases, so does the average daily number of eating occasions. The difference between children with lower household income (under 130 percent of poverty) and higher

income (over 185 percent of poverty) is 0.5 eating occasions. Still, regardless of income, the negative relationship between full-time maternal employment and the number of times children eat in a day persists. Differences between children with mothers working full-time and their counterparts with homemaker mothers remain small, amounting to only 0.1 to 0.3 eating occasions per day.

## Frequency of Meal Skipping

Meal skipping is a dietary pattern that may put children at risk of inadequate food and nutrient intake. It may also affect their attention, behavior and school performance (Petersen *et al.*, 2001; Pollitt and Matthews, 1998). In some households, meal skipping may result from lack of the necessary financial resources to buy food. In others, particularly households with working mothers, mothers may not be there at some meal times to supervise what or if their children eat. Given that children of working mothers tend to have higher household incomes, it was difficult to predict the relationship, if any, between maternal employment and children's meal skipping.

In order to examine meal skipping, a consistent definition of each meal was required. It was decided to classify meals on the basis of self-reported time and food energy content.<sup>3</sup> Morning meals were defined as the consumption of at least 10 percent of the child's REA between 5:00 a.m. and 10:00 a.m. As such, beverages, snacks, and meals reported as "breakfast" (or any other meal) during that period could contribute to consumption of a morning meal. Midday and evening meals were defined as consuming at least 10 percent of the REA for food energy between 10:30 a.m. and 2:00 p.m. and 4:30 p.m. and 8:30 p.m., respectively. Meal time frames were selected to maximize the proportion of children whose main meal (breakfast, lunch, supper/dinner) was reported consumed during that time period, considering both weekdays and weekend days. For example, nearly 90 percent of children who reported eating something for breakfast or brunch ate it before 10:00 a.m. The 10-percent-of-REA criteria, which has been used in other studies of children's breakfast and lunch consumption (McLaughlin *et al.*, 2002; Gleason and Sutor, 2001; Devaney and Stuart, 1998), was included to screen out meals of minimal nutritional value.<sup>4</sup> Thus "meal skipping" in this study refers to failure to consume a nutritionally substantive meal rather than not eating anything at all.

### Skipping the Morning Meal

Of all three types of meals, children are most likely to skip the morning meal (Exhibit 1.3). Just over one-fourth of all children fail to consume a substantive morning meal, but this dietary pattern varies considerably with child age. The highest rates of morning meal skipping are seen among school-age children (17 to 51 percent),<sup>5</sup> with high schoolers (13- to 17-year-olds) more likely to skip the meal

<sup>3</sup> Self-reported name of eating occasion was not used for two reasons: (1) the terms brunch, lunch, dinner, and supper tend to be used interchangeably depending on regional and cultural variation, and (2) a cross tabulation of self-reported meal name and time of meal revealed a fairly large proportion of meals with the same name being consumed at vastly different times of day.

<sup>4</sup> The RDA for food energy among children 1 to 17 years old ranges from 1,300 (children 1 to 3 years) to 3,000 calories per day (males, 15 to 18 years). Thus, the definition of minimal nutritional value (and meal skipping) depends on the child's energy requirements.

<sup>5</sup> Results are similar to an analysis of meal skipping among school-age children using 1994 to 1996 CSFII data, based on the same minimum energy intake criterion but slightly different meal time frames. The two-day average meal skipping rates ranged from 13 to 47 percent for children 6 to 18 years of age (Gleason and Sutor, 2001).

than middle schoolers (9- to 12-year-olds), and middle schoolers more likely to skip than elementary school children. Teenage girls are especially likely to skip the morning meal.

---

**Exhibit 1.3**

**Share of Children Skipping Morning, Midday and Evening Meals**

---

|                        | Maternal Employment Status |           |           | All Children |
|------------------------|----------------------------|-----------|-----------|--------------|
|                        | Full-Time                  | Part-Time | Homemaker |              |
| <b>All children</b>    |                            |           |           |              |
| Skipped morning meal   | 27.7%***                   | 25.4%     | 23.9%     | 26.4%        |
| Skipped midday meal    | 12.7                       | 10.4*     | 12.6      | 12.2         |
| Skipped evening meal   | 11.8                       | 10.6      | 12.3      | 11.8         |
| Maximum sample size    | 3,900                      | 1,859     | 3,023     | 8,782        |
| <b>By age group</b>    |                            |           |           |              |
| 1 to 2 years           |                            |           |           |              |
| Skipped morning meal   | 8.7%*                      | 9.1%      | 11.3%     | 9.9%         |
| Skipped midday meal    | 10.6                       | 10.4      | 12.1      | 11.2         |
| Skipped evening meal   | 8.6                        | 9.8       | 10.1      | 9.5          |
| Maximum sample size    | 723                        | 367       | 828       | 1,918        |
| 3 to 4 years           |                            |           |           |              |
| Skipped morning meal   | 12.3%                      | 11.3%     | 13.2%     | 12.4%        |
| Skipped midday meal    | 7.8                        | 6.3*      | 8.3       | 7.6          |
| Skipped evening meal   | 7.0                        | 7.4       | 8.2       | 7.5          |
| Maximum sample size    | 1,442                      | 712       | 1,145     | 3,299        |
| 5 to 8 years           |                            |           |           |              |
| Skipped morning meal   | 18.4%                      | 16.6%     | 16.0%     | 17.3%        |
| Skipped midday meal    | 9.6**                      | 6.0       | 7.2       | 8.0          |
| Skipped evening meal   | 8.2                        | 7.2       | 8.9       | 8.2          |
| Maximum sample size    | 836                        | 393       | 631       | 1,860        |
| 9 to 12 years          |                            |           |           |              |
| Skipped morning meal   | 31.0%                      | 28.1%     | 28.8%     | 29.7%        |
| Skipped midday meal    | 11.2                       | 12.0      | 11.2      | 11.4         |
| Skipped evening meal   | 9.5                        | 10.5      | 9.7       | 9.8          |
| Maximum sample size    | 428                        | 206       | 238       | 872          |
| 13 to 17 years, male   |                            |           |           |              |
| Skipped morning meal   | 40.5%                      | 39.5%     | 38.0%     | 39.7%        |
| Skipped midday meal    | 20.9                       | 13.1      | 17.3      | 18.5         |
| Skipped evening meal   | 19.2                       | 13.7      | 21.5      | 18.6         |
| Maximum sample size    | 232                        | 86        | 99        | 417          |
| 13 to 17 years, female |                            |           |           |              |
| Skipped morning meal   | 56.4%***                   | 49.3%**   | 36.1%     | 50.8%        |
| Skipped midday meal    | 18.7                       | 16.7      | 24.2      | 19.4         |
| Skipped evening meal   | 21.8                       | 17.5      | 18.9      | 20.3         |
| Maximum sample size    | 239                        | 95        | 82        | 416          |

---

**Exhibit 1.3****Share of Children Skipping Morning, Midday and Evening Meals**

---

|                            | Maternal Employment Status |           |           | All Children |
|----------------------------|----------------------------|-----------|-----------|--------------|
|                            | Full-Time                  | Part-Time | Homemaker |              |
| <b>By income category</b>  |                            |           |           |              |
| Under 130% of poverty      |                            |           |           |              |
| Skipped morning meal       | 25.1%                      | 25.4%     | 24.0%     | 24.9%        |
| Skipped midday meal        | 13.0                       | 13.0      | 15.4      | 14.1         |
| Skipped evening meal       | 11.9                       | 16.3      | 13.2      | 13.4         |
| Maximum sample size        | 874                        | 477       | 1,231     | 2,582        |
| 130 to 185% of poverty     |                            |           |           |              |
| Skipped morning meal       | 26.1%                      | 26.4%     | 22.9%     | 25.4%        |
| Skipped midday meal        | 13.2                       | 11.2**    | 16.4      | 13.4         |
| Skipped evening meal       | 13.4                       | 10.4**    | 16.4      | 13.4         |
| Maximum sample size        | 529                        | 270       | 476       | 1,275        |
| Over 185% of poverty       |                            |           |           |              |
| Skipped morning meal       | 29.0%**                    | 25.2%     | 24.0%     | 27.2%        |
| Skipped midday meal        | 12.6**                     | 9.4       | 9.4       | 11.2         |
| Skipped evening meal       | 11.6                       | 8.8       | 10.8      | 10.8         |
| Maximum sample size        | 2,497                      | 1,112     | 1,316     | 4,925        |
| <b>By number of adults</b> |                            |           |           |              |
| One                        |                            |           |           |              |
| Skipped morning meal       | 28.7%                      | 26.3%     | 23.3%     | 27.9%        |
| Skipped midday meal        | 11.1***                    | 12.6**    | 19.8      | 12.4         |
| Skipped evening meal       | 11.0                       | 20.4**    | 12.9      | 13.0         |
| Maximum sample size        | 601                        | 193       | 285       | 1,079        |
| Multiple                   |                            |           |           |              |
| Skipped morning meal       | 27.6%**                    | 25.0%     | 23.9%     | 26.2%        |
| Skipped midday meal        | 13.1                       | 10.2      | 12.0      | 12.1         |
| Skipped evening meal       | 12.0                       | 9.4**     | 12.3      | 11.6         |
| Maximum sample size        | 3,299                      | 1,666     | 2,738     | 7,703        |

\*\*\* Statistically significant difference from children whose mothers are homemakers at the 1 percent level

\*\* Statistically significant difference from children whose mothers are homemakers at the 5 percent level

\* Statistically significant difference from children whose mothers are homemakers at the 10 percent level

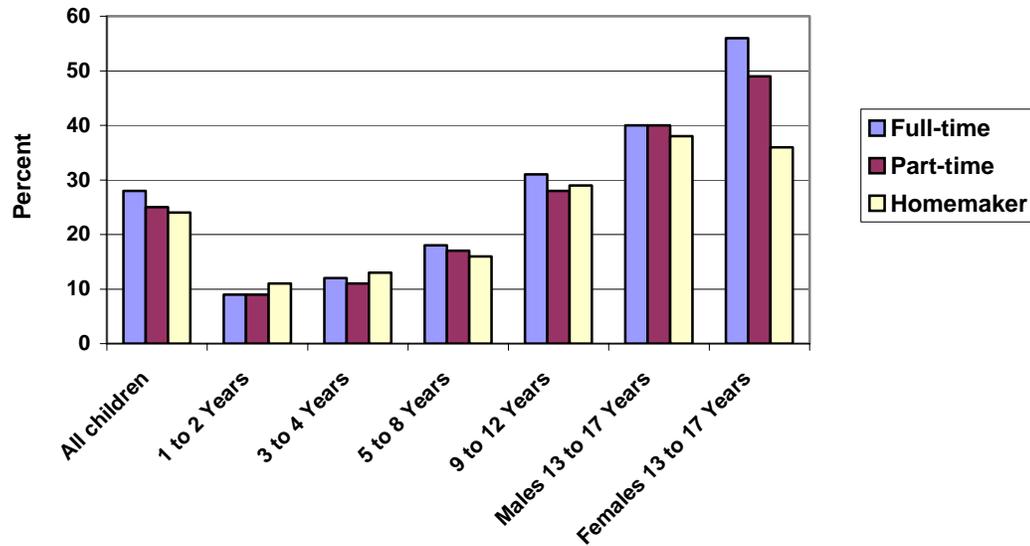
---

Children whose mothers work full-time are significantly more likely to skip the morning meal than children of nonworking mothers. This is mainly attributable to teenage girls, for whom maternal employment (both part- and full-time) is strongly associated with morning meal skipping (Exhibit 1.4). Half of the females age 13 to 17 with mothers who work part-time (49 percent) and 56 percent with mothers working full-time skip the morning meal, compared with only 36 percent with homemaker mothers. The high prevalence of morning meal skipping among teenage girls with working mothers is troublesome. It raises the question of whether this behavior may relate to a desire to control weight, and implies that maternal supervision of the morning meal may be more important for teenage girls than for children in other age/gender groups. The high rates of morning meal skipping among children age 9 to 12 and teenage boys are also of concern, but they do not vary with maternal employment status.

---

## Exhibit 1.4

### Morning Meal Skipping, by Maternal Employment Status



The relationship between maternal employment and morning meal skipping overall is replicated among children with income over 185 percent of poverty and households with multiple adults.

### Skipping the Midday and Evening Meals

Skipping midday or evening meals is relatively uncommon. About 12 percent of children overall skip one of these meals, on average (Exhibit 1.3). As for morning meals, the frequency of meal skipping is lower for younger children and higher for older children. Again, the highest rates of meal skipping are found among teenage boys and girls. About one-fifth of 13- to 17-year-olds each skip the midday and evening meals.

Neither midday nor evening meal skipping appears to be related to maternal employment. There are a few statistically significant differences by age, income and number of adults in the household, but these are scattered and no clear pattern emerges. Among single-adult households, children of homemaker mothers are almost twice as likely to skip the midday meal as children of full-time and part-time working mothers (20 percent *versus* 11 and 13 percent, respectively).

### Food Away from Home

The growing number of working women is one factor that has contributed to an increase in eating out (Nayaga and Capps, 1994). Food obtained away from home tends to be less healthful than foods prepared from home food supplies (Lin *et al.*, 1996 and 1999). Based on data from the 1995 CSFII, away-from-home foods contained more fat and saturated fat, and less calcium, fiber, and iron than home-prepared foods. Inappropriate levels of consumption of these dietary components have potential health consequences. Thus, it was important to document the relationship between maternal employment and sources of food for children.

The distinction between home and away-from-home food sources in the CSFII data was intended to reflect the degree of control consumers have over the nutritional content of the food they report eating. Home foods were those purchased at a store or by mail order, or foods home-grown or caught by the respondent. Away-from-home foods were defined as items from restaurants and fast food places, but also included food obtained at school, in child care, or other places.<sup>6</sup> Food from home supplies may have been eaten away from home, and away-from-home food could have been eaten at home. For example, brown bag lunches brought to and eaten at school were still considered home foods, and carry-out food from a restaurant that was eaten at home was counted as food away from home.<sup>7</sup> Eating occasions (defined previously) comprised of foods from multiple sources were classified based on the source contributing the most food energy (calories).

Approximately one-quarter (24 percent) of children's eating occasions consist primarily of food from away-from-home sources (Exhibit 1.5). The most important sources include food eaten at restaurants, from fast food places (10 percent), and from school cafeterias (6 percent). These figures are roughly comparable to the reported proportion of meals and snacks eaten away from home by all Americans over age 2 in 1995 (Lin *et al.*, 1999). The share of eating opportunities from child care centers and homes is quite small (1 percent), even among toddlers and preschool-age children (3 and 5 percent, respectively). Away-from-home foods tend to become a more important component of children's diets as they get older. The range for all away-from-home food sources combined is 14 percent of eating occasions for 1- to 2-year-olds to 30 percent for 13- to 17-year-old males. Overall, eating away from home does not differ by household income, although lower income children are more likely to eat at school cafeterias compared to restaurants.

As expected, children of working mothers consume a significantly higher proportion of their meals and snacks from away-from-home sources. The share of away-from-home food for children with mothers working part-time (24 percent) falls between that for children of full-time (27 percent) and homemaker mothers (20 percent). This relationship is consistent across most age, income, and household composition categories. The exceptions are teenage girls and single-adult households, where children of mothers working part-time consume a somewhat higher proportion of meals and snacks from away-from-home sources than children of full-time working or nonworking mothers.

The highest percentages of eating occasions from away-from-home sources are seen among children in one-adult households where the mother is working (31 to 32 percent). This is not surprising, given that this group of mothers is probably under the most severe time constraints, although their household income is likely to be lower than their counterparts in multiple-adult households. In multiple-adult households, children with working mothers are consuming fewer of their meals and snacks away from home. This suggests that when time constraints are partially offset by help from other adults, children obtain more of their food from home, even when they are more likely to afford eating out.

---

<sup>6</sup> Other sources of food obtained away from home included someone else's home/gift, soup kitchen, Meals-on-Wheels, or other community food program.

<sup>7</sup> Although it was recognized that ready-to-eat foods available at retail stores (e.g., deli sandwiches, roasted meats, salad bar, prepared casseroles, etc.) may be similar to carry-out items, the majority of store-bought items are likely to be used as ingredients in home food preparation.

**Exhibit 1.5**  
**Share of All Eating Occasions from Home and Away-from-Home Sources**

|                        | Maternal Employment Status |           |           | All Children |
|------------------------|----------------------------|-----------|-----------|--------------|
|                        | Full-Time                  | Part-Time | Homemaker |              |
| <b>All children</b>    |                            |           |           |              |
| Home food supplies     | 73.2%***                   | 75.4%***  | 79.6%     | 75.7%        |
| Away-from-home sources | 26.8***                    | 24.6***   | 20.4      | 24.3         |
| Restaurant             | 11.6***                    | 10.4**    | 8.7       | 10.5         |
| School                 | 6.5                        | 6.0       | 5.8       | 6.2          |
| Child care             | 2.5***                     | 1.2***    | 0.3       | 1.4          |
| Other                  | 6.2                        | 7.0**     | 5.5       | 6.1          |
| Maximum sample size    | 3,900                      | 1,859     | 3,023     | 8,782        |
| <b>By age group</b>    |                            |           |           |              |
| <b>1 to 2 years</b>    |                            |           |           |              |
| Home food supplies     | 81.3%***                   | 85.0%***  | 91.4%     | 86.3%        |
| Away-from-home sources | 18.7***                    | 15.0***   | 8.6       | 13.7         |
| Restaurant             | 6.7***                     | 6.6***    | 4.6       | 5.8          |
| School                 | 0.3**                      | 0.3**     | 0.0       | 0.2          |
| Child care             | 6.3***                     | 2.9***    | 0.3       | 3.1          |
| Other                  | 5.3**                      | 5.2*      | 3.7       | 4.6          |
| Maximum sample size    | 723                        | 367       | 828       | 1,918        |
| <b>3 to 4 years</b>    |                            |           |           |              |
| Home food supplies     | 75.9%***                   | 81.7%***  | 86.6%     | 80.7%        |
| Away-from-home sources | 24.1***                    | 18.3***   | 13.4      | 19.3         |
| Restaurant             | 8.4***                     | 7.5**     | 6.4       | 7.5          |
| School                 | 1.6**                      | 1.6       | 1.0       | 1.4          |
| Child care             | 7.7***                     | 4.1***    | 0.9       | 4.6          |
| Other                  | 6.5***                     | 5.1       | 5.0       | 5.7          |
| Maximum sample size    | 1,442                      | 712       | 1,145     | 3,299        |
| <b>5 to 8 years</b>    |                            |           |           |              |
| Home food supplies     | 72.4%***                   | 76.3%**   | 79.7%     | 75.6%        |
| Away-from-home sources | 27.6***                    | 23.7**    | 20.3      | 24.4         |
| Restaurant             | 10.1***                    | 7.5       | 6.5       | 8.4          |
| School                 | 8.2                        | 8.4       | 7.9       | 8.2          |
| Child care             | 2.6***                     | 1.1***    | 0.4       | 1.6          |
| Other                  | 6.6                        | 6.6       | 5.6       | 6.3          |
| Maximum sample size    | 836                        | 393       | 631       | 1,860        |
| <b>9 to 12 years</b>   |                            |           |           |              |
| Home food supplies     | 72.0%***                   | 73.6%     | 76.8%     | 73.7%        |
| Away-from-home sources | 28.0***                    | 26.4      | 23.2      | 26.3         |
| Restaurant             | 11.3***                    | 11.8***   | 7.6       | 10.4         |
| School                 | 9.5                        | 8.2       | 8.6       | 9.0          |
| Child care             | 0.5***                     | 0.2*      | 0.0       | 0.3          |
| Other                  | 6.7                        | 6.1       | 7.0       | 6.7          |
| Maximum sample size    | 428                        | 206       | 238       | 872          |

**Exhibit 1.5**  
**Share of All Eating Occasions from Home and Away-from-Home Sources**

|                               | Maternal Employment Status |           |           | All Children |
|-------------------------------|----------------------------|-----------|-----------|--------------|
|                               | Full-Time                  | Part-Time | Homemaker |              |
| <b>13 to 17 years, male</b>   |                            |           |           |              |
| Home food supplies            | 68.7%*                     | 70.4%     | 74.1%     | 70.3%        |
| Away-from-home sources        | 31.3*                      | 29.6      | 25.9      | 29.7         |
| Restaurant                    | 17.6                       | 14.3      | 15.3      | 16.4         |
| School                        | 8.3                        | 6.4       | 7.0       | 7.6          |
| Child care                    | 0.0                        | 0.0       | 0.0       | 0.0          |
| Other                         | 5.3                        | 8.9***    | 3.6       | 5.7          |
| Maximum sample size           | 232                        | 86        | 99        | 417          |
| <b>13 to 17 years, female</b> |                            |           |           |              |
| Home food supplies            | 71.3%                      | 67.8%*    | 72.9%     | 70.8%        |
| Away-from-home sources        | 28.7                       | 32.2*     | 27.1      | 29.2         |
| Restaurant                    | 16.1                       | 14.7      | 13.7      | 15.3         |
| School                        | 6.5                        | 6.8       | 6.0       | 6.5          |
| Child care                    | 0.0                        | 0.1       | 0.1       | 0.0          |
| Other                         | 6.0                        | 10.4      | 7.3       | 7.2          |
| Maximum sample size           | 239                        | 95        | 82        | 416          |
| <b>By income category</b>     |                            |           |           |              |
| <b>Under 130% of poverty</b>  |                            |           |           |              |
| Home food supplies            | 71.4%***                   | 73.9%***  | 79.2%     | 75.5%        |
| Away-from-home sources        | 28.6***                    | 26.1***   | 20.8      | 24.5         |
| Restaurant                    | 10.9***                    | 9.0***    | 6.1       | 8.5          |
| School                        | 10.5                       | 10.3      | 9.2       | 9.9          |
| Child care                    | 2.4***                     | 1.1***    | 0.2       | 1.1          |
| Other                         | 4.8                        | 5.6       | 5.2       | 5.1          |
| Maximum sample size           | 874                        | 477       | 1,231     | 2,582        |
| <b>130 to 185% of poverty</b> |                            |           |           |              |
| Home food supplies            | 74.1%***                   | 73.5%***  | 79.0%     | 75.9%        |
| Away-from-home sources        | 25.9***                    | 26.5***   | 21.0      | 24.1         |
| Restaurant                    | 9.8                        | 8.8       | 10.4      | 9.7          |
| School                        | 6.2**                      | 7.2*      | 4.6       | 6.1          |
| Child care                    | 2.5***                     | 1.1***    | 0.1       | 1.2          |
| Other                         | 7.4                        | 9.3***    | 5.9       | 7.1          |
| Maximum sample size           | 529                        | 270       | 476       | 1,275        |
| <b>Over 185% of poverty</b>   |                            |           |           |              |
| Home food supplies            | 73.4%***                   | 76.1%***  | 80.1%     | 75.8%        |
| Away-from-home sources        | 26.6***                    | 23.9***   | 19.9      | 24.2         |
| Restaurant                    | 12.2***                    | 11.3      | 10.0      | 11.5         |
| School                        | 5.5***                     | 4.2       | 3.8       | 4.8          |
| Child care                    | 2.5***                     | 1.2***    | 0.4       | 1.6          |
| Other                         | 6.3                        | 7.1*      | 5.8       | 6.3          |
| Maximum sample size           | 2,497                      | 1,112     | 1,316     | 4,925        |

**Exhibit 1.5**  
**Share of All Eating Occasions from Home and Away-from-Home Sources**

|                            | Maternal Employment Status |           |           | All Children |
|----------------------------|----------------------------|-----------|-----------|--------------|
|                            | Full-Time                  | Part-Time | Homemaker |              |
| <b>By number of adults</b> |                            |           |           |              |
| <b>One</b>                 |                            |           |           |              |
| Home food supplies         | 69.0%***                   | 67.7%***  | 76.4%     | 70.3%        |
| Away-from-home sources     | 31.0***                    | 32.3***   | 23.6      | 29.7         |
| Restaurant                 | 12.2***                    | 13.6***   | 7.4       | 11.5         |
| School                     | 8.0**                      | 9.4       | 10.8      | 8.7          |
| Child care                 | 2.9***                     | 1.9***    | 0.3       | 1.9          |
| Other                      | 8.0***                     | 7.5       | 5.2       | 7.6          |
| Maximum sample size        | 601                        | 193       | 285       | 1,079        |
| <b>Multiple</b>            |                            |           |           |              |
| Home food supplies         | 74.1%***                   | 76.6%***  | 80.0%     | 76.6%        |
| Away-from-home sources     | 25.9***                    | 23.4***   | 20.0      | 23.4         |
| Restaurant                 | 11.5***                    | 9.9       | 8.9       | 10.4         |
| School                     | 6.2*                       | 5.5       | 5.4       | 5.8          |
| Child care                 | 2.4***                     | 1.1***    | 0.3       | 1.3          |
| Other                      | 5.8                        | 6.8**     | 5.6       | 5.9          |
| Maximum sample size        | 3,299                      | 1,666     | 2,738     | 7,703        |

\*\*\* Statistically significant difference from children whose mothers are homemakers at the 1 percent level

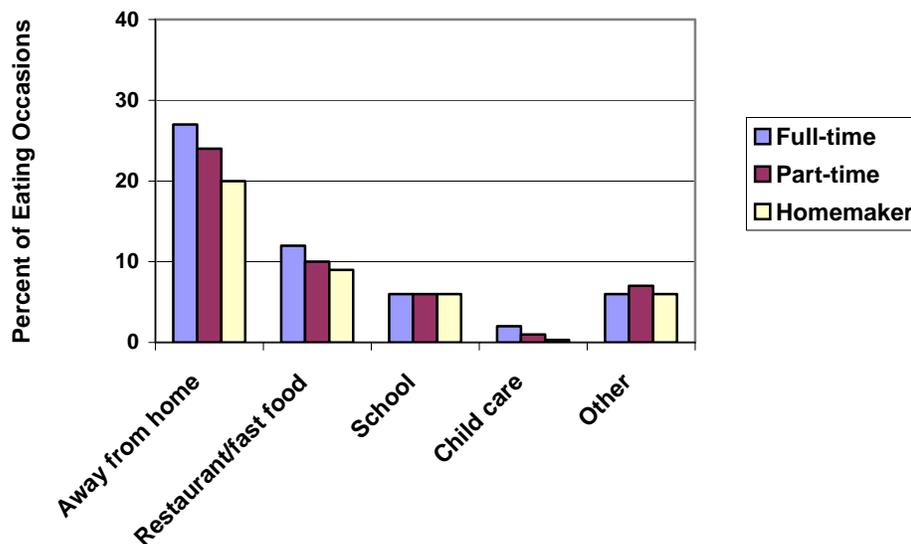
\*\* Statistically significant difference from children whose mothers are homemakers at the 5 percent level

\* Statistically significant difference from children whose mothers are homemakers at the 10 percent level

Exhibit 1.6 shows the relationship between various sources of away-from-home food and maternal employment. Children of both full-time and part-time working mothers consume a significantly larger share of their eating occasions from restaurants (including fast food places) and child care than children of nonworking mothers. Children whose mothers work full-time are also significantly more likely to consume food from other sources—primarily “someone else or gift”—than children whose mothers are homemakers. Although there is no relationship overall between the share of eating occasions from school food supplies and maternal employment, this varies somewhat by income.

Significant differences among the various sources of away-from-home food between children of working and nonworking mothers are generally more sporadic for older children (13- to 17-year-olds). It may be that teenagers are less reliant on their mother for home-prepared food (i.e., they prepare more of their own meals and/or snacks) or they have their own money with which to eat out. Either of these factors would tend to make them more similar to children of homemaker mothers in terms of where they obtain their food.

---

**Exhibit 1.6****Share of Eating Occasions from Away-from-Home Food Sources, by Maternal Employment Status**

---

**Consumption of Carry-out and Prepared Foods**

A dimension of away-from-home food consumption of particular interest is the potential for working mothers to increase their reliance on carry-out foods (i.e., “take-out”). The income/time trade-off made by working mothers is also expected to lead to greater use of prepared foods (e.g., frozen entrees), manufactured specifically with convenience in mind (Capps *et al.*, 1985; Redman, 1980). Both of these classes of foods are generally associated with higher fat and/or sodium content, and possibly lower fiber content than foods prepared at home. To the extent that children of working mothers consume a large share of total food energy intake from carry-out foods or consume prepared foods on a frequent basis, their diet quality may be adversely affected.

The CSFII does not identify carry-out foods *per se*. Therefore, it was assumed that foods from sources, including fast food establishments, restaurants with waitpersons, cafeterias (other than school), and vending machines, provided they were eaten at home, were a reasonable representation of carry-out. Defining and identifying prepared foods was more difficult, both because they are not coded as such in the CSFII dietary intake data, and because there is some debate as to what types of foods to consider “convenience” items. For example, foods such as cake, cookie and brownie mixes are more analogous to homemade than purchased items from a bakery or supermarket. Seasoned rice and noodles mixes take about the same amount of preparation time as their plain counterparts. In addition, items like granola bars and toaster pastries, although convenient if substituting for a meal, are often used by children as snacks. Therefore, a decision was made to limit the comparison of children’s intake of prepared foods to main entrees. These included frozen meals; frozen entrees such as

pizza,<sup>8</sup> lasagna, macaroni and cheese, enchiladas, burritos, breakfast sandwiches, and chicken nuggets; canned entrees such as meats, chili, stew, spaghetti and meatballs, and ravioli; and instant breakfast beverages.

### **Carry-Out Foods**

Consumption of carry-out food was examined in terms of its contribution to children's daily food energy requirement, the 1989 REA. Overall, the proportion of children's energy requirements from carry-out foods is quite minimal—less than 4 percent of REA, on average (Exhibit 1.7). This varies little with age, income, or the number of adults in the household.

Children of full-time working mothers consume significantly more of their REA from carry-out food compared with children of homemakers, but the difference is small (4 percent *versus* 3 percent). The value for children of mothers who work part-time falls in between. This relationship is similar across most age and income groups. Of note is the finding that teenage boys consume almost twice as much carry-out food if their mothers work full-time *versus* not at all.

### **Prepared Entrees**

The average proportion of children consuming a prepared entrée on the days dietary intake data were obtained was approximately 14 percent overall (Exhibit 1.7). Prepared entrees tend to be consumed less frequently by school-age children (5 to 17 years old) than younger children (range of 10 to 19 percent). There is no evidence that consumption of prepared entrees varies with maternal employment status for all children combined. The few statistically significant differences by age and income group do not indicate a clear or consistent pattern either.

---

<sup>8</sup> Although the USDA food codes do not distinguish between homemade pizza and frozen or other forms of prepared pizza, it was assumed that the great majority of pizza consumed by children from home food supplies would not be homemade.

**Exhibit 1.7****Children's Consumption of Carry-out Food and Prepared Entrees**

|                               | <b>Maternal Employment Status</b> |                  |                  | <b>All Children</b> |
|-------------------------------|-----------------------------------|------------------|------------------|---------------------|
|                               | <b>Full-Time</b>                  | <b>Part-Time</b> | <b>Homemaker</b> |                     |
| <b>All children</b>           |                                   |                  |                  |                     |
| Carry-out food (% REA)        | 4.3%***                           | 3.3%             | 2.8%             | 3.6%                |
| Prepared entrees (% children) | 14.1                              | 13.8             | 13.4             | 13.8                |
| Maximum sample size           | 3,900                             | 1,859            | 3,023            | 8,782               |
| <b>By age group</b>           |                                   |                  |                  |                     |
| 1 to 2 years                  |                                   |                  |                  |                     |
| Carry-out food (% REA)        | 3.7%***                           | 2.7%**           | 1.9%             | 2.7%                |
| Prepared entrees (% children) | 20.5**                            | 18.0             | 17.6             | 18.8                |
| Maximum sample size           | 723                               | 367              | 828              | 1,918               |
| 3 to 4 years                  |                                   |                  |                  |                     |
| Carry-out food (% REA)        | 4.1%***                           | 2.8%             | 2.8%             | 3.4%                |
| Prepared entrees (% children) | 18.4                              | 19.2*            | 16.3             | 17.9                |
| Maximum sample size           | 1,442                             | 712              | 1,145            | 3,299               |
| 5 to 8 years                  |                                   |                  |                  |                     |
| Carry-out food (% REA)        | 4.3%***                           | 2.7%             | 2.5%             | 3.4%                |
| Prepared entrees (% children) | 15.1                              | 16.2             | 12.9             | 14.6                |
| Maximum sample size           | 836                               | 393              | 631              | 1,860               |
| 9 to 12 years                 |                                   |                  |                  |                     |
| Carry-out food (% REA)        | 4.4%**                            | 4.7%*            | 2.7%             | 4.0%                |
| Prepared entrees (% children) | 10.7                              | 14.1             | 13.3             | 12.2                |
| Maximum sample size           | 428                               | 206              | 238              | 872                 |
| 13 to 17 years, male          |                                   |                  |                  |                     |
| Carry-out food (% REA)        | 6.1%*                             | 2.7%             | 3.4%             | 4.8%                |
| Prepared entrees (% children) | 9.8                               | 6.8*             | 12.7             | 9.8                 |
| Maximum sample size           | 232                               | 86               | 99               | 417                 |
| 13 to 17 years, female        |                                   |                  |                  |                     |
| Carry-out food (% REA)        | 3.3%                              | 3.2%             | 3.8%             | 3.4%                |
| Prepared entrees (% children) | 13.1                              | 7.3              | 8.5              | 10.9                |
| Maximum sample size           | 239                               | 95               | 82               | 416                 |
| <b>By income category</b>     |                                   |                  |                  |                     |
| Under 130% of poverty         |                                   |                  |                  |                     |
| Carry-out food (% REA)        | 4.0%***                           | 3.4%             | 2.1%             | 3.0%                |
| Prepared entrees (% children) | 12.4                              | 14.0             | 11.5             | 12.4                |
| Maximum sample size           | 874                               | 477              | 1,231            | 2,582               |
| 130 to 185% of poverty        |                                   |                  |                  |                     |
| Carry-out food (% REA)        | 4.7%                              | 1.7%**           | 3.4%             | 3.6%                |
| Prepared entrees (% children) | 15.4*                             | 17.1**           | 12.2             | 14.9                |
| Maximum sample size           | 529                               | 270              | 476              | 1,275               |
| Over 185% of poverty          |                                   |                  |                  |                     |
| Carry-out food (% REA)        | 4.4%***                           | 3.6%             | 3.1%             | 3.9%                |
| Prepared entrees (% children) | 14.2                              | 12.6             | 15.0             | 14.0                |
| Maximum sample size           | 2,497                             | 1,112            | 1,316            | 4,925               |

---

**Exhibit 1.7****Children's Consumption of Carry-out Food and Prepared Entrees**

---

|                               | Maternal Employment Status |           |           | All Children |
|-------------------------------|----------------------------|-----------|-----------|--------------|
|                               | Full-Time                  | Part-Time | Homemaker |              |
| <b>By number of adults</b>    |                            |           |           |              |
| <b>One</b>                    |                            |           |           |              |
| Carry-out food (% REA)        | 4.1%                       | 5.5%      | 3.4%      | 4.1%         |
| Prepared entrees (% children) | 11.5                       | 16.6      | 14.6      | 12.9         |
| Maximum sample size           | 601                        | 193       | 285       | 1,079        |
| <b>Multiple</b>               |                            |           |           |              |
| Carry-out food (% REA)        | 4.4%***                    | 2.9%      | 2.8%      | 3.6%         |
| Prepared entrees (% children) | 14.7                       | 13.4      | 13.2      | 13.9         |
| Maximum sample size           | 3,299                      | 1,666     | 2,738     | 7,703        |

\*\*\* Statistically significant difference from children whose mothers are homemakers at the 1 percent level

\*\* Statistically significant difference from children whose mothers are homemakers at the 5 percent level

\* Statistically significant difference from children whose mothers are homemakers at the 10 percent level

---

## Chapter 2

# Household Food Acquisition and Sufficiency

This chapter explores three aspects of households' food acquisition, provision, and sufficiency that are expected to affect children's nutrition outcomes. These are:

- Mothers' participation in, or alternatively delegation of, meal planning, food purchasing, and food preparation;
- Household expenditures on food; and
- Food sufficiency.

A primary route through which maternal employment may affect children's nutrition outcomes is the mother's reduced involvement in the time-consuming tasks of **planning meals, purchasing food, and preparing food**. It seems likely that working mothers would delegate these tasks in whole or in part to other household members, possibly to the detriment of their children's nutritional well-being.

**Household food expenditures**, appropriately adjusted for household size, are basic measures of how much and where families are eating. Of particular interest is the distinction between food eaten at home and away from home. It was expected that working mothers would rely more heavily on restaurants, fast food, and carry-out, both because they have less time to prepare meals and because they have more income. This may have negative consequences on child nutrition. Working mothers may also spend more at grocery stores, buying more convenience foods rather than less-expensive items that are more time-consuming to prepare.

Finally, **food sufficiency**, a summary measure of food security based on a single survey item, is examined. It was anticipated that food insufficiency would be more of a problem for children of homemaker mothers because of their lower household income. Yet they might be able to substitute time for money in the tasks of food purchasing and preparation, thus making do with less.

As expected, the great majority of children's mothers overall (over 90 percent) are involved in planning meals, food purchasing, and food preparation. The likelihood that the mother plans meals alone is greatest among homemakers (90 percent) and lowest among full-time working mothers (77 percent). Working mothers are significantly more likely to delegate these responsibilities to others, especially if they work full-time.

Full-time and part-time working mothers spend substantially more on food than homemakers: \$176 and \$168 per adult male equivalent per month, *versus* \$153. The bulk of the difference comes from food bought and consumed away from home, e.g., restaurant and cafeteria meals, but working mothers also spend more on groceries and on fast food and carry-out brought home. Even within income categories, full-time working mothers spend more on food than homemakers, concentrated on food bought and consumed away from home, evidently substituting money for time. In single-adult households, both full-time and part-time working mothers spend substantially more on groceries than homemakers. Lacking other adults with whom to share meal preparation tasks, these mothers apparently "buy their way out" by purchasing more convenience foods and preparing fewer foods from scratch.

Only 3 percent of children are in households that “sometimes” or “often” in the last three months did not have enough food to eat. This situation is substantially more common among children of homemakers (5 percent) than among children of working mothers (2 percent). The higher prevalence of food insufficiency among children with homemaker mothers is not entirely attributable to their lower income, and it persists despite their significantly higher FSP participation (reported in Appendix H). In households under 130 percent of poverty, food insufficiency affects 13 percent of children of homemakers, but only 7 to 8 percent of children of working mothers.

## Meal Planning, Food Purchasing, and Food Preparation

CSFII data record for each household member whether that person is usually involved in planning, purchasing, and preparation activities. Linking this information to the mother-child dyads, four categories were defined to describe who is responsible for meal planning, food purchasing, and food preparation activities, namely:

1. The child’s mother and no other adults;
2. The child’s mother along with other adults;
3. Other adults excluding the child’s mother; or, in rare cases,
4. Children under the age of 18 only.

Children may be involved in these activities in addition to adults, in categories 1 through 3.<sup>9</sup>

Participation/delegation measures were constructed for each of the 15,344 dyads. Although they are based on household-level information, they may differ between children in a household if they have different mothers. For example, if a household contains two child-mother dyads (A and B) and Child A’s mother usually plans the meals alone (category 1 above), then Child B lives in a household where other adults—exclusive of his mother—usually plan the meals (category 3).<sup>10</sup>

### Participation in Meal Planning

Most children’s mothers participate in planning the household’s meals—either as the sole adult (83 percent) or in cooperation with others (11 percent; Exhibit 2.1). Significant differences are seen by maternal employment in the expected direction. The likelihood that the mother plans meals alone is greatest among homemakers (90 percent) and lowest among full-time working mothers (77 percent). Although working mothers are more likely than homemakers to participate in meal planning jointly with others (14 *versus* 8 percent), they are nonetheless more likely not to be involved at all (9 percent *versus* 2 percent).<sup>11</sup> These patterns generally hold true regardless of child’s age or household income, although at the lowest income levels, full-time and part-time working mothers are equally likely to delegate meal planning altogether (Exhibit 2.2).

<sup>9</sup> Results for these measures were not stratified by number of adults in the household because for one-adult households delegation of these tasks by the mother is moot.

<sup>10</sup> Note that an adolescent girl can appear in two dyads: one dyad with her child, and a second dyad with her mother. Of the 32 mothers aged 17 years or younger, 12 are dependent children in another dyad.

<sup>11</sup> A handful of children (0.4 percent) live in households where children (under the age of 18) are responsible for meal planning.

---

**Exhibit 2.1****Participation in Meal Planning**

---

|                           | <b>Maternal Employment Status</b> |                  |                  |                     |
|---------------------------|-----------------------------------|------------------|------------------|---------------------|
|                           | <b>Full-Time</b>                  | <b>Part-Time</b> | <b>Homemaker</b> | <b>All Children</b> |
| <b>All children</b>       |                                   |                  |                  |                     |
| Mother alone              | 76.9%***                          | 85.2%***         | 89.9%            | 82.8%               |
| Mother and other adults   | 13.7***                           | 8.3              | 7.9              | 10.7                |
| Other adults alone        | 8.9***                            | 6.0***           | 2.2              | 6.2                 |
| Children alone            | 0.4**                             | 0.5**            | 0.1              | 0.4                 |
| Maximum sample size       | 6,425                             | 3,206            | 5,688            | 15,319              |
| <b>By age group</b>       |                                   |                  |                  |                     |
| 0 to 4 years              |                                   |                  |                  |                     |
| Mother alone              | 70.4%***                          | 79.1%***         | 88.5%            | 79.1%               |
| Mother and other adults   | 17.7***                           | 13.1***          | 8.2              | 13.1                |
| Other adults alone        | 11.7***                           | 7.7***           | 3.3              | 7.7                 |
| Children alone            | 0.1                               | 0.2              | 0.0              | 0.1                 |
| Maximum sample size       | 2,865                             | 1,529            | 2,941            | 7,335               |
| 5 to 8 years              |                                   |                  |                  |                     |
| Mother alone              | 77.0%***                          | 86.3%*           | 90.0%            | 83.1%               |
| Mother and other adults   | 13.1***                           | 7.8              | 8.5              | 10.5                |
| Other adults alone        | 9.8***                            | 5.3***           | 1.5              | 6.2                 |
| Children alone            | 0.1                               | 0.6              | 0.0              | 0.2                 |
| Maximum sample size       | 1,533                             | 807              | 1,387            | 3,727               |
| 9 to 12 years             |                                   |                  |                  |                     |
| Mother alone              | 81.0%***                          | 88.6%            | 88.5%            | 84.8%               |
| Mother and other adults   | 10.6                              | 5.4              | 8.6              | 8.9                 |
| Other adults alone        | 7.8***                            | 5.2              | 2.5              | 5.8                 |
| Children alone            | 0.6                               | 0.8              | 0.3              | 0.6                 |
| Maximum sample size       | 996                               | 481              | 784              | 2,261               |
| 13 to 17 years            |                                   |                  |                  |                     |
| Mother alone              | 80.7%***                          | 88.3%            | 92.6%            | 84.9%               |
| Mother and other adults   | 12.6***                           | 5.8              | 6.1              | 9.7                 |
| Other adults alone        | 5.8***                            | 5.4**            | 1.3              | 4.7                 |
| Children alone            | 1.0**                             | 0.5              | 0.0              | 0.7                 |
| Maximum sample size       | 1,031                             | 389              | 576              | 1,996               |
| <b>By income category</b> |                                   |                  |                  |                     |
| Under 130% of poverty     |                                   |                  |                  |                     |
| Mother alone              | 77.4%***                          | 82.2%**          | 86.8%            | 82.6%               |
| Mother and other adults   | 12.9                              | 8.0**            | 11.5             | 11.2                |
| Other adults alone        | 9.3***                            | 8.2***           | 1.5              | 5.7                 |
| Children alone            | 0.5                               | 1.7**            | 0.2              | 0.6                 |
| Maximum sample size       | 1,715                             | 885              | 2,562            | 5,162               |

**Exhibit 2.1**

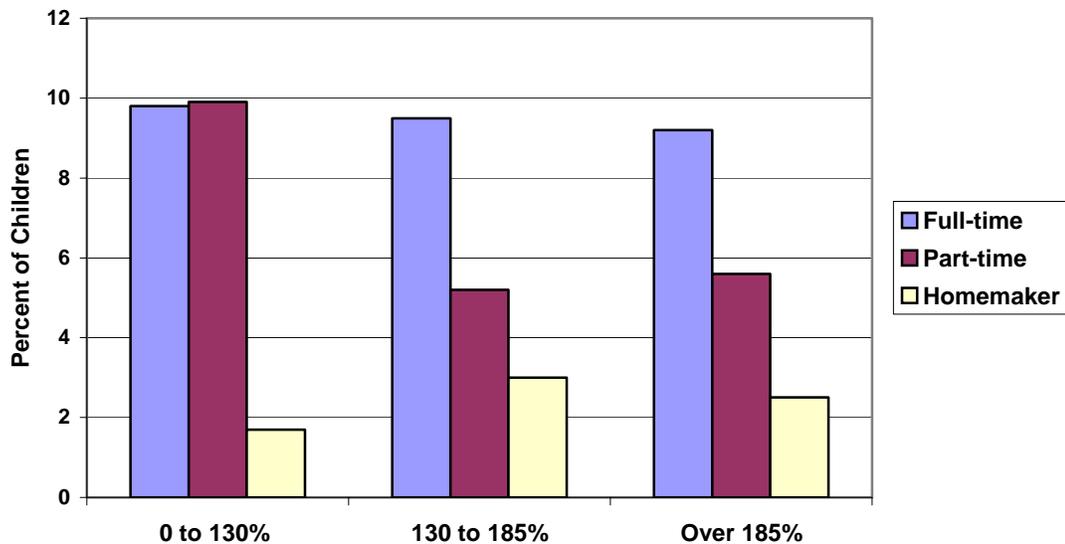
**Participation in Meal Planning**

|                               | Maternal Employment Status |           |           | All Children |
|-------------------------------|----------------------------|-----------|-----------|--------------|
|                               | Full-Time                  | Part-Time | Homemaker |              |
| <b>130 to 185% of poverty</b> |                            |           |           |              |
| Mother alone                  | 77.6%***                   | 85.4%     | 89.1%     | 83.4%        |
| Mother and other adults       | 12.9**                     | 9.4       | 7.9       | 10.3         |
| Other adults alone            | 8.6***                     | 5.2       | 2.9       | 5.8          |
| Children alone                | 0.9***                     | 0.0*      | 0.1       | 0.5          |
| Maximum sample size           | 885                        | 449       | 862       | 2,196        |
| <b>Over 185% of poverty</b>   |                            |           |           |              |
| Mother alone                  | 76.7%***                   | 86.2%***  | 92.4%     | 82.7%        |
| Mother and other adults       | 14.1***                    | 8.1**     | 5.1       | 10.6         |
| Other adults alone            | 8.9***                     | 5.4**     | 2.5       | 6.5          |
| Children alone                | 0.3*                       | 0.2*      | 0.0       | 0.2          |
| Maximum sample size           | 2,927                      | 1,393     | 1,697     | 6,017        |

\*\*\* Statistically significant difference from children whose mothers are homemakers at the 1 percent level  
 \*\* Statistically significant difference from children whose mothers are homemakers at the 5 percent level  
 \* Statistically significant difference from children whose mothers are homemakers at the 10 percent level

**Exhibit 2.2**

**Mothers Not Involved in Meal Planning, by Household Income Relative to Poverty and Employment Status**



## Participation in Food Purchasing

Similarly, most children's mothers are responsible in whole or in part for purchasing food for the household: 75 percent of mothers are the only adult in the household who usually shops for food, and 16 percent of mothers are among several adults in the household who do so (Exhibit 2.3). Full-time working mothers are significantly less likely than part-time working mothers and homemakers to take sole responsibility for food purchases (73 versus 78 percent). Conversely, full-time working mothers and, to a lesser extent, part-time working mothers, are significantly more likely than homemakers to delegate food shopping completely (11 and 8 versus 6 percent). This is especially true among mothers of younger children, age 0 to 4 years (13 and 10 versus 7 percent).

---

### Exhibit 2.3

#### Participation in Food Purchasing

|                         | Maternal Employment Status |           |           | All Children |
|-------------------------|----------------------------|-----------|-----------|--------------|
|                         | Full-Time                  | Part-Time | Homemaker |              |
| <b>All children</b>     |                            |           |           |              |
| Mother alone            | 72.6%***                   | 77.7%     | 77.7%     | 75.4%        |
| Mother and other adults | 16.6                       | 14.7      | 16.4      | 16.0         |
| Other adults alone      | 10.6***                    | 7.5**     | 5.5       | 8.3          |
| Children alone          | 0.2                        | 0.1       | 0.4       | 0.2          |
| Maximum sample size     | 6,433                      | 3,201     | 5,691     | 15,325       |
| <b>By age group</b>     |                            |           |           |              |
| 0 to 4 years            |                            |           |           |              |
| Mother alone            | 66.1%***                   | 72.9%     | 75.3%     | 71.0%        |
| Mother and other adults | 20.7**                     | 16.9      | 17.6      | 18.7         |
| Other adults alone      | 13.1***                    | 10.2**    | 7.0       | 10.2         |
| Children alone          | 0.0                        | 0.1       | 0.1       | 0.1          |
| Maximum sample size     | 2,871                      | 1,527     | 2,942     | 7,340        |
| 5 to 8 years            |                            |           |           |              |
| Mother alone            | 72.5%**                    | 79.6%     | 78.7%     | 76.1%        |
| Mother and other adults | 17.0                       | 13.6      | 15.8      | 15.9         |
| Other adults alone      | 10.5***                    | 6.7       | 5.5       | 8.1          |
| Children alone          | 0.0                        | 0.0       | 0.0       | 0.0          |
| Maximum sample size     | 1,534                      | 807       | 1,389     | 3,730        |
| 9 to 12 years           |                            |           |           |              |
| Mother alone            | 77.3%                      | 81.1%     | 77.4%     | 78.2%        |
| Mother and other adults | 13.5                       | 12.6      | 17.2      | 14.3         |
| Other adults alone      | 9.2*                       | 6.3       | 5.1       | 7.4          |
| Children alone          | 0.0                        | 0.0       | 0.3       | 0.1          |
| Maximum sample size     | 996                        | 479       | 784       | 2,259        |
| 13 to 17 years          |                            |           |           |              |
| Mother alone            | 76.2%                      | 78.5%     | 79.9%     | 77.5%        |
| Mother and other adults | 14.2                       | 15.1      | 14.9      | 14.6         |
| Other adults alone      | 8.9***                     | 6.3       | 4.0       | 7.3          |
| Children alone          | 0.6                        | 0.1       | 1.2       | 0.6          |
| Maximum sample size     | 1,032                      | 388       | 576       | 1,996        |

---

**Exhibit 2.3****Participation in Food Purchasing**

---

|                                  | Maternal Employment Status |           |           | All Children |
|----------------------------------|----------------------------|-----------|-----------|--------------|
|                                  | Full-Time                  | Part-Time | Homemaker |              |
| <b><i>By income category</i></b> |                            |           |           |              |
| Under 130% of poverty            |                            |           |           |              |
| Mother alone                     | 75.1%                      | 78.2%     | 75.6%     | 75.9%        |
| Mother and other adults          | 18.1                       | 15.3*     | 19.0      | 18.0         |
| Other adults alone               | 6.8**                      | 6.2       | 4.6       | 5.7          |
| Children alone                   | 0.0                        | 0.3       | 0.8       | 0.4          |
| Maximum sample size              | 1,716                      | 883       | 2,566     | 5,165        |
| 130 to 185% of poverty           |                            |           |           |              |
| Mother alone                     | 76.5%***                   | 73.4%     | 66.6%     | 72.9%        |
| Mother and other adults          | 16.0***                    | 18.3*     | 25.9      | 19.4         |
| Other adults alone               | 7.4                        | 8.3       | 7.5       | 7.6          |
| Children alone                   | 0.1                        | 0.0       | 0.0       | 0.1          |
| Maximum sample size              | 543                        | 260       | 540       | 1,343        |
| Over 185% of poverty             |                            |           |           |              |
| Mother alone                     | 71.2%***                   | 78.6%**   | 82.9%     | 75.9%        |
| Mother and other adults          | 16.3***                    | 13.6      | 11.6      | 14.4         |
| Other adults alone               | 12.2***                    | 7.8*      | 5.4       | 9.6          |
| Children alone                   | 0.2                        | 0.0       | 0.1       | 0.2          |
| Maximum sample size              | 2,384                      | 1,139     | 1,416     | 4,939        |

---

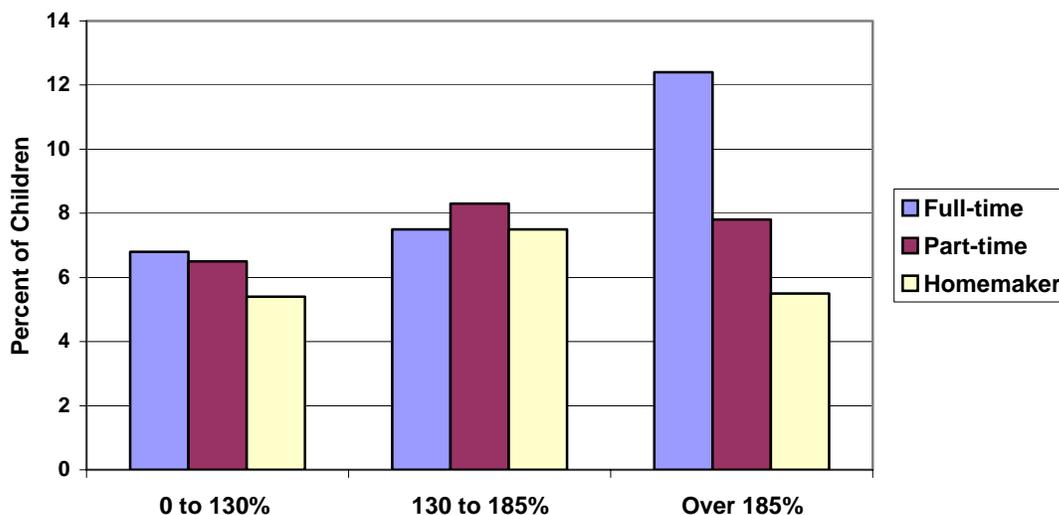
\*\*\* Statistically significant difference from children whose mothers are homemakers at the 1 percent level  
\*\* Statistically significant difference from children whose mothers are homemakers at the 5 percent level  
\* Statistically significant difference from children whose mothers are homemakers at the 10 percent level

---

For lower income households (0 to 130 percent of poverty and 130 to 185 percent of poverty), little variation is seen across maternal employment categories in the likelihood of mothers delegating food purchasing entirely to other adults. Large differences are seen, however, for higher income households (Exhibit 2.4). This is undoubtedly due at least in part to the greater presence of additional adults in higher income households. Practically all (92 percent) of households with income over 185 percent of poverty include extra adults, compared with only two-thirds (68 percent) of households with income under 130 percent of poverty. Lower income working mothers have little time to shop, but there may be no one else available to take over the job.

**Exhibit 2.4**

**Mothers Not Involved in Food Purchasing, by Household Income Relative to Poverty and Employment Status**



**Participation in Food Preparation**

Finally, nearly all children’s mothers are responsible for food preparation, either in whole (77 percent) or in part (16 percent; Exhibit 2.5). Sole responsibility is much more prevalent among homemakers than among full-time and part-time working mothers (87 *versus* 69 and 78 percent, respectively), and complete delegation more common among full-time working mothers. The relationship between responsibility for food preparation and maternal employment status is similar regardless of child’s age or household income (Exhibit 2.6).

**Exhibit 2.5  
Participation in Food Preparation**

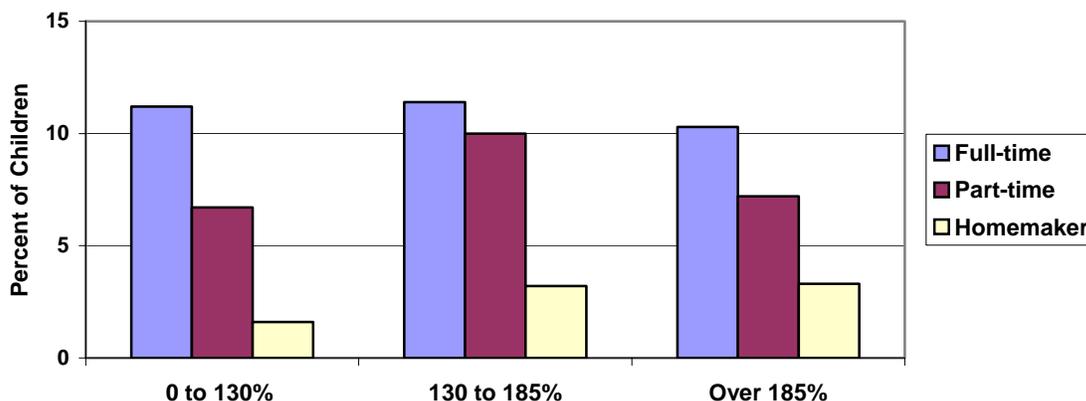
|                         | Maternal Employment Status |           |           | All Children |
|-------------------------|----------------------------|-----------|-----------|--------------|
|                         | Full-Time                  | Part-Time | Homemaker |              |
| <b>All children</b>     |                            |           |           |              |
| Mother alone            | 69.3%***                   | 78.1%***  | 87.1%     | 76.7%        |
| Mother and other adults | 20.1***                    | 14.4***   | 10.1      | 15.9         |
| Other adults alone      | 10.2***                    | 7.4***    | 2.7       | 7.2          |
| Children alone          | 0.4***                     | 0.2*      | 0.0       | 0.2          |
| Maximum sample size     | 6,414                      | 3,199     | 5,686     | 15,299       |
| <b>By age group</b>     |                            |           |           |              |
| 0 to 4 years            |                            |           |           |              |
| Mother alone            | 64.4%***                   | 71.7%***  | 86.0%     | 74.2%        |
| Mother and other adults | 21.9***                    | 19.3***   | 10.7      | 17.1         |
| Other adults alone      | 13.4***                    | 8.8***    | 3.4       | 8.6          |
| Children alone          | 0.2**                      | 0.2       | 0.0       | 0.1          |
| Maximum sample size     | 2,859                      | 1,528     | 2,941     | 7,328        |

**Exhibit 2.5**  
**Participation in Food Preparation**

|                               | Maternal Employment Status |           |           | All Children |
|-------------------------------|----------------------------|-----------|-----------|--------------|
|                               | Full-Time                  | Part-Time | Homemaker |              |
| <b>5 to 8 years</b>           |                            |           |           |              |
| Mother alone                  | 69.2%***                   | 79.0%***  | 87.5%     | 77.1%        |
| Mother and other adults       | 19.1***                    | 14.0**    | 10.2      | 15.2         |
| Other adults alone            | 11.6***                    | 6.9***    | 2.3       | 7.7          |
| Children alone                | 0.1*                       | 0.0       | 0.0       | 0.0          |
| Maximum sample size           | 995                        | 479       | 784       | 2,258        |
| <b>9 to 12 years</b>          |                            |           |           |              |
| Mother alone                  | 73.3%***                   | 81.6%     | 84.9%     | 78.3%        |
| Mother and other adults       | 17.1**                     | 11.3      | 11.0      | 14.1         |
| Other adults alone            | 9.0**                      | 7.0       | 4.1       | 7.2          |
| Children alone                | 0.5                        | 0.2       | 0.0       | 0.3          |
| Maximum sample size           | 995                        | 479       | 784       | 2,258        |
| <b>13 to 17 years</b>         |                            |           |           |              |
| Mother alone                  | 71.4%***                   | 81.6%**   | 90.1%     | 77.7%        |
| Mother and other adults       | 21.6***                    | 11.7      | 8.7       | 16.7         |
| Other adults alone            | 6.2***                     | 6.4***    | 1.1       | 5.1          |
| Children alone                | 0.8***                     | 0.2       | 0.0       | 0.5          |
| Maximum sample size           | 1,032                      | 386       | 576       | 1,994        |
| <b>By income category</b>     |                            |           |           |              |
| <b>Under 130% of poverty</b>  |                            |           |           |              |
| Mother alone                  | 73.3%***                   | 77.9%***  | 87.6%     | 80.6%        |
| Mother and other adults       | 15.4**                     | 15.4**    | 10.8      | 13.3         |
| Other adults alone            | 10.6***                    | 6.6***    | 1.6       | 5.8          |
| Children alone                | 0.6***                     | 0.1       | 0.0       | 0.3          |
| Maximum sample size           | 1,281                      | 662       | 1,941     | 3,884        |
| <b>130 to 185% of poverty</b> |                            |           |           |              |
| Mother alone                  | 69.1%***                   | 71.5%**   | 82.3%     | 74.3%        |
| Mother and other adults       | 19.5                       | 18.5      | 14.5      | 17.5         |
| Other adults alone            | 10.4***                    | 10.0***   | 3.1       | 7.8          |
| Children alone                | 1.0***                     | 0.0*      | 0.1       | 0.5          |
| Maximum sample size           | 882                        | 447       | 862       | 2,191        |
| <b>Over 185% of poverty</b>   |                            |           |           |              |
| Mother alone                  | 68.2%***                   | 79.8%***  | 88.3%     | 75.7%        |
| Mother and other adults       | 21.5***                    | 12.9***   | 8.4       | 16.5         |
| Other adults alone            | 10.1***                    | 7.0***    | 3.3       | 7.6          |
| Children alone                | 0.2*                       | 0.2*      | 0.0       | 0.2          |
| Maximum sample size           | 3,818                      | 1,867     | 2,263     | 7,948        |

\*\*\* Statistically significant difference from children whose mothers are homemakers at the 1 percent level  
 \*\* Statistically significant difference from children whose mothers are homemakers at the 5 percent level  
 \* Statistically significant difference from children whose mothers are homemakers at the 10 percent level

---

**Exhibit 2.6****Mothers Not Involved in Food Preparation, by Household Income Relative to Poverty and Employment Status**

---

**Household Food Expenditures**

Food expenditures differ among households for many reasons, including differences in household composition. To correct for the latter, monthly food expenditures are expressed on an Adult Male Equivalent, or AME, basis. Each household member is counted as some fraction of an adult male, based on their relative food energy requirements conditional on age, gender, and pregnancy/lactation status.<sup>12</sup>

Overall, children's households spend \$168 per AME per month on food, of which \$107 is spent at grocery stores, \$13 at specialty stores (e.g., bakeries, fish stores, fruit and vegetable stands), \$17 on carry-out and fast food brought into the home, and \$31 on food bought and consumed away from home, e.g., at restaurants, cafeterias, vending machines (Exhibit 2.7). Households with full-time and part-time working mothers spend more on food than households with homemaker mothers, not only in total, but also in *every* category (Exhibit 2.8). Total spending per AME is \$176 for children's households with full-time working mothers, \$168 for households with part-time working mothers, and \$153 for households with homemaker mothers. Whereas working mothers' households spend \$3 to \$4 more per AME at grocery stores than their homemaker counterparts, and \$1 to \$2 more at specialty stores, they spend \$4 to \$7 more on fast food and carry-out, and \$15 to \$23 more on food bought and consumed away from home. Qualitatively similar patterns are seen for the household spending of children of all ages.

---

<sup>12</sup> The food energy requirement, i.e., REA, for an adult male (aged 19 to 50) is 2900 kcal (National Research Council, 1989). The range for other groups is 650 kcal (infants age 0 to 5 months) to 3000 kcal (boys age 15 to 18 years) per day.

**Exhibit 2.7****Household Food Expenditures per Adult Male Equivalent (AME), by Source of Food**

|                             | Maternal Employment Status |            |           | All Children |
|-----------------------------|----------------------------|------------|-----------|--------------|
|                             | Full-Time                  | Part-Time  | Homemaker |              |
| <b>All children</b>         |                            |            |           |              |
| Grocery stores              | \$107.4**                  | \$108.1**  | \$103.8   | \$106.5      |
| Specialty stores            | 12.9                       | 14.0       | 12.4      | 13.0         |
| Fast food/Carry-out         | 19.3***                    | 16.6***    | 12.4      | 16.7         |
| Away from home <sup>a</sup> | 36.3***                    | 29.7***    | 24.5      | 31.3         |
| Total                       | 175.8***                   | 168.3***   | 153.1     | 167.5        |
| Maximum sample size         | 6,323                      | 3,157      | 5,585     | 15,065       |
| <b>By age group</b>         |                            |            |           |              |
| 0 to 4 years                |                            |            |           |              |
| Grocery stores              | \$112.5                    | \$111.5    | \$108.3   | \$110.7      |
| Specialty stores            | 12.7                       | 12.6       | 12.8      | 12.8         |
| Fast food/Carry-out         | 20.4***                    | 17.3***    | 12.6      | 16.8         |
| Away from home <sup>a</sup> | 36.1***                    | 31.2***    | 22.8      | 30.0         |
| Total                       | 181.8***                   | 172.6***   | 156.6     | 170.2        |
| Maximum sample size         | 2,821                      | 1,513      | 2,895     | 7,229        |
| 5 to 8 years                |                            |            |           |              |
| Grocery stores              | \$106.7                    | \$105.3    | \$103.8   | \$105.5      |
| Specialty stores            | 13.7                       | 12.5       | 12.0      | 12.9         |
| Fast food/Carry-out         | 18.7***                    | 15.6       | 13.5      | 16.4         |
| Away from home <sup>a</sup> | 35.3***                    | 29.4**     | 24.3      | 30.6         |
| Total                       | 174.4***                   | 162.9      | 153.7     | 165.4        |
| Maximum sample size         | 1,514                      | 797        | 1,369     | 3,680        |
| 9 to 12 years               |                            |            |           |              |
| Grocery stores              | \$104.4                    | \$104.0    | \$103.0   | \$103.9      |
| Specialty stores            | 11.9                       | 13.8       | 13.9      | 12.8         |
| Fast food/Carry-out         | 19.0***                    | 16.7*      | 12.8      | 16.8         |
| Away from home <sup>a</sup> | 33.3*                      | 28.8       | 27.8      | 30.8         |
| Total                       | 168.5                      | 163.4      | 157.4     | 164.4        |
| Maximum sample size         | 987                        | 470        | 761       | 2,218        |
| 13 to 17 years              |                            |            |           |              |
| Grocery stores              | \$104.8                    | \$110.2**  | \$99.2    | \$104.7      |
| Specialty stores            | 13.2                       | 17.1**     | 11.1      | 13.6         |
| Fast food/Carry-out         | 18.9***                    | 16.8***    | 10.7      | 16.6         |
| Away from home <sup>a</sup> | 40.1***                    | 28.9*      | 23.5      | 34.1         |
| Total                       | 176.9***                   | 173.0***   | 144.5     | 169.0        |
| Maximum sample size         | 1,001                      | 377        | 560       | 1,938        |
| <b>By income category</b>   |                            |            |           |              |
| Under 130% of poverty       |                            |            |           |              |
| Grocery stores              | \$92.0                     | \$104.0*** | \$89.7    | \$93.2       |
| Specialty stores            | 10.0                       | 10.4       | 10.2      | 10.1         |
| Fast food/Carry-out         | 14.2***                    | 13.2**     | 10.0      | 12.1         |
| Away from home <sup>a</sup> | 17.4***                    | 15.5***    | 11.8      | 14.4         |
| Total                       | 133.6***                   | 143.1***   | 121.7     | 129.8        |
| Maximum sample size         | 1,678                      | 874        | 2,508     | 5,060        |

**Exhibit 2.7**

**Household Food Expenditures per Adult Male Equivalent (AME), by Source of Food**

|                               | Maternal Employment Status |            |           | All Children |
|-------------------------------|----------------------------|------------|-----------|--------------|
|                               | Full-Time                  | Part-Time  | Homemaker |              |
| <b>130 to 185% of poverty</b> |                            |            |           |              |
| Grocery stores                | \$95.9                     | \$92.7     | \$94.2    | \$94.3       |
| Specialty stores              | 10.7                       | 8.4        | 8.8       | 9.5          |
| Fast food/Carry-out           | 18.0***                    | 13.2       | 11.7      | 14.9         |
| Away from home <sup>a</sup>   | 23.0**                     | 19.8       | 18.7      | 20.9         |
| Total                         | 147.5**                    | 134.2      | 133.4     | 139.6        |
| Maximum sample size           | 874                        | 436        | 850       | 2,160        |
| <b>Over 185% of poverty</b>   |                            |            |           |              |
| Grocery stores                | \$113.9                    | \$113.2*   | \$118.2   | \$114.8      |
| Specialty stores              | 14.1                       | 16.8       | 15.3      | 15.0         |
| Fast food/Carry-out           | 20.9***                    | 18.7***    | 14.6      | 18.9         |
| Away from home <sup>a</sup>   | 44.1***                    | 37.1       | 36.0      | 40.7         |
| Total                         | 193.0*                     | 185.8      | 184.0     | 189.4        |
| Maximum sample size           | 3,771                      | 1,847      | 2,227     | 7,845        |
| <b>By number of adults</b>    |                            |            |           |              |
| <b>One</b>                    |                            |            |           |              |
| Grocery stores                | \$120.9***                 | \$130.3*** | \$106.7   | \$119.8      |
| Specialty stores              | 14.0                       | 14.1       | 13.2      | 14.0         |
| Fast food/Carry-out           | 21.1***                    | 18.3***    | 10.9      | 18.5         |
| Away from home <sup>a</sup>   | 34.6***                    | 17.7**     | 12.0      | 27.1         |
| Total                         | 190.6***                   | 180.4***   | 142.9     | 179.4        |
| Maximum sample size           | 944                        | 303        | 490       | 1,737        |
| <b>Multiple</b>               |                            |            |           |              |
| Grocery stores                | \$104.6                    | \$105.4    | \$103.4   | \$104.4      |
| Specialty stores              | 12.6                       | 13.9       | 12.3      | 12.8         |
| Fast food/Carry-out           | 18.9***                    | 16.3***    | 12.6      | 16.4         |
| Away from home <sup>a</sup>   | 36.6***                    | 31.1***    | 25.7      | 32.0         |
| Total                         | 172.8***                   | 166.7***   | 154.0     | 165.6        |
| Maximum sample size           | 5,379                      | 2,854      | 5,095     | 13,328       |

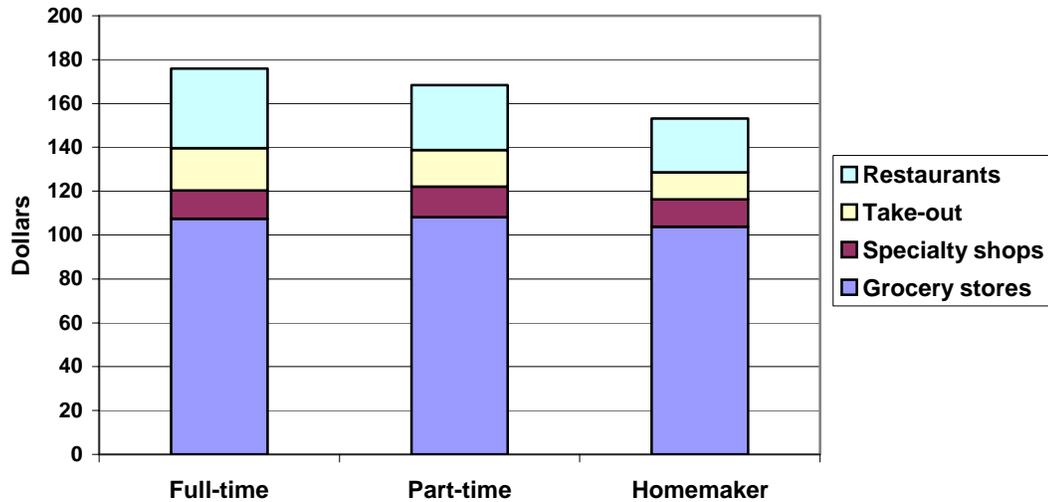
a Includes food bought and consumed away from home.

\*\*\* Statistically significant difference from children whose mothers are homemakers at the 1 percent level

\*\* Statistically significant difference from children whose mothers are homemakers at the 5 percent level

\* Statistically significant difference from children whose mothers are homemakers at the 10 percent level

---

**Exhibit 2.8****Monthly Food Expenditure per AME, by Source of Food and Maternal Employment Status**

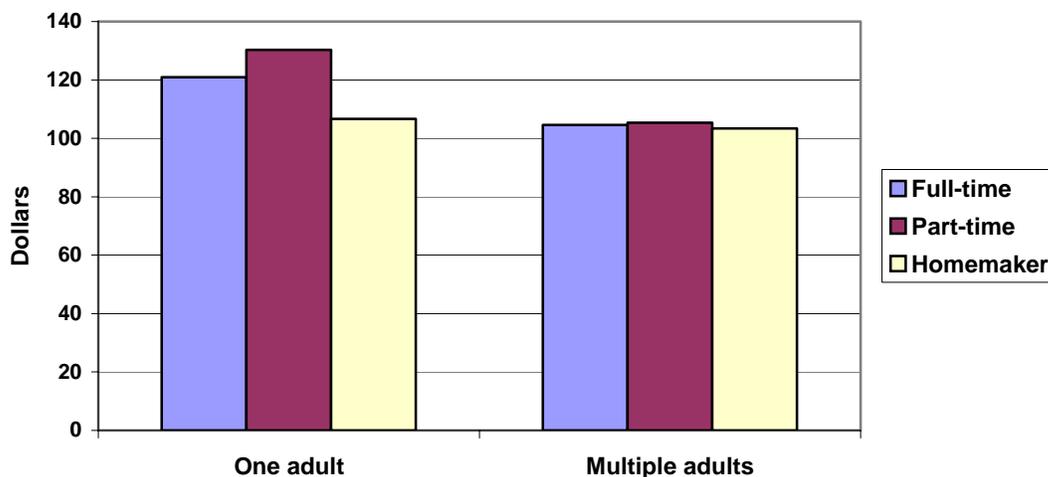
Household income is of course an important determinant of food expenditures. Total food expenditures per AME in households under 130 percent of poverty, between 130 and 185 percent of poverty, and over 185 percent of poverty, are \$130, \$140, and \$189, respectively. The nearly \$50 differential between the second and third groups is mostly due to greater expenditures on groceries (\$21) and restaurants (\$20) by the latter (higher income households).

Even within each income category, full-time working mothers spend more in total on food than do homemakers, evidently substituting money for time. In the lowest income group, part-time working mothers do so as well. With one exception, these differences within income category are attributable to higher spending on food bought and consumed away from home. That exception is part-time working mothers in the lowest income category. In addition to spending \$4 more per AME than homemakers at restaurants, they also spend an estimated \$14 more at grocery stores, presumably buying more convenience foods.

Total spending on food per AME is \$13 higher in single-adult than in multiple-adult households, again likely representing a substitution of money for time, despite the lower income of single-adult households. Single adult households in fact spend \$5 less at restaurants than multiple-adult households, but \$10 more on groceries.

This difference in grocery expenditures, however, is entirely attributable to households with working mothers (Exhibit 2.9). Full-time and part-time working mothers in one-adult households spend \$14 and \$24 respectively more on groceries than homemakers. In households with multiple adults, in contrast, working mothers and homemakers spend practically identically on groceries (\$103 to \$105), and not very differently from homemakers in one-adult households (\$107).

---

**Exhibit 2.9****Spending on Groceries per AME, by Household Type and Maternal Employment Status**

---

**Food Sufficiency**

Overall sufficiency of food for a household was measured in the CSFII by the following item:

*Which of these statements best describes the food eaten in your household in the last three months: enough of the kinds of food we want to eat; enough but not always the kinds of food we want to eat; sometimes not enough to eat; or often not enough to eat?*

For households that did not have enough food to eat, follow-up questions determined whether the household had enough to eat in each of the past three months, the number of days in the past month when food was lacking, and reasons for food insufficiency.

Overall, nearly three-quarters (72 percent) of children are in households that have enough of the kinds of food they wanted to eat, and another quarter (25 percent) have enough food but not of the desired kinds. Only 3 percent sometimes lack enough to eat (and a negligible proportion “often” lacked enough to eat).

Children of working mothers are significantly more food sufficient according to this measure (Exhibit 2.10).<sup>13</sup> Little difference is seen between children of full-time and part-time working mothers. Three-quarters (74 percent) of children whose mothers work, *versus* two-thirds of children of homemaker mothers, have enough of the kinds of food they prefer. Conversely, only 2 percent of children of working mothers, *versus* 5 percent of children of homemaker mothers, sometimes or often do not

---

<sup>13</sup> A more exact measure of children’s food security can be calculated using the CPS, which contains the full 18-item battery for a nationally representative sample of households in the same time frame, and the Children’s Food Security Scale (Nord and Bickel, 2002). Because families attempt to protect children from food insecurity, measures based on the entire household rather than the children may overestimate the extent of the problem.

have enough to eat (Exhibit 2.11). Similar patterns are seen for children in each age group. For some age groups food sufficiency is a little higher among children of full-time working mothers and for others among children of part-time mothers; but in all age groups children of homemaker mothers fare the worst. Likewise, within both one-adult and multiple adult households the same patterns are seen.

---

**Exhibit 2.10**

**Household Food Sufficiency**

|                           | Maternal Employment Status |           |           | All Children |
|---------------------------|----------------------------|-----------|-----------|--------------|
|                           | Full-Time                  | Part-Time | Homemaker |              |
| <b>All children</b>       |                            |           |           |              |
| Enough kinds and food     | 73.8%***                   | 73.7%***  | 67.8%     | 72.1%        |
| Enough food, not kinds    | 23.9**                     | 24.3      | 27.2      | 24.9         |
| Sometimes not enough food | 2.3***                     | 1.8***    | 4.4       | 2.8          |
| Often not enough food     | 0.0***                     | 0.1***    | 0.6       | 0.2          |
| Maximum sample size       | 6,443                      | 3,208     | 5,687     | 15,338       |
| <b>By age group</b>       |                            |           |           |              |
| 0 to 4 years              |                            |           |           |              |
| Enough kinds and food     | 73.1%**                    | 70.2%     | 67.8%     | 70.5%        |
| Enough food, not kinds    | 25.0                       | 27.6      | 27.7      | 26.6         |
| Sometimes not enough food | 1.9**                      | 2.1*      | 3.5       | 2.5          |
| Often not enough food     | 0.0***                     | 0.1***    | 1.0       | 0.4          |
| Maximum sample size       | 2,878                      | 1,531     | 2,941     | 7,350        |
| 5 to 8 years              |                            |           |           |              |
| Enough kinds and food     | 74.7%**                    | 73.6%     | 68.8%     | 72.6%        |
| Enough food, not kinds    | 23.0                       | 24.3      | 26.4      | 24.4         |
| Sometimes not enough food | 2.2                        | 1.9*      | 4.1       | 2.7          |
| Often not enough food     | 0.1**                      | 0.2*      | 0.7       | 0.3          |
| Maximum sample size       | 1,537                      | 807       | 1,388     | 3,732        |
| 9 to 12 years             |                            |           |           |              |
| Enough kinds and food     | 76.4%                      | 73.6%     | 70.9%     | 74.3%        |
| Enough food, not kinds    | 21.0                       | 23.7      | 24.9      | 22.7         |
| Sometimes not enough food | 2.5                        | 2.7       | 3.8       | 2.9          |
| Often not enough food     | 0.1*                       | 0.0*      | 0.4       | 0.1          |
| Maximum sample size       | 997                        | 481       | 782       | 2,260        |
| 13 to 17 years            |                            |           |           |              |
| Enough kinds and food     | 71.6%                      | 78.1%***  | 64.1%     | 71.4%        |
| Enough food, not kinds    | 25.9                       | 21.1      | 29.3      | 25.6         |
| Sometimes not enough food | 2.5*                       | 0.5***    | 6.4       | 2.9          |
| Often not enough food     | 0.0                        | 0.2       | 0.2       | 0.1          |
| Maximum sample size       | 1,031                      | 389       | 576       | 1,996        |
| <b>By income category</b> |                            |           |           |              |
| Under 130% of poverty     |                            |           |           |              |
| Enough kinds and food     | 54.6%**                    | 51.9%     | 47.8%     | 51.0%        |
| Enough food, not kinds    | 37.2                       | 40.8      | 39.1      | 38.9         |
| Sometimes not enough food | 8.0*                       | 6.6**     | 11.3      | 9.1          |
| Often not enough food     | 0.2***                     | 0.7**     | 1.7       | 1.0          |

---

**Exhibit 2.10****Household Food Sufficiency**

---

|                            | <b>Maternal Employment Status</b> |                  |                  | <b>All Children</b> |
|----------------------------|-----------------------------------|------------------|------------------|---------------------|
|                            | <b>Full-Time</b>                  | <b>Part-Time</b> | <b>Homemaker</b> |                     |
| Maximum sample size        | 1,718                             | 885              | 2,562            | 5,165               |
| 130 to 185% of poverty     |                                   |                  |                  |                     |
| Enough kinds and food      | 69.9%                             | 70.4%            | 64.4%            | 68.4%               |
| Enough food, not kinds     | 26.1**                            | 28.2             | 35.0             | 29.2                |
| Sometimes not enough food  | 4.0***                            | 1.4              | 0.6              | 2.4                 |
| Often not enough food      | 0.0                               | 0.0              | 0.0              | 0.0                 |
| Maximum sample size        | 885                               | 449              | 862              | 2,196               |
| Over 185% of poverty       |                                   |                  |                  |                     |
| Enough kinds and food      | 79.9%**                           | 82.1%            | 84.3%            | 81.4%               |
| Enough food, not kinds     | 19.7**                            | 17.7             | 15.6             | 18.3                |
| Sometimes not enough food  | 0.4                               | 0.2              | 0.1              | 0.3                 |
| Often not enough food      | 0.0                               | 0.0              | 0.0              | 0.0                 |
| Maximum sample size        | 3,840                             | 1,874            | 2,263            | 7,977               |
| <b>By number of adults</b> |                                   |                  |                  |                     |
| One                        |                                   |                  |                  |                     |
| Enough kinds and food      | 65.3%***                          | 46.8%            | 50.3%            | 58.9%               |
| Enough food, not kinds     | 31.1                              | 48.6*            | 37.2             | 35.4                |
| Sometimes not enough food  | 3.5**                             | 3.8**            | 10.4             | 4.9                 |
| Often not enough food      | 0.2**                             | 0.8              | 2.0              | 0.8                 |
| Maximum sample size        | 954                               | 307              | 491              | 1,752               |
| Multiple                   |                                   |                  |                  |                     |
| Enough kinds and food      | 75.6%***                          | 77.0%***         | 69.6%            | 74.1%               |
| Enough food, not kinds     | 22.4**                            | 21.4***          | 26.2             | 23.3                |
| Sometimes not enough food  | 2.0***                            | 1.6***           | 3.8              | 2.4                 |
| Often not enough food      | 0.0***                            | 0.0***           | 0.4              | 0.2                 |
| Maximum sample size        | 5,489                             | 2,901            | 5,196            | 13,586              |

---

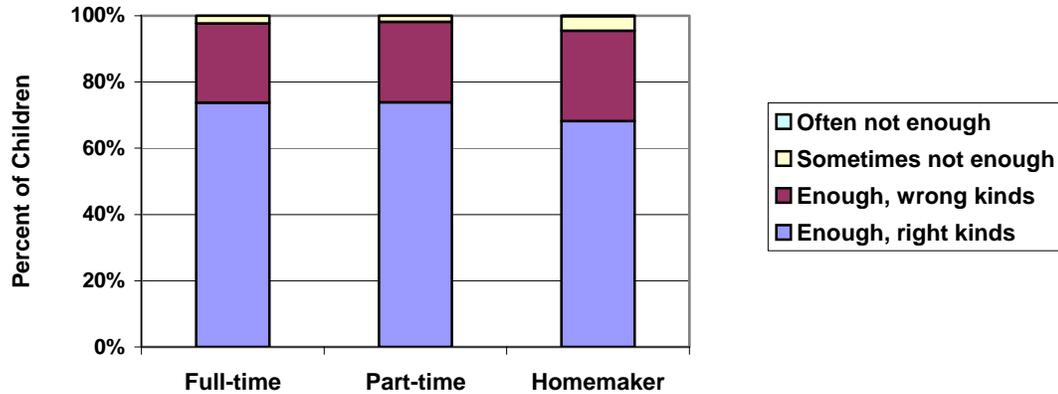
\*\*\* Statistically significant difference from children whose mothers are homemakers at the 1 percent level  
\*\* Statistically significant difference from children whose mothers are homemakers at the 5 percent level  
\* Statistically significant difference from children whose mothers are homemakers at the 10 percent level

---

---

**Exhibit 2.11****Household Food Sufficiency, by Maternal Employment Status**

---

**Exhibit 2.11****Household Food Sufficiency, by Maternal Employment Status**

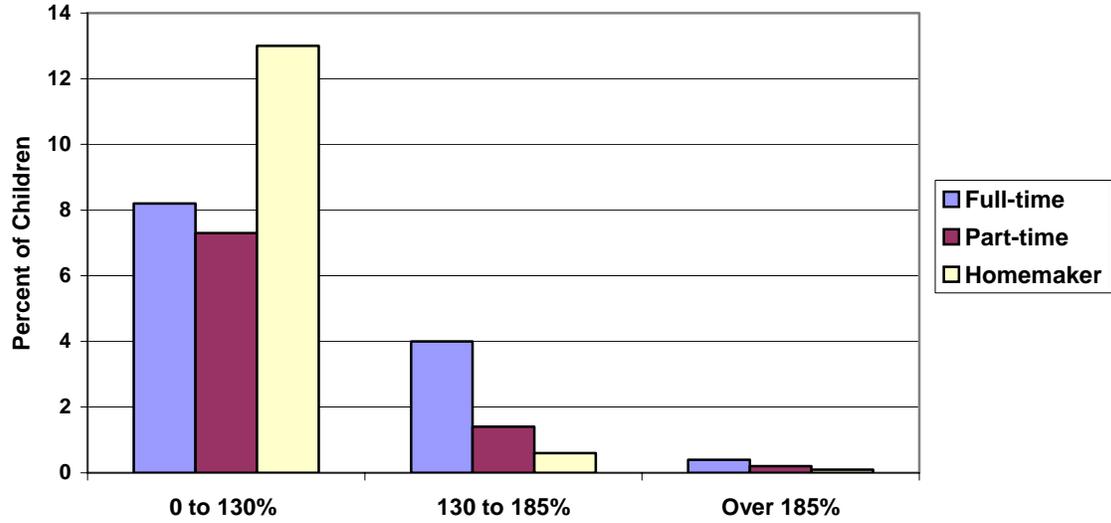
Because food sufficiency is so closely related to income, it is of special interest to look at variations by maternal employment status holding income constant. Among children in households under 130 percent of poverty, 10 percent do not always have enough to eat. This proportion is substantially higher among children of homemaker mothers (13 percent) than children of working mothers (7 to 8 percent; Exhibit 2.12). Among children in the middle-income group (130 to 185 percent of poverty), only 2 percent lack enough to eat; surprisingly, this is heavily concentrated among children of full-time working mothers. Food insufficiency is virtually non-existent among children in higher income households.

Information was also collected in the CSFII about the reasons that households did not have enough food or money or food stamps to buy food. In virtually all cases, it was found to be because of insufficient funds, rather than lack of appliances, transportation, or time (not shown).

---

**Exhibit 2.12**

**Sometimes/Often Not Enough to Eat, by Household Income Relative to Poverty and Maternal Employment Status**



## Chapter 3

# Food Assistance Program Participation

Children up to the age of 18, depending on their age, household income, and other circumstances, are eligible to participate in five major Food and Nutrition Assistance Programs (FNAPs): the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), the Food Stamp Program (FSP), the School Breakfast Program (SBP), the National School Lunch Program (NSLP), and the Child and Adult Care Feeding Program (CACFP).<sup>14</sup> In this chapter, we describe children’s participation in the first four of these programs as related to their mothers’ employment status. The role of CACFP was discussed in Chapter 4 of Volume I of this study.

The relationship between children’s participation in the various FNAPs and their mothers’ employment is of interest for several reasons. First, maternal employment may be a barrier to participation for some programs (FSP, WIC). For other programs, maternal employment may make program participation especially attractive or valuable (SBP, NSLP, CACFP). These differences are of policy significance because participation in each of these programs may affect more distal child outcomes, from nutrient intake and diet quality to physical growth and academic achievement.

Results show that for WIC, FSP, and SBP, participation is substantially higher among children of nonworking mothers than among children of working mothers. For the NSLP, in contrast, children of full-time working mothers are most likely to participate. Across the four programs, participation rates are sometimes higher and sometimes lower for children of full-time *versus* part-time working mothers.

Participation differences between children of working and nonworking mothers in WIC, the FSP, and the SBP are largely attributable to differences in income and hence eligibility. (Although the SBP is available to children of all incomes, it tends not to be offered in schools with predominantly higher income children and few higher income children choose to participate.) As noted in Appendix C (see Volume I), household income tends to be substantially lower for children of nonworking mothers. Nonetheless, even among lower income households, participation differences by mother’s employment status can still be seen in WIC for children and in the FSP. These differences may be due to issues of access and perceptions of stigma.

## Special Supplemental Nutrition Program for Women, Infants, and Children

The WIC program provides supplemental foods, nutrition education, and health care referrals to pregnant and postpartum women, infants, and children up to the age of five, who meet the following criteria:

---

<sup>14</sup> School-aged children are also eligible to participate in the Summer Food Service Program (SFSP). Nationally representative data on SFSP program participants were not available for analysis.

- Household income is under 185 percent of poverty, or adjunct eligibility is achieved through participation in a means-tested program such as AFDC/TANF (welfare),<sup>15</sup> FSP, or Medicaid; and
- The individual is deemed to be at nutritional risk by a competent professional authority.

Through vouchers that can be redeemed at grocery stores, the WIC program supplies foods that provide specific nutrients that may be lacking in the diets of the target population: protein, iron, calcium, and vitamins A and C.

Medicaid income eligibility cut-offs for infants and young children in some states are above 185 percent of poverty, so that some higher income children are eligible for WIC. Qualifying nutritional risks may be medically based (e.g., anemia, lead poisoning) or diet-based (inadequate nutrient intake). Because WIC is not an entitlement program, a priority system is used to allocate slots when sufficient funds are not available to serve all applicants. Under this system, children who are only at dietary risk are deemed low priority—below individuals with medically based risks, and below infants and pregnant women with any nutritional risk.

Participation rates in WIC are high among eligible infants, and drop off with each year of children's age (Bartlett *et al.*, 2000; Burstein *et al.*, 1999). This pattern can be explained by three factors. First, as just noted, older children may be unable to participate in some localities due to lack of funding (although this situation is increasingly rare). Second, the value of the food package is substantially greater for infants than for children, so that families of infants gain more from participating. The infant package includes formula, whereas the child package comprises age-appropriate amounts of milk, 100 percent fruit juice, minimally sweetened iron-fortified cereal, eggs, and peanut butter. In 1998, the value of the infant food package to participants was between \$80 and \$100 in most States, whereas the value of the child package was around \$30 to \$40. Finally, as children grow older, they develop independent food preferences. If they reject the foods in the WIC package (e.g., refuse to drink milk or prefer sugared cereals), families may not be interested in participating.

As reported in Volume I, Appendix C, children whose mothers are homemakers are substantially more likely to be in households under 185 percent of the poverty (53 percent) than children whose mothers work full-time (32 percent) or part-time (37 percent). This factor alone would lead us to expect substantially greater WIC participation among children of homemakers. Indeed, the WIC participation rates among children with mothers who work full-time or part-time are significantly lower than among children whose mothers are homemakers: 15 and 16 percent respectively, *versus* 28 percent (Exhibit 3.1).<sup>16</sup> As expected, in all three employment groups, WIC participation is highest among infants, and lowest among 3- to 4-year-olds; in all three age groups, children of employed mothers are significantly less likely to participate than children of homemaker mothers (Exhibit 3.2).

---

<sup>15</sup> The data presented here span 1994 to 1998. The AFDC program was converted to TANF when PRWORA went into effect in 1996.

<sup>16</sup> The measure of WIC participation was based on a CSFII item that captured information on whether or not the child was currently receiving benefits under the WIC program (regardless of duration).

---

**Exhibit 3.1****Participation in the Supplemental Nutrition Program for Women, Infants, and Children (WIC)**

---

|                            | <b>Maternal Employment Status</b> |                  |                  | <b>All Children</b> |
|----------------------------|-----------------------------------|------------------|------------------|---------------------|
|                            | <b>Full-Time</b>                  | <b>Part-Time</b> | <b>Homemaker</b> |                     |
| <b>All children</b>        |                                   |                  |                  |                     |
| WIC participation          | 14.5%***                          | 15.8%***         | 27.8%            | 19.9%               |
| Maximum sample size        | 2,864                             | 1,523            | 2,925            | 7,312               |
| <b>By age group</b>        |                                   |                  |                  |                     |
| Infant (0 to 11 months)    |                                   |                  |                  |                     |
| WIC participation          | 27.6%***                          | 30.1%***         | 43.7%            | 35.1%               |
| Maximum sample size        | 473                               | 277              | 617              | 1,367               |
| 1 to 2 years               |                                   |                  |                  |                     |
| WIC participation          | 14.1%***                          | 14.9%***         | 29.0%            | 20.2%               |
| Maximum sample size        | 892                               | 506              | 1,085            | 2,483               |
| 3 to 4 years               |                                   |                  |                  |                     |
| WIC participation          | 10.1%***                          | 11.6%***         | 20.7%            | 14.1%               |
| Maximum sample size        | 1,499                             | 740              | 1,223            | 3,462               |
| <b>By income category</b>  |                                   |                  |                  |                     |
| Under 130% of poverty      |                                   |                  |                  |                     |
| WIC participation          | 41.6%***                          | 44.9%**          | 53.2%            | 48.1%               |
| Maximum sample size        | 695                               | 400              | 1,243            | 2,338               |
| 130 to 185% of poverty     |                                   |                  |                  |                     |
| WIC participation          | 26.7%*                            | 21.0%***         | 33.1%            | 28.4%               |
| Maximum sample size        | 383                               | 202              | 467              | 1,052               |
| Over 185% of poverty       |                                   |                  |                  |                     |
| WIC participation          | 4.6%                              | 4.2%             | 4.9%             | 4.6%                |
| Maximum sample size        | 1,786                             | 921              | 1,215            | 3,922               |
| <b>By number of adults</b> |                                   |                  |                  |                     |
| One                        |                                   |                  |                  |                     |
| WIC participation          | 33.4%***                          | 42.4%*           | 53.1%            | 41.2%               |
| Maximum sample size        | 363                               | 133              | 249              | 745                 |
| Multiple                   |                                   |                  |                  |                     |
| WIC participation          | 11.3%***                          | 13.0%***         | 25.0%            | 17.1%               |
| Maximum sample size        | 2,501                             | 1,390            | 2,676            | 6,567               |

\*\*\* Statistically significant difference from children whose mothers are homemakers at the 1 percent level

\*\* Statistically significant difference from children whose mothers are homemakers at the 5 percent level

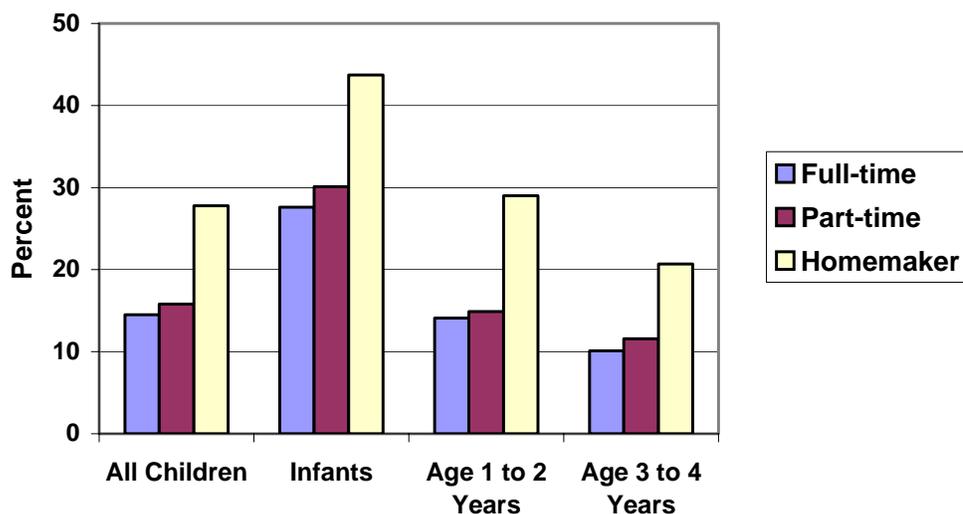
\* Statistically significant difference from children whose mothers are homemakers at the 10 percent level

---

---

**Exhibit 3.2****WIC Participation, by Maternal Employment Status**

---



The lower WIC participation rate of children of working mothers cannot be attributed entirely to household income, however. Even among children under 130 percent of poverty, children of working mothers are significantly less likely to participate in WIC than children of homemaker mothers (42 and 45 percent *versus* 53 percent). One possible explanation is that WIC participation is made difficult for working mothers by time constraints and restricted WIC office hours. Another possible explanation is that working mothers in this sample were unlikely to be receiving welfare. Most of these data predate welfare reform, so that combining work and welfare was relatively infrequent. As noted in Volume I, Appendix C, only 3 to 5 percent of children of working mothers, compared to 17 percent of children of non-working mothers, are in households that receive public assistance. Compared to homemaker mothers in the same income category, working mothers may put higher value on maintaining their economic independence and avoiding the stigma of being seen going to the WIC clinic or using WIC coupons in the grocery store.

As expected, children's WIC participation drops as household income increases. A small proportion of children with household income over 185 percent of poverty reportedly receive WIC. This is readily explicable by adjunct eligibility, differences in how income information is collected by the CSFII and the WIC agency, income fluctuations between the time of WIC certification and the CSFII interview, and the fact that CSFII measures income on an annual rather than a monthly basis.

WIC participation is typically analyzed with respect to the income-eligible population. The results presented here do not limit the sample in that regard because we are interested in whether children of working mothers are less likely to reap the benefits of WIC participation, given that their mothers

have made the trade-off of time for income. When we do restrict the sample to children in households under 185 percent of poverty, we find notably there is practically no difference in WIC participation by **infants** across maternal employment categories. Among income-eligible infants, the WIC participation rates range only from 63 to 65 percent (Exhibit 3.3). Thus, for this age group, for which the value of WIC benefits is particularly large, maternal employment is not an impediment to participation among the income-eligible. Large differences open up for income-eligible toddlers, however, comparable to those seen for children of all income levels combined.

---

### Exhibit 3.3

#### WIC Participation Among Income-Eligible Children (household income at or below 185%)

|                            | Maternal Employment Status |           |           | All Children |
|----------------------------|----------------------------|-----------|-----------|--------------|
|                            | Full-Time                  | Part-Time | Homemaker |              |
| <b>All children</b>        |                            |           |           |              |
| WIC participation          | 35.4%***                   | 35.9%***  | 46.4%     | 40.9%        |
| Maximum sample size        | 1,078                      | 602       | 1,710     | 3,390        |
| <b>By age group</b>        |                            |           |           |              |
| Infant (0 to 11 months)    |                            |           |           |              |
| WIC participation          | 62.8%                      | 62.5%     | 64.9%     | 64.0%        |
| Maximum sample size        | 159                        | 106       | 386       | 651          |
| 1 to 2 years               |                            |           |           |              |
| WIC participation          | 35.1%***                   | 36.3%***  | 50.2%     | 43.3%        |
| Maximum sample size        | 326                        | 190       | 637       | 1,153        |
| 3 to 4 years               |                            |           |           |              |
| WIC participation          | 25.0%***                   | 25.0%***  | 35.5%     | 29.5%        |
| Maximum sample size        | 593                        | 306       | 687       | 1,586        |
| <b>By income category</b>  |                            |           |           |              |
| Under 130% of poverty      |                            |           |           |              |
| WIC participation          | 41.6%***                   | 44.9%**   | 53.2%     | 48.1%        |
| Maximum sample size        | 695                        | 400       | 1,243     | 2,338        |
| 130 to 185% of poverty     |                            |           |           |              |
| WIC participation          | 26.7%*                     | 21.0%***  | 33.1%     | 28.4%        |
| Maximum sample size        | 383                        | 202       | 467       | 1,052        |
| <b>By number of adults</b> |                            |           |           |              |
| One                        |                            |           |           |              |
| WIC participation          | 42.4%**                    | 46.6%     | 54.8%     | 47.7%        |
| Maximum sample size        | 280                        | 118       | 242       | 640          |
| Multiple                   |                            |           |           |              |
| WIC participation          | 31.8%***                   | 32.5%***  | 44.8%     | 38.9%        |
| Maximum sample size        | 798                        | 484       | 1,468     | 2,750        |

\*\*\* Statistically significant difference from children whose mothers are homemakers at the 1 percent level

\*\* Statistically significant difference from children whose mothers are homemakers at the 5 percent level

\* Statistically significant difference from children whose mothers are homemakers at the 10 percent level

Children in one-adult households are substantially more likely to participate in WIC than children in households with multiple adults (41 percent *versus* 17 percent). No doubt this is largely due to lower household income. Note that even within these subgroups, however, children of working mothers are still significantly and substantially less likely to participate in WIC than children of homemaker mothers.

## Food Stamp Program

The FSP, the largest of the FNAPs, is available to virtually all low-income individuals, regardless of age, health, household composition, or other characteristics. Eligibility is determined based on income relative to household size and financial assets. The gross income limit (not applied to households with a member aged 60 or older) is 130 percent of poverty. The only groups barred from participating (with some exceptions) are individuals in institutions, students, strikers, illegal immigrants, and able-bodied adults without dependents who do not participate in a work program. Unlike the other FNAPs, the FSP determines eligibility and benefit amounts for the entire household, i.e., a group of people that prepares and consumes meals together. Although the FSP does not prescribe specific nutritious foods, food stamps do increase households' overall food purchasing power and have been demonstrated to increase food expenditures.<sup>17</sup>

FSP participation fell precipitously between 1994 and 2000, by about 40 percent. A lively debate rages as to the extent to which this is due to the improvement in the economy, PRWORA provisions that directly affected eligibility, and/or indirect effects of welfare reform such as changes in office practices.

It is to be expected that FSP participation would be lower among households with working mothers, because of the previously mentioned difference in income. In addition, there has long been concern among administrators that participation is difficult for working families because of the time requirements of applying and limited office hours (Barlett *et al.*, 1992; Gabor *et al.*, 2002).

The anticipated patterns are seen, in that FSP participation is substantially higher among children of homemaker mothers (22 percent) than children of full-time and working mothers (8 and 11 percent; Exhibit 3.4).<sup>18</sup> Older children are somewhat less likely to receive food stamp benefits than younger children. Within each age group, the strong relationship between maternal employment status and FSP participation is repeated. A small number of children's households reportedly receive food stamps, even though household income exceeds 130 percent of poverty. This is likely for the same reasons given in the preceding section, pertaining to measurement of income in the CSFII *versus* the certification process.

---

<sup>17</sup> For a summary of the literature on impacts of the FSP on food expenditures, household nutrient availability, and nutrient intake, see Burstein *et al.*, 2003.

<sup>18</sup> Participation in the FSP was defined as any household member currently authorized to receive food stamps (assuming other household members benefit).

---

**Exhibit 3.4****Participation in FSP**

---

|                            | <b>Maternal Employment Status</b> |                  |                  |                     |
|----------------------------|-----------------------------------|------------------|------------------|---------------------|
|                            | <b>Full-Time</b>                  | <b>Part-Time</b> | <b>Homemaker</b> | <b>All Children</b> |
| <b>All children</b>        |                                   |                  |                  |                     |
| FSP participation          | 7.7%***                           | 11.0%***         | 22.4%            | 12.8%               |
| Maximum sample size        | 6,430                             | 3,188            | 5,687            | 15,305              |
| <b>By age group</b>        |                                   |                  |                  |                     |
| 0 to 4 years               |                                   |                  |                  |                     |
| FSP participation          | 9.9%***                           | 14.1%***         | 24.6%            | 16.4%               |
| Maximum sample size        | 2,870                             | 1,524            | 2,940            | 7,334               |
| 5 to 8 years               |                                   |                  |                  |                     |
| FSP participation          | 7.4%***                           | 10.9%***         | 23.4%            | 13.1%               |
| Maximum sample size        | 1,534                             | 800              | 1,388            | 3,722               |
| 9 to 12 years              |                                   |                  |                  |                     |
| FSP participation          | 7.4%***                           | 9.1%***          | 19.6%            | 11.1%               |
| Maximum sample size        | 997                               | 477              | 783              | 2,257               |
| 13 to 17 years             |                                   |                  |                  |                     |
| FSP participation          | 5.6%***                           | 9.2%***          | 21.3%            | 9.8%                |
| Maximum sample size        | 1,029                             | 387              | 576              | 1,992               |
| <b>By income category</b>  |                                   |                  |                  |                     |
| Under 130% of poverty      |                                   |                  |                  |                     |
| FSP participation          | 34.8%***                          | 46.6%**          | 55.3%            | 46.1%               |
| Maximum sample size        | 1,714                             | 875              | 2,563            | 5,152               |
| 130 to 185% of poverty     |                                   |                  |                  |                     |
| FSP participation          | 5.8%*                             | 3.7%***          | 9.6%             | 6.5%                |
| Maximum sample size        | 884                               | 447              | 862              | 2,193               |
| Over 185% of poverty       |                                   |                  |                  |                     |
| FSP participation          | 0.7%                              | 0.7%             | 1.9%             | 1.0%                |
| Maximum sample size        | 3,832                             | 1,866            | 2,262            | 7,960               |
| <b>By number of adults</b> |                                   |                  |                  |                     |
| One                        |                                   |                  |                  |                     |
| FSP participation          | 22.5%***                          | 53.2%***         | 78.6%            | 39.1%               |
| Maximum sample size        | 952                               | 307              | 491              | 1,750               |
| Multiple                   |                                   |                  |                  |                     |
| FSP participation          | 4.6%***                           | 6.1%***          | 16.6%            | 8.7%                |
| Maximum sample size        | 5,478                             | 2,881            | 5,196            | 13,555              |

---

\*\*\* Statistically significant difference from children whose mothers are homemakers at the 1 percent level

\*\* Statistically significant difference from children whose mothers are homemakers at the 5 percent level

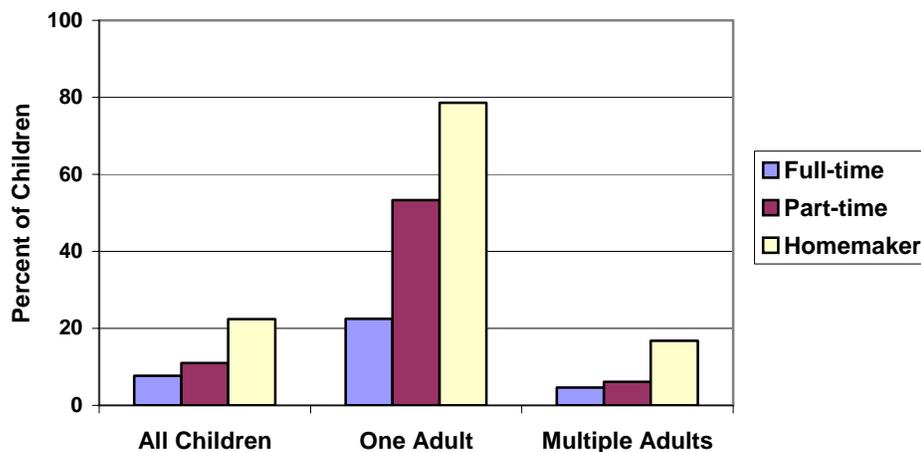
\* Statistically significant difference from children whose mothers are homemakers at the 10 percent level

Children in single-adult households with nonworking mothers are extremely likely to be receiving food stamps: the participation rate is 79 percent. Even if the mother is working, children in single-adult households are quite likely to receive food stamp benefits; 23 percent of such children whose mothers work full-time, and 53 percent of such children whose mothers work part-time, do so. Participation rates are much lower in multiple-adult households (Exhibit 3.5).

---

**Exhibit 3.5**

**FSP Participation, by Number of Adults and Maternal Employment Status**




---

Restricting the sample to children in households under 130 percent of poverty does not alter the pattern of results. Single-adult households are still substantially more likely to participate than multiple-adult households (68 percent *versus* 37 percent), and within each age and household type category the FSP participation rate is highest for children whose mothers are homemakers and lowest for children whose mothers work full-time (Exhibit 3.6).

For households receiving food stamps, the benefits can be considerable. The average monthly benefit received by participating households with children is \$252 for those with full-time working mothers, \$245 for those with part-time working mothers, and \$277 for those with non-working mothers (not shown).<sup>19</sup>

---

<sup>19</sup> CSFII caps reported FSP benefit amount at \$995. Only two sample members, however, had monthly benefits at or above \$995.

---

**Exhibit 3.6****FSP Participation Among Income-Eligible Children (household income under 130% of poverty)**

---

|                            | <b>Maternal Employment Status</b> |                  |                  |                     |
|----------------------------|-----------------------------------|------------------|------------------|---------------------|
|                            | <b>Full-Time</b>                  | <b>Part-Time</b> | <b>Homemaker</b> | <b>All Children</b> |
| <b>All children</b>        |                                   |                  |                  |                     |
| FSP participation          | 34.8%***                          | 46.6%**          | 55.3%            | 46.1%               |
| Maximum sample size        | 1,714                             | 875              | 2,563            | 5,152               |
| <b>By age group</b>        |                                   |                  |                  |                     |
| 0 to 4 years               |                                   |                  |                  |                     |
| FSP participation          | 41.5%***                          | 52.4%            | 59.9%            | 53.0%               |
| Maximum sample size        | 694                               | 400              | 1,248            | 2,342               |
| 5 to 8 years               |                                   |                  |                  |                     |
| FSP participation          | 30.7%***                          | 46.4%**          | 59.7%            | 46.1%               |
| Maximum sample size        | 432                               | 221              | 623              | 1,276               |
| 9 to 12 years              |                                   |                  |                  |                     |
| FSP participation          | 34.3%***                          | 40.0%*           | 53.7%            | 42.9%               |
| Maximum sample size        | 307                               | 142              | 380              | 829                 |
| 13 to 17 years             |                                   |                  |                  |                     |
| FSP participation          | 30.0%**                           | 44.7%            | 45.3%            | 39.3%               |
| Maximum sample size        | 281                               | 112              | 312              | 705                 |
| <b>By income category</b>  |                                   |                  |                  |                     |
| Under 130% of poverty      |                                   |                  |                  |                     |
| FSP participation          | 34.8%***                          | 46.6%**          | 55.3%            | 46.1%               |
| Maximum sample size        | 1,714                             | 875              | 2,563            | 5,152               |
| <b>By number of adults</b> |                                   |                  |                  |                     |
| One                        |                                   |                  |                  |                     |
| FSP participation          | 53.6%***                          | 69.7%***         | 85.3%            | 67.7%               |
| Maximum sample size        | 545                               | 256              | 460              | 1,261               |
| Multiple                   |                                   |                  |                  |                     |
| FSP participation          | 24.0%***                          | 33.3%***         | 46.6%            | 36.7%               |
| Maximum sample size        | 1,169                             | 619              | 2,103            | 3,891               |

---

\*\*\* Statistically significant difference from children whose mothers are homemakers at the 1 percent level

\*\* Statistically significant difference from children whose mothers are homemakers at the 5 percent level

\* Statistically significant difference from children whose mothers are homemakers at the 10 percent level

---

## School Breakfast Program

The SBP is available to children in public and not-for-profit private schools, in districts and schools that choose to participate—currently about 70 percent of schools nationwide (FNS, 2002). In order for schools to receive reimbursement, school breakfasts must meet federal nutrition standards. On average, they must provide at least 25 percent of the RDA for food energy and key nutrients, and meet the goals of the *Dietary Guidelines for Americans*. A typical school breakfast includes milk; fruit, vegetable, or fruit or vegetable juice; and two servings of grains/bread, meat, or bread or meat alternates (e.g., cereal, eggs) (Fox *et al.*, 2001). Children can qualify to receive free breakfasts if their household income is below 130 percent of poverty, and to receive reduced-price breakfasts if their

household income is below 185 percent of poverty. Only a small fraction of children who participate—17 percent in fiscal year 2001—pay full price.

Although the higher household income of children of working mothers is a factor that would tend to reduce SBP participation, the convenience of the program might be attractive to full-time working mother. Overall, children of working mothers, especially part-time working mothers, are significantly less likely than children of homemaker mothers to participate in the SBP (16 to 20 percent *versus* 28 percent of children; Exhibit 3.7).<sup>20</sup> The pattern persists if we consider “substantive” participation, i.e., taking school breakfast more than once a week. Among children of part-time and full-time working mothers, only 10 and 14 percent, respectively, do so, compared with 20 percent of children of homemakers (Exhibit 3.8).

### Exhibit 3.7

#### Participation in the SBP

|                       | Maternal Employment Status |           |           | All Children |
|-----------------------|----------------------------|-----------|-----------|--------------|
|                       | Full-Time                  | Part-Time | Homemaker |              |
| <b>All children</b>   |                            |           |           |              |
| Not in school         | 4.2%***                    | 4.7%**    | 6.7%      | 5.0%         |
| In school, no program | 35.3                       | 43.0***   | 34.1      | 36.8         |
| Program not used      | 40.1***                    | 35.9*     | 31.1      | 36.8         |
| Program used          | 20.4***                    | 16.4***   | 28.1      | 21.4         |
| Maximum sample size   | 3,384                      | 1,590     | 2,587     | 7,561        |
| <b>By age group</b>   |                            |           |           |              |
| 5 to 8 years          |                            |           |           |              |
| Not in school         | 8.3%**                     | 9.2%      | 12.3%     | 9.7%         |
| In school, no program | 32.5                       | 37.9      | 33.7      | 34.1         |
| Program not used      | 35.7**                     | 30.7      | 28.2      | 32.3         |
| Program used          | 23.6                       | 22.2      | 25.8      | 23.9         |
| Maximum sample size   | 1,471                      | 771       | 1,313     | 3,555        |
| 9 to 12 years         |                            |           |           |              |
| Not in school         | 0.5%**                     | 0.9%*     | 2.5%      | 1.1%         |
| In school, no program | 32.5                       | 41.1      | 32.3      | 34.4         |
| Program not used      | 41.5***                    | 38.7*     | 30.6      | 37.9         |
| Program used          | 25.6**                     | 19.3***   | 34.7      | 26.5         |
| Maximum sample size   | 973                        | 467       | 753       | 2,193        |
| 13 to 17 years        |                            |           |           |              |
| Not in school         | 3.7%                       | 3.9%      | 5.2%      | 4.1%         |
| In school, no program | 40.7                       | 50.0***   | 36.2      | 41.8         |
| Program not used      | 43.3*                      | 38.3      | 34.3      | 40.3         |
| Program used          | 12.3***                    | 7.8***    | 24.2      | 13.9         |
| Maximum sample size   | 940                        | 352       | 521       | 1,813        |

<sup>20</sup> SBP participation is defined here as the child getting a complete school breakfast at least once per week.

---

**Exhibit 3.7****Participation in the SBP**

---

|                            | <b>Maternal Employment Status</b> |                  |                  | <b>All Children</b> |
|----------------------------|-----------------------------------|------------------|------------------|---------------------|
|                            | <b>Full-Time</b>                  | <b>Part-Time</b> | <b>Homemaker</b> |                     |
| <b>By income category</b>  |                                   |                  |                  |                     |
| Under 130% of poverty      |                                   |                  |                  |                     |
| Not in school              | 5.1%                              | 4.6%             | 5.3%             | 5.1%                |
| In school, no program      | 16.9                              | 24.0*            | 17.2             | 18.4                |
| Program not used           | 27.8                              | 28.4             | 24.7             | 26.7                |
| Program used               | 50.2                              | 43.0**           | 52.8             | 49.8                |
| Maximum sample size        | 973                               | 446              | 1,236            | 2,655               |
| 130 to 185% of poverty     |                                   |                  |                  |                     |
| Not in school              | 2.8%**                            | 5.7%             | 5.6%             | 4.5%                |
| In school, no program      | 21.0                              | 32.4***          | 17.8             | 23.3                |
| Program not used           | 48.3                              | 45.3             | 43.3             | 46.0                |
| Program used               | 27.9                              | 16.6***          | 33.3             | 26.3                |
| Maximum sample size        | 470                               | 237              | 370              | 1,077               |
| Over 185% of poverty       |                                   |                  |                  |                     |
| Not in school              | 4.2%**                            | 4.5%**           | 8.0%             | 5.1%                |
| In school, no program      | 43.0**                            | 52.0             | 51.7             | 46.9                |
| Program not used           | 42.0***                           | 35.9             | 31.8             | 38.5                |
| Program used               | 10.8                              | 7.6              | 8.5              | 9.5                 |
| Maximum sample size        | 1,941                             | 907              | 981              | 3,829               |
| <b>By number of adults</b> |                                   |                  |                  |                     |
| One                        |                                   |                  |                  |                     |
| Not in school              | 4.1%                              | 4.4%             | 4.5%             | 4.1%                |
| In school, no program      | 30.2                              | 31.5             | 29.0             | 30.2                |
| Program not used           | 33.9*                             | 23.1             | 23.2             | 30.4                |
| Program used               | 31.9*                             | 41.0             | 43.3             | 35.3                |
| Maximum sample size        | 558                               | 170              | 219              | 947                 |
| Multiple                   |                                   |                  |                  |                     |
| Not in school              | 4.2%***                           | 4.8%**           | 7.0%             | 5.2%                |
| In school, no program      | 36.5                              | 44.1***          | 34.7             | 37.9                |
| Program not used           | 41.4***                           | 37.5*            | 31.7             | 37.8                |
| Program used               | 17.9***                           | 13.6***          | 26.6             | 19.1                |
| Maximum sample size        | 2,826                             | 1,420            | 2,368            | 6,614               |

---

\*\*\* Statistically significant difference from children whose mothers are homemakers at the 1 percent level

\*\* Statistically significant difference from children whose mothers are homemakers at the 5 percent level

\* Statistically significant difference from children whose mothers are homemakers at the 10 percent level

---

**Exhibit 3.8**  
**SBP Participation, by Frequency of Use of Program**

|                                      | Maternal Employment Status |           |           | All Children |
|--------------------------------------|----------------------------|-----------|-----------|--------------|
|                                      | Full-Time                  | Part-Time | Homemaker |              |
| <b>All children</b>                  |                            |           |           |              |
| Not in school                        | 4.2%***                    | 4.7%**    | 6.7%      | 5.0%         |
| In school, no program                | 35.3                       | 43.0***   | 34.1      | 36.8         |
| Program not used                     | 40.1***                    | 35.9*     | 31.1      | 36.8         |
| Program used up to once per week     | 6.4*                       | 6.1**     | 8.6       | 6.9          |
| Program used more than once per week | 14.0***                    | 10.3***   | 19.6      | 14.5         |
| Maximum sample size                  | 3,384                      | 1,590     | 2,587     | 7,561        |
| <b>By age group</b>                  |                            |           |           |              |
| 5 to 8 years                         |                            |           |           |              |
| Not in school                        | 8.3%**                     | 9.2%      | 12.3%     | 9.7%         |
| In school, no program                | 32.5                       | 37.9      | 33.7      | 34.1         |
| Program not used                     | 35.7**                     | 30.7      | 28.2      | 32.3         |
| Program used up to once per week     | 6.2                        | 8.5       | 6.6       | 6.9          |
| Program used more than once per week | 17.4                       | 13.7*     | 19.1      | 17.0         |
| Maximum sample size                  | 1,471                      | 771       | 1,313     | 3,555        |
| 9 to 12 years                        |                            |           |           |              |
| Not in school                        | 0.5%**                     | 0.9%*     | 2.5%      | 1.1%         |
| In school, no program                | 32.5                       | 41.1      | 32.3      | 34.4         |
| Program not used                     | 41.5***                    | 38.7*     | 30.6      | 37.9         |
| Program used up to once per week     | 8.0                        | 6.6*      | 11.7      | 8.7          |
| Program used more than once per week | 17.5                       | 12.7***   | 23.0      | 17.9         |
| Maximum sample size                  | 973                        | 467       | 753       | 2,193        |
| 13 to 17 years                       |                            |           |           |              |
| Not in school                        | 3.7%                       | 3.9%      | 5.2%      | 4.1%         |
| In school, no program                | 40.7                       | 50.0***   | 36.2      | 41.8         |
| Program not used                     | 43.3*                      | 38.3      | 34.3      | 40.3         |
| Program used up to once per week     | 5.1                        | 3.2***    | 7.5       | 5.2          |
| Program used more than once per week | 7.2***                     | 4.6***    | 16.7      | 8.7          |
| Maximum sample size                  | 940                        | 352       | 521       | 1,813        |
| <b>By income category</b>            |                            |           |           |              |
| Under 130% of poverty                |                            |           |           |              |
| Not in school                        | 5.1%                       | 4.6%      | 5.3%      | 5.1%         |
| In school, no program                | 16.9                       | 24.0*     | 17.2      | 18.4         |
| Program not used                     | 27.8                       | 28.4      | 24.7      | 26.7         |
| Program used up to once per week     | 9.0                        | 12.4      | 10.2      | 10.2         |
| Program used more than once per week | 41.2                       | 30.6***   | 42.6      | 39.6         |
| Maximum sample size                  | 973                        | 446       | 1,236     | 2,655        |

**Exhibit 3.8**  
**SBP Participation, by Frequency of Use of Program**

|                                      | Maternal Employment Status |           |           | All Children |
|--------------------------------------|----------------------------|-----------|-----------|--------------|
|                                      | Full-Time                  | Part-Time | Homemaker |              |
| <b>130 to 185% of poverty</b>        |                            |           |           |              |
| Not in school                        | 2.8%**                     | 5.7%      | 5.6%      | 4.5%         |
| In school, no program                | 21.0                       | 32.4***   | 17.8      | 23.3         |
| Program not used                     | 48.3                       | 45.3      | 43.3      | 46.0         |
| Program used up to once per week     | 10.5                       | 4.8*      | 11.3      | 9.1          |
| Program used more than once per week | 17.3                       | 11.8**    | 22.0      | 17.2         |
| Maximum sample size                  | 470                        | 237       | 370       | 1,077        |
| <b>Over 185% of poverty</b>          |                            |           |           |              |
| Not in school                        | 4.2%**                     | 4.5%**    | 8.0%      | 5.1%         |
| In school, no program                | 43.0**                     | 52.0      | 51.7      | 46.9         |
| Program not used                     | 42.0***                    | 35.9      | 31.8      | 38.5         |
| Program used up to once per week     | 5.0                        | 4.4       | 6.2       | 5.1          |
| Program used more than once per week | 5.8***                     | 3.3       | 2.4       | 4.3          |
| Maximum sample size                  | 1,941                      | 907       | 981       | 3,829        |
| <b>By number of adults</b>           |                            |           |           |              |
| <b>One</b>                           |                            |           |           |              |
| Not in school                        | 4.1%                       | 4.4%      | 4.5%      | 4.1%         |
| In school, no program                | 30.2                       | 31.5      | 29.0      | 30.2         |
| Program not used                     | 33.9*                      | 23.1      | 23.2      | 30.4         |
| Program used up to once per week     | 8.0                        | 12.9*     | 5.8       | 8.6          |
| Program used more than once per week | 23.9**                     | 28.2      | 37.5      | 26.8         |
| Maximum sample size                  | 558                        | 170       | 219       | 947          |
| <b>Multiple</b>                      |                            |           |           |              |
| Not in school                        | 4.2%***                    | 4.8%**    | 7.0%      | 5.2%         |
| In school, no program                | 36.5                       | 44.1***   | 34.7      | 37.9         |
| Program not used                     | 41.4***                    | 37.5*     | 31.7      | 37.8         |
| Program used up to once per week     | 6.1**                      | 5.3***    | 8.8       | 6.6          |
| Program used more than once per week | 11.8***                    | 8.3***    | 17.8      | 12.5         |
| Maximum sample size                  | 2,826                      | 1,420     | 2,368     | 6,614        |

\*\*\* Statistically significant difference from children whose mothers are homemakers at the 1 percent level

\*\* Statistically significant difference from children whose mothers are homemakers at the 5 percent level

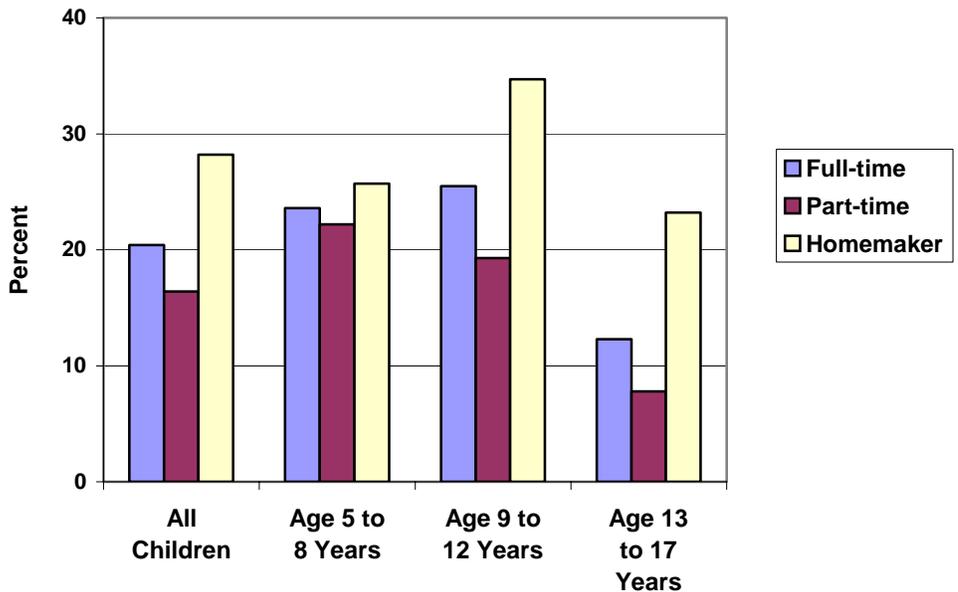
\* Statistically significant difference from children whose mothers are homemakers at the 10 percent level

Part of the low participation rate among children of part-time working mothers may be due to the fact that SBP is **unavailable** to them. The proportions of school-aged children attending a school that opted out of SBP was 43 percent for those whose mothers worked part-time, *versus* 34 and 35 percent for the other two groups.

Combining across mother’s employment status, SBP participation is seen to decline sharply with entrance into secondary school. Whereas 24 percent of all 5- to 8-year-olds, and 26 percent of all 9- to 12-year olds, take school breakfasts at least occasionally, the corresponding proportion for 13- to 17-year olds is only 14 percent. It must be noted, however, that breakfasts are less likely to be available to teenagers in their schools; 42 percent of them are in schools that do not participate, compared with 34 percent of children in both of the two younger age groups. Within each age group, the same general pattern is seen, that children of non-working mothers are more likely to take school breakfasts than children of mothers who work, with children of part-time working mothers having the lowest participation rates (Exhibit 3.9).

**Exhibit 3.9**

**SBP Participation, by Maternal Employment Status**



The patterns by household income are most striking. SBP participation is highly concentrated among lower-income children. Overall, 50 percent of school-aged children in households under 130 percent of poverty take school breakfasts, compared with only 26 percent and 9 percent in the two higher income categories. Remarkably, within each income category, SBP participation among children of full-time working mothers is practically the same as among children of homemakers (Exhibit 3.10). The implication is that the low overall participation rates seen for children of full-time working mothers are a function of their income; when that is taken into account, full-time working mothers are

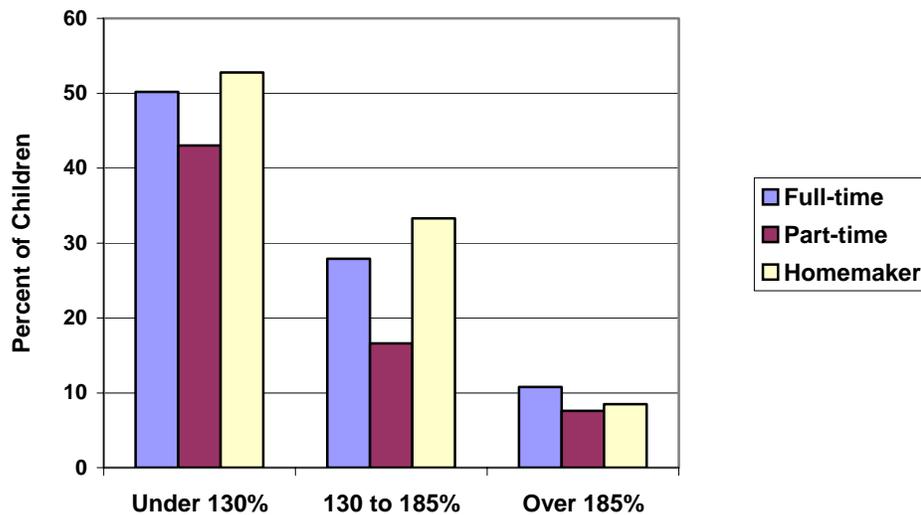
about as likely to take advantage of the program as homemakers. Even within income groups, however, participation rates are lower for children of part-time working mothers, significantly so in the two lower-income groups.

Children in single-adult households are substantially more likely to participate in SBP than their counterparts in multiple-adult households—35 *versus* 19 percent. Although multiple adult households look like the population as a whole, a different pattern is seen among single-adult households, where children with part-time working mothers are nearly as likely to participate as children of non-working mothers.

---

### Exhibit 3.10

#### SBP Participation, by Household Income as Percent of Poverty and Maternal Employment Status



---

## National School Lunch Program

The NSLP is available in practically all public and not-for-profit private schools. The eligibility criteria for free, reduced-price, and full-price meals are the same as in the SBP. Reimbursable meals typically include milk, a meat or meat alternate-based entrée, a grain or bread, and two or more fruit and/or vegetable items (Fox *et al.*, 2001). On average, they must provide at least 33 percent of the RDA for food energy and key nutrients, and meet the goals of the *Dietary Guidelines for Americans*.

Overall, 71 percent of school-aged children take school lunches at least occasionally (once per week; Exhibit 3.11). Children of full-time working mothers are significantly more likely to participate than children of either part-time working mothers or homemakers (74 *versus* 69 percent). This same pattern is seen in each of the three age groups as well, although the difference between children of full-time working mothers and homemakers is not statistically significant for teenagers (Exhibit 3.12).

When only “substantive” participation (more than once a week) is considered, however, children of part-time working mothers have substantially lower participation (45 percent) than children of full-time working and homemaker mothers (55 and 53 percent, respectively; Exhibit 3.13).

**Exhibit 3.11**

**Participation in NSLP**

|                           | Maternal Employment Status |           |           | All Children |
|---------------------------|----------------------------|-----------|-----------|--------------|
|                           | Full-Time                  | Part-Time | Homemaker |              |
| <b>All children</b>       |                            |           |           |              |
| Not in school             | 4.1%***                    | 4.6%**    | 6.6%      | 4.9%         |
| In school, no program     | 5.1                        | 7.8       | 6.8       | 6.2          |
| Program not used          | 17.1                       | 18.8      | 17.3      | 17.7         |
| Program used              | 73.6**                     | 68.9      | 69.2      | 71.2         |
| Maximum sample size       | 3,440                      | 1,627     | 2,642     | 7,709        |
| <b>By age group</b>       |                            |           |           |              |
| 5 to 8 years              |                            |           |           |              |
| Not in school             | 8.2%**                     | 9.0%      | 12.1%     | 9.6%         |
| In school, no program     | 6.4                        | 7.8       | 8.3       | 7.3          |
| Program not used          | 13.6                       | 18.3      | 16.3      | 15.5         |
| Program used              | 71.8***                    | 64.8      | 63.3      | 67.6         |
| Maximum sample size       | 1,487                      | 791       | 1,341     | 3,619        |
| 9 to 12 years             |                            |           |           |              |
| Not in school             | 0.4%**                     | 0.9%      | 2.4%      | 1.1%         |
| In school, no program     | 3.8                        | 5.8       | 5.1       | 4.6          |
| Program not used          | 13.7                       | 14.8      | 15.5      | 14.4         |
| Program used              | 82.0*                      | 78.5      | 77.0      | 79.9         |
| Maximum sample size       | 991                        | 472       | 772       | 2,235        |
| 13 to 17 years            |                            |           |           |              |
| Not in school             | 3.6%                       | 3.8%      | 5.2%      | 4.0%         |
| In school, no program     | 5.1                        | 9.6       | 6.9       | 6.5          |
| Program not used          | 23.9                       | 22.9      | 20.1      | 22.9         |
| Program used              | 67.4                       | 63.7      | 67.8      | 66.6         |
| Maximum sample size       | 962                        | 364       | 529       | 1,855        |
| <b>By income category</b> |                            |           |           |              |
| Under 130% of poverty     |                            |           |           |              |
| Not in school             | 5.1%                       | 4.5%      | 5.2%      | 5.0%         |
| In school, no program     | 1.1**                      | 3.2       | 3.7       | 2.6          |
| Program not used          | 7.9                        | 12.4      | 10.2      | 9.7          |
| Program used              | 85.8**                     | 79.9      | 80.9      | 82.7         |
| Maximum sample size       | 982                        | 458       | 1,260     | 2,700        |
| 130 to 185% of poverty    |                            |           |           |              |
| Not in school             | 2.8%**                     | 5.6%      | 5.5%      | 4.4%         |
| In school, no program     | 3.2                        | 3.9       | 4.1       | 3.6          |
| Program not used          | 11.7                       | 7.6       | 12.5      | 11.2         |
| Program used              | 82.3                       | 82.9      | 77.9      | 80.8         |
| Maximum sample size       | 477                        | 242       | 384       | 1,103        |

**Exhibit 3.11**

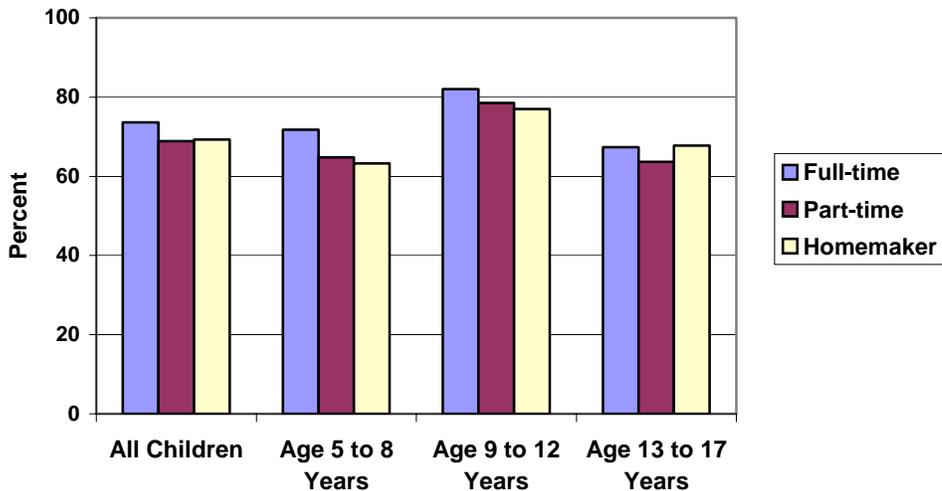
**Participation in NSLP**

|                            | Maternal Employment Status |           |           | All Children |
|----------------------------|----------------------------|-----------|-----------|--------------|
|                            | Full-Time                  | Part-Time | Homemaker |              |
| Over 185% of poverty       |                            |           |           |              |
| Not in school              | 4.1%**                     | 4.4%**    | 7.8%      | 5.0%         |
| In school, no program      | 6.6*                       | 10.3      | 9.9       | 8.1          |
| Program not used           | 20.6                       | 23.6      | 23.9      | 22.1         |
| Program used               | 68.7***                    | 61.6      | 58.5      | 64.8         |
| Maximum sample size        | 1,981                      | 927       | 998       | 3,906        |
| <b>By number of adults</b> |                            |           |           |              |
| <b>One</b>                 |                            |           |           |              |
| Not in school              | 4.0%                       | 4.3%      | 4.4%      | 4.0%         |
| In school, no program      | 4.3                        | 4.8       | 7.5       | 5.0          |
| Program not used           | 14.7                       | 15.5      | 21.2      | 16.1         |
| Program used               | 77.0*                      | 75.4      | 66.9      | 74.9         |
| Maximum sample size        | 566                        | 172       | 225       | 963          |
| <b>Multiple</b>            |                            |           |           |              |
| Not in school              | 4.1%***                    | 4.7%**    | 6.9%      | 5.1%         |
| In school, no program      | 5.3                        | 8.1       | 6.8       | 6.4          |
| Program not used           | 17.6                       | 18.8      | 17.1      | 17.9         |
| Program used               | 72.9                       | 68.4      | 69.3      | 70.6         |
| Maximum sample size        | 2,874                      | 1,455     | 2,417     | 6,746        |

\*\*\* Statistically significant difference from children whose mothers are homemakers at the 1 percent level  
 \*\* Statistically significant difference from children whose mothers are homemakers at the 5 percent level  
 \* Statistically significant difference from children whose mothers are homemakers at the 10 percent level

**Exhibit 3.12**

**NSLP Participation, by Maternal Employment Status**



**Exhibit 3.13**

**NSLP Participation, by Frequency of Use of the Program**

|                                      | Maternal Employment Status |           |           | All Children |
|--------------------------------------|----------------------------|-----------|-----------|--------------|
|                                      | Full-Time                  | Part-Time | Homemaker |              |
| <b>All children</b>                  |                            |           |           |              |
| Not in school                        | 4.1%***                    | 4.6%**    | 6.6%      | 4.9%         |
| In school, no program                | 5.1                        | 7.8       | 6.8       | 6.2          |
| Program not used                     | 17.1                       | 18.8      | 17.3      | 17.7         |
| Program used up to once per week     | 18.2                       | 24.0***   | 16.5      | 19.1         |
| Program used more than once per week | 55.4                       | 44.9***   | 52.8      | 52.1         |
| Maximum sample size                  | 3,440                      | 1,627     | 2,642     | 7,709        |
| <b>By age group</b>                  |                            |           |           |              |
| 5 to 8 years                         |                            |           |           |              |
| Not in school                        | 8.2%**                     | 9.0%      | 12.1%     | 9.6%         |
| In school, no program                | 6.4                        | 7.8       | 8.3       | 7.3          |
| Program not used                     | 13.6                       | 18.3      | 16.3      | 15.5         |
| Program used up to once per week     | 18.8                       | 24.0**    | 17.2      | 19.5         |
| Program used more than once per week | 53.1**                     | 40.8      | 46.1      | 48.1         |
| Maximum sample size                  | 1,487                      | 791       | 1,341     | 3,619        |
| 9 to 12 years                        |                            |           |           |              |
| Not in school                        | 0.4%**                     | 0.9%      | 2.4%      | 1.1%         |
| In school, no program                | 3.8                        | 5.8       | 5.1       | 4.6          |
| Program not used                     | 13.7                       | 14.8      | 15.5      | 14.4         |
| Program used up to once per week     | 19.3                       | 27.8**    | 19.0      | 21.2         |
| Program used more than once per week | 62.7                       | 50.7      | 58.0      | 58.7         |
| Maximum sample size                  | 991                        | 472       | 772       | 2,235        |
| 13 to 17 years                       |                            |           |           |              |
| Not in school                        | 3.6%                       | 3.8%      | 5.2%      | 4.0%         |
| In school, no program                | 5.1                        | 9.6       | 6.9       | 6.5          |
| Program not used                     | 23.9                       | 22.9      | 20.1      | 22.9         |
| Program used up to once per week     | 16.6                       | 20.3*     | 13.4      | 16.8         |
| Program used more than once per week | 50.7                       | 43.4**    | 54.4      | 49.9         |
| Maximum sample size                  | 962                        | 364       | 529       | 1,855        |
| <b>By income category</b>            |                            |           |           |              |
| Under 130% of poverty                |                            |           |           |              |
| Not in school                        | 5.1%                       | 4.5%      | 5.2%      | 5.0%         |
| In school, no program                | 1.1**                      | 3.2       | 3.7       | 2.6          |
| Program not used                     | 7.9                        | 12.4      | 10.2      | 9.7          |
| Program used up to once per week     | 7.8                        | 8.2       | 7.8       | 7.9          |

**Exhibit 3.13**

**NSLP Participation, by Frequency of Use of the Program**

|                                      | Maternal Employment Status |           |           | All Children |
|--------------------------------------|----------------------------|-----------|-----------|--------------|
|                                      | Full-Time                  | Part-Time | Homemaker |              |
| Program used more than once per week | 78.0*                      | 71.6      | 73.1      | 74.7         |
| Maximum sample size                  | 982                        | 458       | 1,260     | 2,700        |
| 130 to 185% of poverty               |                            |           |           |              |
| Not in school                        | 2.8%**                     | 5.6%      | 5.5%      | 4.4%         |
| In school, no program                | 3.2                        | 3.9       | 4.1       | 3.6          |
| Program not used                     | 11.7                       | 7.6       | 12.5      | 11.2         |
| Program used up to once per week     | 11.2                       | 26.0**    | 13.1      | 15.4         |
| Program used more than once per week | 71.1                       | 57.0      | 64.8      | 65.4         |
| Maximum sample size                  | 477                        | 242       | 384       | 1,103        |
| Over 185% of poverty                 |                            |           |           |              |
| Not in school                        | 4.1%**                     | 4.4%**    | 7.8%      | 5.0%         |
| In school, no program                | 6.6*                       | 10.3      | 9.9       | 8.1          |
| Program not used                     | 20.6                       | 23.6      | 23.9      | 22.1         |
| Program used up to once per week     | 22.5                       | 28.6*     | 23.2      | 24.2         |
| Program used more than once per week | 46.2***                    | 33.1      | 35.3      | 40.6         |
| Maximum sample size                  | 1,981                      | 927       | 998       | 3,906        |
| <b>By number of adults</b>           |                            |           |           |              |
| <b>One</b>                           |                            |           |           |              |
| Not in school                        | 4.0%                       | 4.3%      | 4.4%      | 4.0%         |
| In school, no program                | 4.3                        | 4.8       | 7.5       | 5.0          |
| Program not used                     | 14.7                       | 15.5      | 21.2      | 16.1         |
| Program used up to once per week     | 15.9***                    | 6.1       | 5.6       | 12.5         |
| Program used more than once per week | 62.1                       | 69.3      | 61.3      | 62.4         |
| Maximum sample size                  | 566                        | 172       | 225       | 963          |
| <b>Multiple</b>                      |                            |           |           |              |
| Not in school                        | 4.1%***                    | 4.7%**    | 6.9%      | 5.1%         |
| In school, no program                | 5.3                        | 8.1       | 6.8       | 6.4          |
| Program not used                     | 17.6                       | 18.8      | 17.1      | 17.9         |
| Program used up to once per week     | 18.8                       | 26.0***   | 17.5      | 20.2         |
| Program used more than once per week | 54.1                       | 42.4***   | 51.8      | 50.4         |
| Maximum sample size                  | 2,874                      | 1,455     | 2,417     | 6,746        |

\*\*\* Statistically significant difference from children whose mothers are homemakers at the 1 percent level

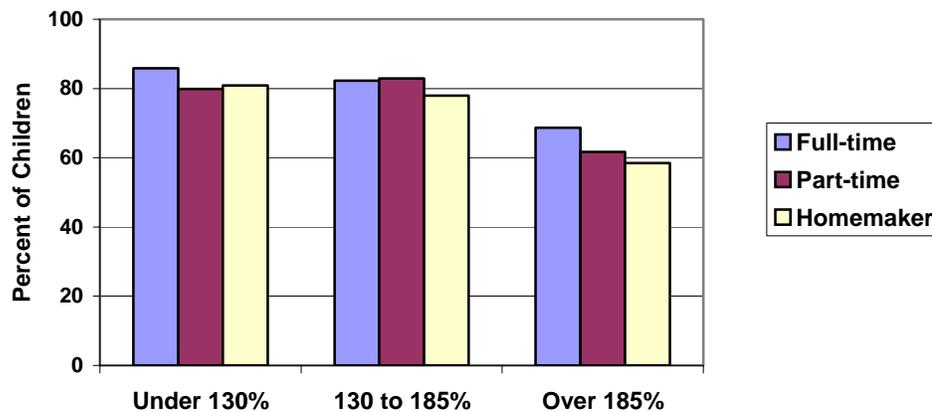
\*\* Statistically significant difference from children whose mothers are homemakers at the 5 percent level

\* Statistically significant difference from children whose mothers are homemakers at the 10 percent level

Although not nearly as concentrated among low-income children as SBP participation, NSLP participation is nonetheless somewhat lower among children in higher income households: 65 percent among children in households over 185 percent of poverty, *versus* 81 percent and 83 percent in the two higher income groups. Participation is also higher among children in one-adult households than in multiple adult households (75 percent *versus* 71 percent). In every subgroup, children whose mothers are employed full-time are more likely to participate than children whose mothers are homemakers, although the differences are not always statistically significant. Especially striking is the 10 percentage point gap among children in households above 185 percent of poverty (Exhibit 3.14).

**Exhibit 3.14**

**NSLP Participation, by Household Income as Percent of Poverty and Maternal Employment Status**



**Summary**

Children of working mothers are less likely than other children to participate in WIC, FSP, and SBP, but are more likely, if their mothers work full-time, to participate in the NSLP. This is partially explainable by differences in income, but there are still likely issues of access. Although it would be desirable to reduce barriers to working families participating in WIC and FSP, these comparisons also show the potential importance of CACFP as a program that can specifically improve the nutrition of children of working mothers.

Although children of full-time working mothers are substantially less likely to participate in SBP than children of homemakers, this program is heavily concentrated among low-income households, and the differences vanish when income is taken into account. Children of part-time working mothers are less likely than either of the other two groups to take school breakfasts, perhaps because the stigma associated with this program is not sufficiently balanced by convenience for mothers who work only part-time (Glantz *et al.*, 1994).

Children's participation in NSLP is also negatively related to income, but much less strongly. Even among children in households over 185 percent of poverty the participation rate is 65 percent. Children of full-time working mothers are generally more likely to participate than children of part-time working and homemaker mothers overall and in each subgroup, although not all of the subgroup differences are statistically significant. Substantive participation (more than once a week) is about the same for children of full-time working mothers and homemakers, and 10 percentage points higher than for children of part-time working mothers.

## Chapter 4

# Children's Physical Activity and Risk of Overweight

Overweight in children is an important nutrition-related problem in the United States. The proportion of overweight children and adolescents has essentially tripled over the last three decades, and an estimated 15 percent are now overweight (CDC/NCHS, 2002). The prevalence of child overweight is especially great among minorities (Strauss and Pollack, 2001). There is also evidence that overweight during childhood continues into adulthood (Guo *et al.*, 1994); in adults, overweight and obesity are associated with increased risk for heart disease, diabetes, high blood pressure and stroke, and other diseases. Children's excess food energy intake, discussed in Chapters 2 and 3 of volume 1 of this study, is just one of the factors contributing to this problem.

Sedentary lifestyles and low levels of physical activity may be even more important risk factors for overweight and obesity in children than excess energy intake (Schlicker *et al.*, 1994). Factors contributing to reduced physical activity include increased television and video watching and greater use of computers, as well as reduced participation in physical activity classes in school (Anderson *et al.*, 1998). In addition to contributing to overweight, a sedentary lifestyle is considered a risk factor for cardiovascular disease according to the American Heart Association (Fletcher *et al.*, 1996).

Because of lack of maternal supervision, it was hypothesized that children whose mothers work might watch more television and be less physically active than children with homemaker mothers are. Although these factors may contribute to the development of overweight, the increased financial resources associated with maternal employment might help to provide a stable supply of higher quality food, which could help control a child's weight. This chapter presents results of bivariate analyses of children's physical activity levels and risk of overweight, relative to mothers' employment status.

Outcome measures from the CSFII that assess physical activity level include reported frequency of engaging in vigorous exercise and time spent viewing television or videotapes. Data on vigorous exercise were available for children age 12 to 17. Children's risk of overweight (and underweight) was determined from calculations of BMI, based on reported measures of body weight and height. As discussed below, height and weight data for children under age 12 were not used for this analysis. Results are tabulated for all children and by age and income group; where sample sizes permit, results are also tabulated for the number of adults in the home.<sup>21</sup> In addition, findings from the analysis of children's weight status are presented separately for boys and girls.

Although the observed differences in children's physical activity and risk of overweight by maternal employment are not great, they tend to be in the direction of worse outcomes for children of full-time working mothers relative to children of homemaker mothers. In particular:

- Children age 12 to 17 whose mothers work are equally as likely to engage in daily vigorous exercise as children of homemaker mothers.

---

<sup>21</sup> For some analyses, it was also not possible to break out children in households with income under 130 percent of the federal poverty level because of small sample sizes.

- Children of full-time working mothers are more likely to watch television (TV) or videos for more than two hours daily than children of homemakers (48 percent *versus* 40 percent).
- Children with both part-time and full-time working mothers, especially those under age 5, are less likely to avoid TV/video watching altogether than children of homemaker mothers.
- Children’s TV/video watching is negatively related to household income, although maternal employment does not modify this relationship. About half of all children who reside in households living under 130 percent of poverty spend more than two hours daily on this activity.
- Among 12- to 14-year-olds, children whose mothers work full-time are at significantly greater risk of overweight than children whose mothers are homemakers.
- Adolescent boys tend to be at greater risk of overweight than girls, and lower-income adolescents more so than those in families with higher income. These patterns are not significantly altered across maternal employment categories.

Among children age 12 to 17, the proportion engaging in vigorous daily exercise is the same regardless of mothers’ employment status (43 percent). Scattered significant differences are seen across income categories, but they follow no consistent pattern.

## Physical Activity Level

The *Dietary Guidelines for Americans* recommend that children get at least 60 minutes of physical activity daily (USDA/HHS and USDA, 2000). The CSFII item on physical activity gauges the frequency of vigorous exercise (“enough to work up a sweat”) among 980 adolescents age 12 to 17 years. Overall, about 43 percent of these children exercise daily and 20 percent exercise once a week or less (Exhibit 4.1). The frequency of vigorous exercise varies little by age group or household income.

The proportions of children exercising daily are practically identical across the three maternal employment groups. Counterbalancing patterns are seen across the income groups without any consistent relationship (Exhibit 4.2). For example, among children with household incomes under 185 percent of poverty, those whose mothers work full-time are significantly less likely to exercise daily than those whose mothers do not work (37 percent *versus* 51 percent), whereas among children with incomes over 185 percent of poverty the pattern is reversed (45 percent *versus* 36 percent).

The CSFII also obtained information on the number of hours that children of all ages watched TV or videos, over the same two days for which their food intake was measured. The great majority of children overall (89 percent) watch some TV or videos. Generally, infants and toddlers (age 0 to 4 years) watch TV/videos less than older children.<sup>22</sup> A quarter of infants and toddlers do not watch at all, compared with only 4 to 8 percent in the older groups.

---

<sup>22</sup> It was assumed that proxy respondents for the relatively small share of infants reported to watch TV or videos were referring primarily to videotapes produced specifically for infants.

---

**Exhibit 4.1****Frequency of Vigorous Exercise**

---

|                           | <b>Maternal Employment Status</b> |                  |                  | <b>All Children</b> |
|---------------------------|-----------------------------------|------------------|------------------|---------------------|
|                           | <b>Full-Time</b>                  | <b>Part-Time</b> | <b>Homemaker</b> |                     |
| <b>All children</b>       |                                   |                  |                  |                     |
| Daily                     | 42.9%                             | 42.9%            | 43.0%            | 43.1%               |
| 2-6 times per week        | 36.2                              | 40.0             | 35.7             | 36.9                |
| 1 time per week or never  | 20.9                              | 17.1             | 21.3             | 20.0                |
| Maximum sample size       | 541                               | 211              | 228              | 980                 |
| <b>By age group</b>       |                                   |                  |                  |                     |
| 12 to 14 years            |                                   |                  |                  |                     |
| Daily                     | 41.4%                             | 49.6%            | 42.9%            | 43.7%               |
| 2-6 times per week        | 38.4                              | 39.7             | 37.2             | 38.4                |
| 1 time per week or never  | 20.2                              | 10.7             | 19.9             | 17.9                |
| Maximum sample size       | 260                               | 116              | 129              | 505                 |
| 15 to 17 years            |                                   |                  |                  |                     |
| Daily                     | 44.4%                             | 35.7%            | 43.1%            | 42.4%               |
| 2-6 times per week        | 33.9                              | 40.2             | 34.1             | 35.2                |
| 1 time per week or never  | 21.7                              | 24.1             | 22.8             | 22.4                |
| Maximum sample size       | 281                               | 95               | 99               | 475                 |
| <b>By income category</b> |                                   |                  |                  |                     |
| Up to 185% of poverty     |                                   |                  |                  |                     |
| Daily                     | 36.6%**                           | 38.3%            | 50.8%            | 41.5%               |
| 2-6 times per week        | 37.4                              | 45.0**           | 29.7             | 36.5                |
| 1 time per week or never  | 26.0                              | 16.7             | 19.5             | 22.0                |
| Maximum sample size       | 162                               | 81               | 122              | 365                 |
| Over 185% of poverty      |                                   |                  |                  |                     |
| Daily                     | 45.3%*                            | 44.2%            | 36.4%            | 43.8%               |
| 2-6 times per week        | 35.8                              | 38.5             | 40.0             | 37.1                |
| 1 time per week or never  | 18.8                              | 17.3             | 23.6             | 19.1                |
| Maximum sample size       | 379                               | 130              | 106              | 615                 |

---

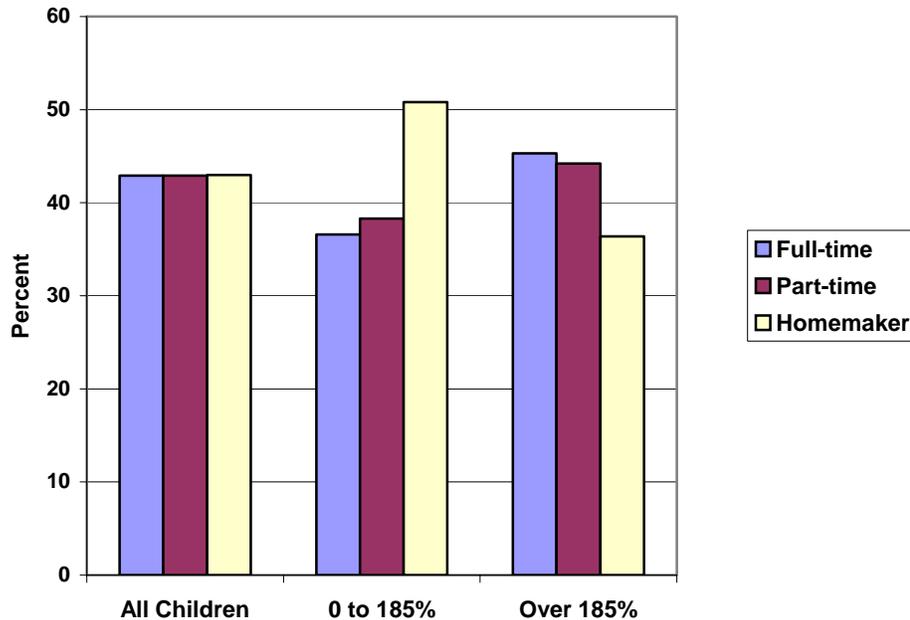
\*\*\* Statistically significant difference from children whose mothers are homemakers at the 1 percent level.

\*\* Statistically significant difference from children whose mothers are homemakers at the 5 percent level.

\* Statistically significant difference from children whose mothers are homemakers at the 10 percent level.

---

---

**Exhibit 4.2****Daily Vigorous Exercise, by Income Relative to Poverty and Maternal Employment Status**

TV/video watching seems negatively related to household income; the proportion of children who watch more than two hours drops from 51 percent in the lowest income households to 41 percent in households living over 185 percent of poverty. The number of adults living in the household is also associated with children’s TV/video viewing; 55 percent of children whose mother is the only adult watch more than two hours, compared to 43 percent of children who live with multiple adults.

Children of mothers who work full-time spend significantly more time watching TV/videos than children of homemakers (Exhibit 4.3). About 48 percent of full-time workers’ children watch more than two hours of TV/videos, compared to 40 percent of homemakers’ children. Furthermore, children of working mothers (both full- and part-time) are significantly less likely to avoid TV/video watching altogether than children of homemakers.

Infants and toddlers are the source of the pattern noted above that children of working mothers are less likely to avoid TV/video viewing altogether than children of homemaker mothers: 22 to 23 percent *versus* 28 percent in this age group. The other finding noted for all age groups combined, that children of full-time working mothers are substantially more likely to watch more than two hours of TV/videos per day than their counterparts, is mainly attributable to the viewing behavior of 5- to 14-year-olds. Patterns for older adolescents do not vary markedly by maternal employment status (Exhibit 4.4).

**Exhibit 4.3**

**Hours of Television/Video Viewing**

|                           | Maternal Employment Status |           |           | All Children |
|---------------------------|----------------------------|-----------|-----------|--------------|
|                           | Full-Time                  | Part-Time | Homemaker |              |
| <b>All children</b>       |                            |           |           |              |
| None                      | 9.6%***                    | 10.8%*    | 13.0%     | 10.9%        |
| Under 2 hours             | 42.0**                     | 46.9      | 46.9      | 44.5         |
| Over 2 hours              | 48.4***                    | 42.3      | 40.1      | 44.5         |
| Maximum sample size       | 4,344                      | 2,132     | 3,622     | 10,098       |
| <b>By age group</b>       |                            |           |           |              |
| 0 to 4 years              |                            |           |           |              |
| None                      | 23.0%***                   | 21.7%***  | 28.2%     | 24.7%        |
| Under 2 hours             | 44.7                       | 47.3*     | 43.7      | 44.8         |
| Over 2 hours              | 32.3***                    | 31.0      | 28.2      | 30.4         |
| Maximum sample size       | 2,613                      | 1,352     | 2,572     | 6,537        |
| 5 to 11 years             |                            |           |           |              |
| None                      | 3.4%**                     | 4.4%      | 6.0%      | 4.4%         |
| Under 2 hours             | 42.6**                     | 49.4      | 50.8      | 46.6         |
| Over 2 hours              | 54.0***                    | 46.2      | 43.3      | 49.0         |
| Maximum sample size       | 1,179                      | 568       | 817       | 2,564        |
| 12 to 14 years            |                            |           |           |              |
| None                      | 3.8%                       | 6.5%      | 6.7%      | 5.2%         |
| Under 2 hours             | 31.9**                     | 39.2      | 46.2      | 37.4         |
| Over 2 hours              | 64.4**                     | 54.3      | 47.0      | 57.4         |
| Maximum sample size       | 269                        | 117       | 134       | 520          |
| 15 to 17 years            |                            |           |           |              |
| None                      | 6.6%                       | 11.1%     | 9.1%      | 8.0%         |
| Under 2 hours             | 46.5                       | 48.4      | 43.7      | 46.4         |
| Over 2 hours              | 46.8                       | 40.5      | 47.2      | 45.6         |
| Maximum sample size       | 283                        | 95        | 99        | 477          |
| <b>By income category</b> |                            |           |           |              |
| Under 130% of poverty     |                            |           |           |              |
| None                      | 10.2%*                     | 10.5%     | 12.3%     | 11.4%        |
| Under 2 hours             | 38.5                       | 39.3      | 35.6      | 37.5         |
| Over 2 hours              | 51.3                       | 50.2      | 52.1      | 51.1         |
| Maximum sample size       | 966                        | 549       | 1,507     | 3,022        |
| 130 to 185% of poverty    |                            |           |           |              |
| None                      | 9.7%**                     | 13.6%     | 12.8%     | 11.7%        |
| Under 2 hours             | 34.0***                    | 40.9**    | 50.7      | 40.6         |
| Over 2 hours              | 56.3***                    | 45.5*     | 36.5      | 47.7         |
| Maximum sample size       | 585                        | 304       | 576       | 1,465        |
| Over 185% of poverty      |                            |           |           |              |
| None                      | 9.4%***                    | 10.0%**   | 14.0%     | 10.6%        |
| Under 2 hours             | 44.4***                    | 50.6      | 54.1      | 48.1         |
| Over 2 hours              | 46.2***                    | 39.4**    | 31.9      | 41.3         |
| Maximum sample size       | 2,793                      | 1,279     | 1,539     | 5,611        |

**Exhibit 4.3**

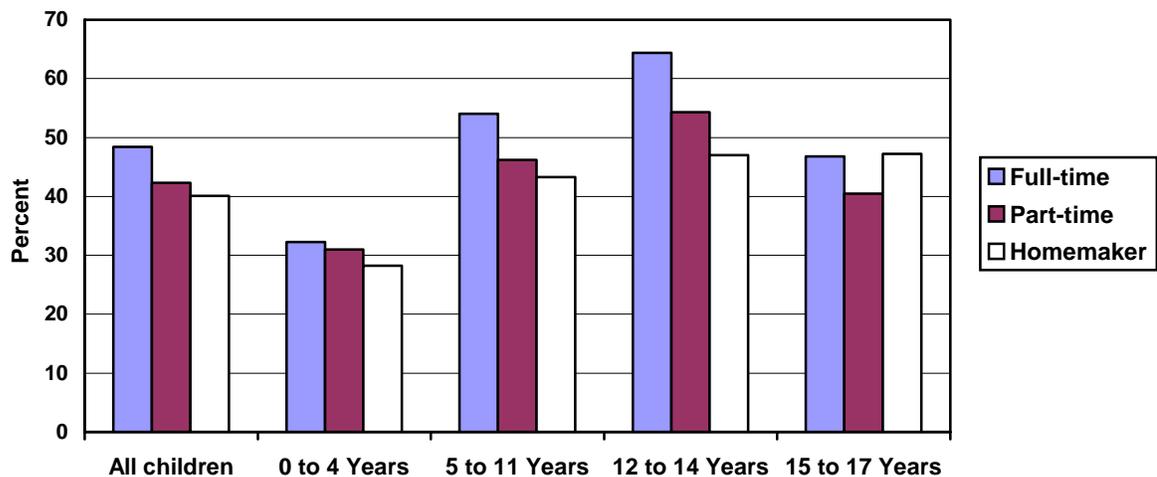
**Hours of Television/Video Viewing**

|                            | Maternal Employment Status |           |           | All Children |
|----------------------------|----------------------------|-----------|-----------|--------------|
|                            | Full-Time                  | Part-Time | Homemaker |              |
| <b>By number of adults</b> |                            |           |           |              |
| <b>One</b>                 |                            |           |           |              |
| None                       | 7.9%                       | 9.4%      | 7.0%      | 8.3%         |
| Under 2 hours              | 38.4*                      | 37.8      | 30.8      | 37.1         |
| Over 2 hours               | 53.7*                      | 52.8*     | 62.2      | 54.5         |
| Maximum sample size        | 634                        | 214       | 323       | 1,171        |
| <b>Multiple</b>            |                            |           |           |              |
| None                       | 9.9%***                    | 10.7%**   | 13.7%     | 11.4%        |
| Under 2 hours              | 42.7**                     | 48.2      | 48.3      | 45.7         |
| Over 2 hours               | 47.3***                    | 41.0      | 38.0      | 43.0         |
| Maximum sample size        | 3,710                      | 1,918     | 3,299     | 8,927        |

\*\*\* Statistically significant difference from children whose mothers are homemakers at the 1 percent level.  
 \*\* Statistically significant difference from children whose mothers are homemakers at the 5 percent level.  
 \* Statistically significant difference from children whose mothers are homemakers at the 10 percent level.

**Exhibit 4.4**

**More Than Two Hours of TV/Video Viewing, by Maternal Employment Status**



Variation in household income does not modify the general relationship between TV/video watching and mother’s employment status, except in the poorest households where about half of children in all three groups watch more than two hours per day on average. In single-adult households, however, children of working mothers are actually somewhat less likely to watch more than two hours per day

than children of homemakers (53 to 54 percent *versus* 62 percent,  $p < 0.10$ ). The patterns of TV/video watching among children in multiple-adult households are similar to those for all children.

Taken together, the findings that infants and preschool children with working mothers are less likely to avoid watching TV/videos altogether than children of homemakers **and** consume higher levels of food energy (see Chapters 2 and 3) suggest they are a group that may be at risk for overweight.

## Body Mass Index and Risk of Overweight

The Centers for Disease Control and Prevention (CDC, 2001) have developed age- and gender-specific distributions of BMI for children to define:

- Underweight: BMI below the 5th percentile;
- At risk of overweight: BMI at or above the 85th percentile; and
- Overweight: BMI at or above the 95th percentile.<sup>23</sup>

The CSFII collected data on young children's height and weight from adult proxies, whereas children age 12 to 17 reported their own height and weight. Only the self-reported values were found to be of sufficiently high quality to analyze.<sup>24</sup> Because of the small sample sizes, it was not possible to cross children's age with gender in these analyses.

Using the CDC definitions, 12 percent of the adolescents are overweight, and 28 percent are at risk of overweight (Exhibit 4.5). Risk of overweight is about equally prevalent among older and younger adolescents, but is substantially more prevalent among boys than girls—33 *versus* 23 percent. As many other studies have found, risk of overweight is more prevalent among lower than higher income children. Underweight is rare in all groups, and shows little variation by subgroup.

Risk of overweight does not differ significantly by maternal employment status for all adolescents combined. Compared to children of homemakers, children of full-time working mothers are a little more likely, and children of part-time mothers a little less likely, to be at risk of overweight. This pattern is seen consistently for both genders and in both income groups, mostly without achieving statistical significance. The pattern appears most strikingly among 12- to 14- year-olds, for whom risk of overweight is significantly higher for children of full-time working mothers than for children of homemakers (36 *versus* 25 percent). The relationship is mildly reversed for older adolescents (Exhibit 4.6).

---

<sup>23</sup> CDC has recently revised the definition for "at risk of overweight" to include only those children with BMIs between the 85th and 95th percentiles (CDC, 2002).

<sup>24</sup> Based on the authors' review of the reported values, and preliminary analyses of the validity of self-reported height and weight using NHANES-III data conducted by Marilyn Townsend at the University of California, April 2002. Proxy-reported heights in the CSFII were implausibly concentrated at rounded values such as 24 inches, 30 inches, and 36 inches.

**Exhibit 4.5**

**Overweight, Overweight/At Risk for Overweight, and Underweight, Based on BMI<sup>a</sup>**

|                           | Maternal Employment Status |           |           | All Children |
|---------------------------|----------------------------|-----------|-----------|--------------|
|                           | Full-Time                  | Part-Time | Homemaker |              |
| <b>All children</b>       |                            |           |           |              |
| Overweight                | 13.5%                      | 7.8%      | 11.4%     | 11.7%        |
| Overweight/At risk        | 30.6                       | 23.1      | 26.5      | 27.7         |
| Underweight               | 3.0                        | 3.3       | 3.1       | 3.0          |
| Maximum sample size       | 540                        | 207       | 217       | 964          |
| <b>By age group</b>       |                            |           |           |              |
| 12 to 14 years            |                            |           |           |              |
| Overweight                | 13.7%                      | 7.5%      | 10.1%     | 11.3%        |
| Overweight/At risk        | 35.6**                     | 22.6      | 24.9      | 29.8         |
| Underweight               | 2.7                        | 1.4       | 1.7       | 2.2          |
| Maximum sample size       | 260                        | 116       | 120       | 496          |
| 15 to 17 years            |                            |           |           |              |
| Overweight                | 13.2%                      | 8.2%      | 12.8%     | 12.2%        |
| Overweight/At risk        | 25.2                       | 23.6      | 28.2      | 25.5         |
| Underweight               | 3.4                        | 5.2       | 4.6       | 4.0          |
| Maximum sample size       | 280                        | 91        | 97        | 468          |
| <b>By gender</b>          |                            |           |           |              |
| Boys                      |                            |           |           |              |
| Overweight                | 17.0%                      | 9.3%      | 12.3%     | 14.2%        |
| Overweight/At risk        | 36.0                       | 28.5      | 30.6      | 32.6         |
| Underweight               | 2.9                        | 2.7       | 3.7       | 3.0          |
| Maximum sample size       | 266                        | 101       | 123       | 490          |
| Girls                     |                            |           |           |              |
| Overweight                | 9.9%                       | 6.3%      | 10.4%     | 9.1%         |
| Overweight/At risk        | 25.1                       | 18.0      | 21.7      | 22.6         |
| Underweight               | 3.2                        | 3.9       | 2.5       | 3.1          |
| Maximum sample size       | 274                        | 106       | 94        | 474          |
| <b>By income category</b> |                            |           |           |              |
| Up to 185% of poverty     |                            |           |           |              |
| Overweight                | 14.4%                      | 11.9%     | 15.9%     | 14.4%        |
| Overweight/At risk        | 35.0                       | 27.7      | 32.0      | 32.5         |
| Underweight               | 4.9                        | 3.0       | 4.6       | 4.4          |
| Maximum sample size       | 159                        | 78        | 110       | 347          |
| Over 185% of poverty      |                            |           |           |              |
| Overweight                | 12.7%                      | 5.5%      | 7.8%      | 10.5%        |
| Overweight/At risk        | 29.0                       | 20.6      | 22.3      | 25.5         |
| Underweight               | 2.4                        | 3.2       | 2.1       | 2.4          |
| Maximum sample size       | 381                        | 129       | 107       | 617          |

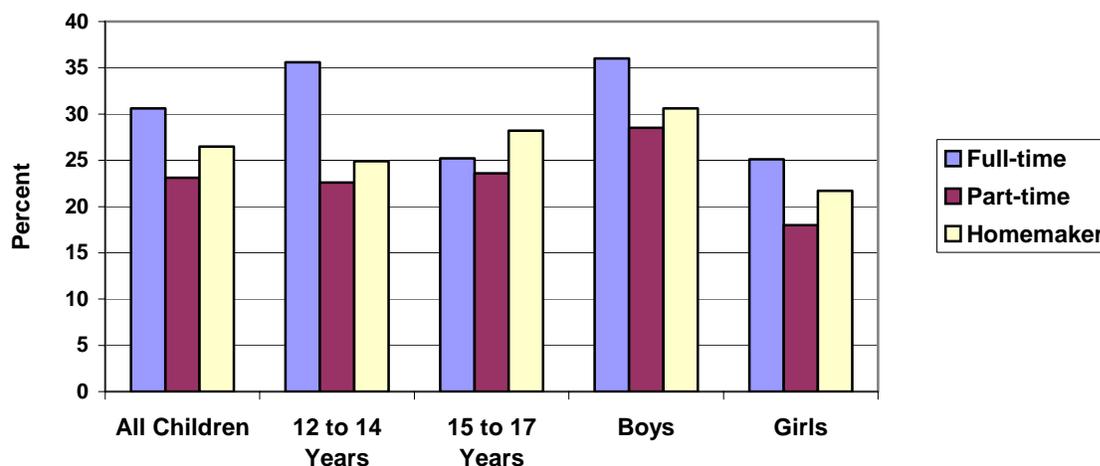
a According to the CDC, overweight in children is defined as a BMI at or above the 95th percentile for age and sex; at risk for overweight (which includes overweight) is defined as a BMI at or above the 85th percentile; underweight is indicated by a BMI below the 5th percentile.

\*\*\* Statistically significant difference from children whose mothers are homemakers at the 1 percent level.

\*\* Statistically significant difference from children whose mothers are homemakers at the 5 percent level.

\* Statistically significant difference from children whose mothers are homemakers at the 10 percent level.

---

**Exhibit 4.6****Risk of Overweight Among Adolescents, by Maternal Employment Status**

Although 12- to 14-year-old children whose mothers work full-time do not tend to consume more food energy than children whose mothers are homemakers, they are, as noted above, the group most likely to spend over 2 hours a day watching TV or videos (64 percent *versus* 54 and 47 percent for children of part-time and homemaker mothers; Exhibit 4.3).

## Summary

Comparisons of children's physical activity level and weight status show a mild tendency toward worse outcomes for children whose mothers work full-time relative to children of homemakers. At almost all ages, children of full-time working mothers spend more time in sedentary activities, specifically TV and video viewing, than children of nonworking mothers. The reported frequency of engaging in vigorous exercise, however, does not vary with maternal employment, at least for 12- to 17-year-olds. With regard to overweight, children 12 to 14 years old (but not age 15 to 17) were at significantly greater risk if their mothers work full-time. Unfortunately, data on exercise levels and reliable data for calculating BMI were not available for children under age 12. The potential for associations between mothers' work status and their children's exercise frequency and risk of overweight cannot be ruled out for younger children.

## References

American Dietetic Association. Position of the American Dietetic Association: Nutrition Standards for Child Care Programs. *Journal of the American Dietetic Association* 99:981-988, 1999.

American Dietetic Association. Position of the American Dietetic Association: Nutrition Standards for Child Care Programs. *Journal of the American Dietetic Association* 94:323-328, 1994.

Andersen, R.E., Crespo, C.J., Bartlett, S.J., Cheskin, L.J., and Pratt, M. Relationship of Physical Activity and Television Watching with Body Weight and Level of Fatness Among Children: Results from the Third National Health and Nutrition Examination Survey. *Journal of the American Medical Association* 279(12):938-942, 1998.

Anderson, P.M., Butcher, K.F., and Levine, P.B. *Maternal Employment and Overweight Children*. Dartmouth College Department of Economics, January 2002.

Bartlett, S., M. Brown, D. Moore, and A. Estacion. *Study of WIC Participant and Program Characteristics 1998*. Cambridge, MA: Abt Associates Inc., May 2000.

Bartlett, S., N. Burstein, G. Silverstein, and D. Rosenbaum. *The Food Stamp Application Process: Office Operations and Client Experience*. Cambridge, MA: Abt Associates Inc., April 1992.

Becker, G.S. A Theory of the Allocation of Time. *Economic Journal* 75:493-508, 1965.

Blaylock, J.R., J.N. Variyam, and B-H. Lin. *Maternal Nutrition Knowledge and Children's Diet Quality and Nutrient Intakes, FANRP-1*. Washington, DC: U.S. Department of Agriculture, Economic Research Service, 1999.

Bowman, S.A., M. Lino, S.A. Gerrior, and P.P. Basiotis. *The Healthy Eating Index: 1994-96*. Alexandria, VA: U.S. Department of Agriculture, Center for Nutrition Policy and promotion, CNPP-5. [www.cnpp.usda.gov/hei949bdata.htm](http://www.cnpp.usda.gov/hei949bdata.htm), 1998.

Briley, M.E., C.R. Roberts-Gray, and S. Rowe. What Can Children Learn from the Menu at the Child Care Center? *Journal of Community Health* 18(6):363-73, 1993.

Burstein, N., M.K. Fox, J.B. Hiller, R. Kornfeld, K. Lam, C. Price, and D.T. Rodda. *Profile of WIC Children*. Cambridge, MA: Abt Associates Inc., November 1999.

Burstein, N., J.I. Layzer, and K. Cahill. *National Study of Child Care for Low-Income Families: Patterns of Child Care Use Among Low-Income Families*. Cambridge, MA: Abt Associates Inc., August 2001.

Burstein, N., C. Price, and P. Rossi. The Food Stamp Program. In Fox, M.K. and Hamilton, W.L. (eds.), *Nutrition and Health Outcomes Study: Review of the Literature*. Cambridge, MA: Abt Associates Inc., 2003 (in preparation).

Capps, O., Jr., J.R. Tedford, and J.Havlicek, Jr. Household Demand for Convenience and Nonconvenience Foods. *Journal of Agricultural Economics* 67:862-869, 1985.

Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion. *Body Mass Index-for-Age (Children)*. Online at <http://www.cdc.gov/nccdphp/dnpa/bmi/bmi-for-age.htm>, 2001.

Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion. *Body Mass Index-For Age (Children)*. Online at <http://www.cdc.gov/nccdphp/dnpa/bmi/bmi-for-age.htm>, 2002.

Centers for Disease Control and Prevention, National Center for Health Statistics. *Prevalence of Overweight Among Children and Adolescents: United States, 1999-2000*. Online at <http://www.cdc.gov/nchs/products/pubs/pubd/hestats/overwght99.htm>, 2002.

Colavito, E.A., J.E. Guthrie, A.A. Hertzler, and R.E. Webb. Relationship of Diet-Health Attitudes and Nutrition Knowledge of Household Meal Planners to the Fat and Fiber Intakes of Meal Planners and Preschoolers. *Journal of Nutrition Education* 28:321-328, 1996.

Crepinsek, M.K., N.R. Burstein, E.B. Lee, S.D. Kennedy, and W.L. Hamilton. *Meals Offered by CACFP Tier 2 Family Child Care Providers: Effects of Lower Meal Reimbursements*. Washington, DC: U.S. Department of Agriculture, Economic Research Service, EFAN 02006, 2002a. Online at <http://www.ers.usda.gov/publications/efant02006>.

Crepinsek, M.K., L.M. Ghelfi, and W.L. Hamilton. *Households with Children in CACFP Child Care Homes: Effects of Meal Reimbursement Tiering*. Washington, DC: U.S. Department of Agriculture, Economic Research Service, E-FAN-02-005, 2002b. Online at <http://www.ers.usda.gov/publications/efan02005>.

Devaney, B. and E. Stuart. *Eating Breakfast: Effects of the School Breakfast Program*. Princeton, NJ: Mathematica Policy Research, Inc., 1998.

Fletcher, G.F., Balady, G., Blair, S.M., J Blumental, C. Caspersen, B. Chaitman, S. Epstein, E.S. Froelicher, V.F. Froelicher, I.L. Pina, and M.L. Pollock. Statement on Exercise: Benefits and Recommendations for Physical Activity Programs for All Americans; A Statement for Health Professionals by the Committee on Exercise and Cardiac Rehabilitation of the Council on Clinical Cardiology, American Heart Association. *Circulation* 94:857-862, 1996.

Fox, M.K., M.K. Crepinsek, P. Connor, and M. Battaglia. *School Nutrition Dietary Assessment Study-II: Final Report*. Alexandria, VA: U.S. Department of Agriculture, Food and Nutrition Service, Special Nutrition Programs Report No. CN-01-SNDAIIFR, April 2001.

Fox, M.K., F.B. Glantz, L. Geitz, and N. Burstein. *Early Childhood and Child Care Study: Nutritional Assessment of the CACFP. Volume II. Final Report*. Alexandria, VA: U.S. Department of Agriculture, Food and Consumer Service, 1997.

Gabor, V., B.L. Hardison, and C. Botsko. *A Study of Program Access and Declining Food Stamp Participation: Interim Report on the National Survey of Local Office Policies and Practices*. Washington, D.C.: Health Systems Research, Inc., May 2002.

Gillespie, A.H. and C.L. Achterberg. Comparison of Family Interaction Patterns Related to Food and Nutrition. *Journal of the American Dietetic Association* 89(4):509-512, 1989.

Glantz, F.B. The Child and Adult Care Food Program. In Fox, M.K. and Hamilton, W.L. (eds.), *Nutrition and Health Outcomes Study: Review of the Literature*. Cambridge, MA: Abt Associates Inc., 2003(in preparation).

Glantz, F.B., D.T. Rodda, M.J. Cutler, W. Rhodes, and M. Wrobel. *Early Childhood and Child Care Study: Profile of Participants. Vol. 1: Final Report*. Alexandria, VA: U.S. Department of Agriculture, Food and Consumer Service, 1997.

Gleason, P., A. Rangarjan, and C. Olsen. *Dietary Intake and Dietary Attitudes Among Food Stamp Participants and Other Low-Income Individuals*. Alexandria, VA: U.S. Department of Agriculture, Food and Nutrition Service, September 2000.

Gleason, P. and C. Suitor. *Children's Diets in the Mid-1990s: Dietary Intake and Its Relationship with School Meal Participation*, CN-01-CD1. Alexandria, VA: U.S. Department of Agriculture, Food and Nutrition Service, 2001.

Godwin, A.L., W.A. McIntosh, and K.S. Kubena. *The Relationship Between Parental Labor Force Participation and Adolescents' Dietary Intake and Risks to Cardiovascular Health*. Thesis, Texas A&M University, May 1997.

Guo, S.S., A.F. Roche, W.C. Chumlea, J.D. Gardner, and R.M. Siervogel. The Predictive Value of Childhood Body Mass Index Values for Overweight at Age 35 Years. *American Journal of Clinical Nutrition* 59:810-819, 1994.

Guthrie, J.F., B.M. Derby, and A.S. Levy. What People Know and Do Not Know About Nutrition. In Frazao, E. (ed.), *American's Eating Habits: Changes and Consequences*. Washington, DC: U.S. Department of Agriculture, Economic Research Service, AIB No. 750, April 1999.

Horton, S. and C. Campbell. Wife's Employment, Food Expenditures, and Apparent Nutrient Intake: Evidence from Canada. *American Journal of Agricultural Economics* 73:784-794, 1991.

Institute of Medicine, Food and Nutrition Board. *Dietary Reference Intakes: Calcium, Phosphorus, Magnesium, Vitamin D, and Fluoride*. Washington, DC: National Academy Press, 1997.

Institute of Medicine, Food and Nutrition Board. *Dietary Reference Intakes: Vitamin A, Vitamin K, Arsenic, Boron, Chromium, Copper, Iodine, Iron, Manganese, Molybdenum, Nickel, Silicon, Vanadium, and Zinc*. Washington, DC: National Academy Press, 2001.

Institute of Medicine, Food and Nutrition Board. *Dietary Reference Intakes for Energy, Carbohydrate, Fiber, Fat, Fatty Acids, Cholesterol, Protein, and Amino Acids (Macronutrients)*. Washington, DC: National Academy Press, 2002.

Johnson, R.K., A.C. Crouter, and H. Smiciklas-Wright. Effects of Maternal Employment on Family Food Consumption Patterns and Children's Diets. *Journal of Nutrition Education* 25(3):130-133, 1993.

Johnson, R.K., H. Smiciklas-Wright, and A.C. Crouter. Effect of Maternal Employment on the Quality of Young Children's Diets: The CSFII Experience. *Journal of the American Dietetic Association* 92:213-214, 1992a.

Johnson, R.K., H. Smiciklas-Wright, A.C. Crouter, and F.K. Willits. Maternal Employment and the Quality of Young Children's Diets: Empirical Evidence Based on the 1987-1988 Nationwide Food Consumption Survey. *Pediatrics* 90:245-249, 1992b.

Kennedy, E.T., J. Ohls, S. Carlson, and K. Fleming. The Healthy Eating Index: Design and Applications. *Journal of the American Dietetic Association* 95(1):1103-1108, 1995.

Lin, B-H., J. Guthrie; and J.R. Blaylock. *The Diets of America's Children: Influence of Dining Out, Household Characteristics, and Nutrition Knowledge*, AER-746. Washington, DC: U.S. Department of Agriculture, Economic Research Service, 1996.

Lin, B-H., J. Guthrie, and E. Frazao. Nutrient Contribution of Food Away From Home. In Frazao, E. (ed.), *American's Eating Habits: Changes and Consequences*. Washington, DC: U.S. Department of Agriculture, Economic Research Service, AIB No. 750, April 1999.

McLaughlin, J.E., L.S. Bernstein, M.K. Crepinsek, L.M. Daft, and J.M. Murphy. *Evaluation of the School Breakfast Program Pilot Project: Findings from the First Year of Implementation*. Alexandria, VA: U.S. Department of Agriculture, Food and Nutrition Service, Special Nutrition Programs Report No. CN-02-SBP, October 2002.

National Research Council. *Recommended Dietary Allowances*, 10th ed. Washington, DC: National Academy Press, 1989a.

National Research Council. *Diet and Health: Implications for Reducing Chronic Disease Risk*. Washington, DC: National Academy Press, 1989b.

Nord, M. and G. Bickel. *Measuring Children's Food Security in U.S. Households, 1995-99*. Washington, DC: U.S. Department of Agriculture, Economic Research Service, FANRR No. 25, 2002.

Olmstead, J. and G. Weathers. *Reformed but Time Poor: Toward A Discussion of Welfare Reform and Mothers' Time*. Occidental College Department of Economics, November 1, 2001.

Oppenheimer, V.K. Women's Employment and the Gain to Marriage: The Specialization and Trading Model. *Annual Review of Sociology* 23:431-51, 1997.

Peterson, K., M. Davison, K. Wahlstrom, J. Himes, L. Hjelseth, J. Ross, and M. Tucker. *Fast Break to Learning School Breakfast Program: A Report of the First Year Results, 1999-2000*. Minneapolis, MN: University of Minnesota, 2001.

Pollitt, E. and R. Matthews. Breakfast and Cognition: An Integrative Summary. *American Journal of Clinical Nutrition* 67(suppl.):804S-813S, 1998.

Redman, B.J. The Impact of Women's Time Allocation on Expenditure for Meals Away from Home and Prepared Foods. *Journal of Agricultural Economics* 62:234-237, 1980.

Schlicker, S.A., S.T. Borra, and C. Regan. The Weight and Fitness Status of United States Children. *Nutrition Reviews* 52:11-17, 1994.

Strauss, R.S. and H.A. Pollack. Epidemic Increase in Childhood Overweight, 1986-1998. *Journal of the American Medical Association* 286(22):2845-2848, 2001.

Tout, K., M. Zaslow, A. Romano Papillo, and S. Vandivere. *Early Care and Education: Work Support for Families and Developmental Opportunities for Young Children*. The Urban Institute, September 2001.

U.S. Bureau of the Census. *Statistical Abstract of the United States: 1997* (117th edition). Table 671: Full Time Wage and Salary Workers—Number and Earnings, 1985 to 1996.

U.S. Bureau of the Census. *Statistical Abstract of the United States: 2002*. Tables 562: Employment Status of the Civilian Population, and 570: Employment Status of Women by Marital Status and Presence and Age of Children, 1979 to 2001. Online at <http://www.census.gov/prod/2003pubs/02statab/labor.pdf>.

U.S. Department of Agriculture. The Food Guide Pyramid. *USDA Home and Garden Bulletin* 252, 1992.

U.S. Department of Agriculture, Agricultural Research Service. *Continuing Survey of Food Intakes by Individuals 1994-96, 1998* (CD-ROM). Washington, DC: U.S. Government Printing Office, 2000.

U.S. Department of Agriculture, Agricultural Research Service. *Documentation: Pyramid Servings Database for USDA Survey Food Codes, October 2000*. Online at <http://www.barc.usda.gov/bhnrc/cnrg>.

U.S. Department of Agriculture, Agricultural Research Service. *Food and Nutrient Intakes by Children 1994-96, 1998*. Table No. 4: Nutrient Intakes: Mean Percentages of Food Energy From Protein, Total Fat, Fatty Acids, Carbohydrate, and Alcohol, by Sex and Age, 1999. Online at <http://www.barc.usda.gov/bhnrc/cnrg>.

U.S. Department of Agriculture, Center for Nutrition Policy and Promotion. *Tips for Using the Food Guide Pyramid for Young Children Booklet*, Program Aid No.1647, March 1999. Online at <http://www.cnpp.usda.gov/KidsPyra/PyrBook.pdf>.

U.S. Department of Agriculture, Food and Nutrition Service. *School Breakfast Program—Fact Sheet, 2002*. <http://www.fns.usda.gov/cnd/breakfast>.

U.S. Departments of Health and Human Services and Agriculture. *Nutrition and Your Health: Dietary Guidelines for Americans*, 4th ed. Washington, DC: U.S. Government Printing Office, 1995.

U.S. Departments of Health and Human Services and Agriculture. *Nutrition and Your Health: Dietary Guidelines for Americans*, 5th ed. Washington, DC: U.S. Government Printing Office, 2000.

Williams, C.L. Importance of Dietary Fiber in Childhood. *Journal of the American Dietetic Association* 95:1140-1149, 1995.