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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.

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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 85th 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.¹ 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.

¹ 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).² 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	
All children				
Mean number of eating occasions	4.6**	4.8	4.8	4.7
Maximum sample size	3,900	1,859	3,023	8,782
By age group				
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
By income category				
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

² 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

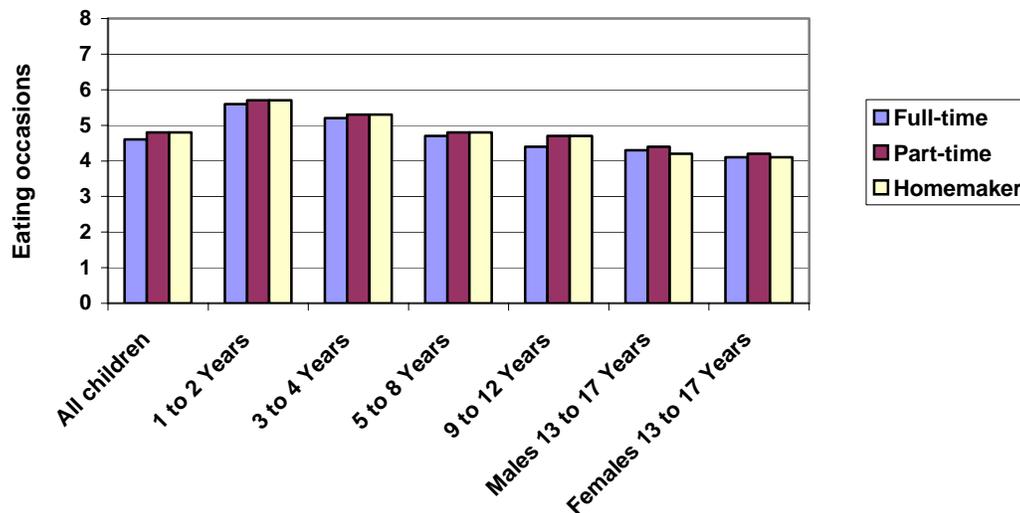
Number of Eating Occasions per Day

	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
By number of adults				
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.³ 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 Suito, 2001; Devaney and Stuart, 1998), was included to screen out meals of minimal nutritional value.⁴ 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),⁵ with high schoolers (13- to 17-year-olds) more likely to skip the meal

³ 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.

⁴ 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.

⁵ 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 Suito, 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	
All children				
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
By age group				
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	
By income category				
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
By number of adults				
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

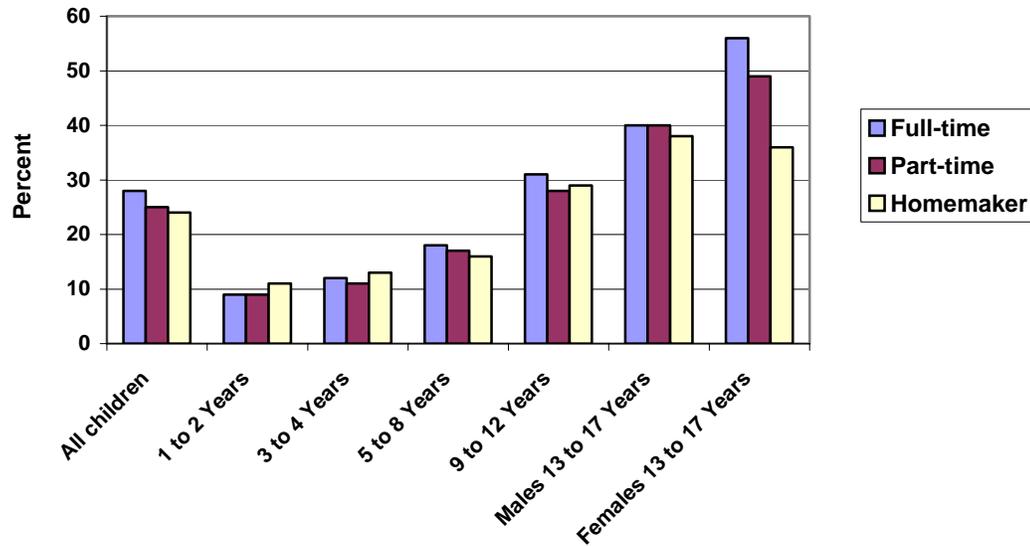
** Statistically significant difference from children whose mothers are homemakers at the 5 percent level

* 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.⁶ 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.⁷ 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.

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

⁷ 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	
All children				
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
By age group				
1 to 2 years				
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
3 to 4 years				
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
5 to 8 years				
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
9 to 12 years				
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	
13 to 17 years, male				
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
13 to 17 years, female				
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
By income category				
Under 130% of poverty				
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
130 to 185% of poverty				
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
Over 185% of poverty				
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	
By number of adults				
One				
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
Multiple				
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

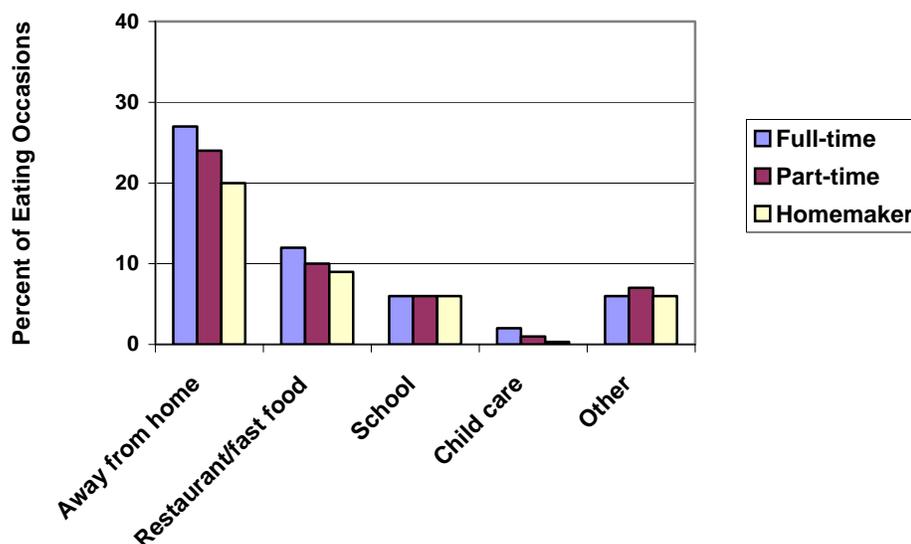
*** Statistically significant difference from children whose mothers are homemakers at the 1 percent level

** 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,⁸ 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.

⁸ 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

	Maternal Employment Status			All Children
	Full-Time	Part-Time	Homemaker	
All children				
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
By age group				
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
By income category				
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	
<i>By number of adults</i>				
One				
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
Multiple				
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 3.⁹

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).¹⁰

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).¹¹ 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).

⁹ 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.

¹⁰ 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.

¹¹ 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**

	Maternal Employment Status			
	Full-Time	Part-Time	Homemaker	All Children
All children				
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
By age group				
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
By income category				
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

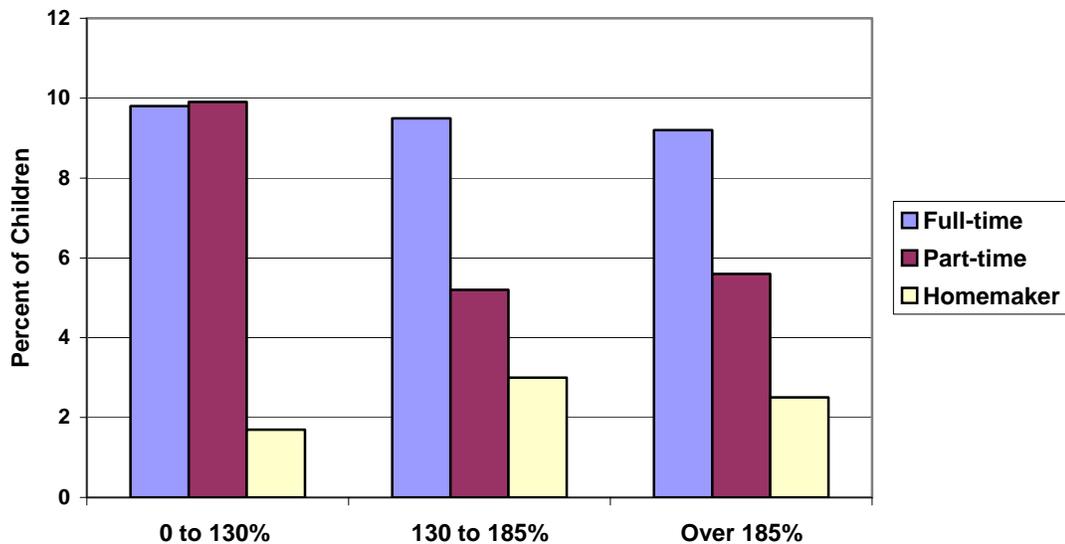
Participation in Meal Planning

	Maternal Employment Status			All Children
	Full-Time	Part-Time	Homemaker	
130 to 185% of poverty				
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
Over 185% of poverty				
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	
All children				
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
By age group				
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**

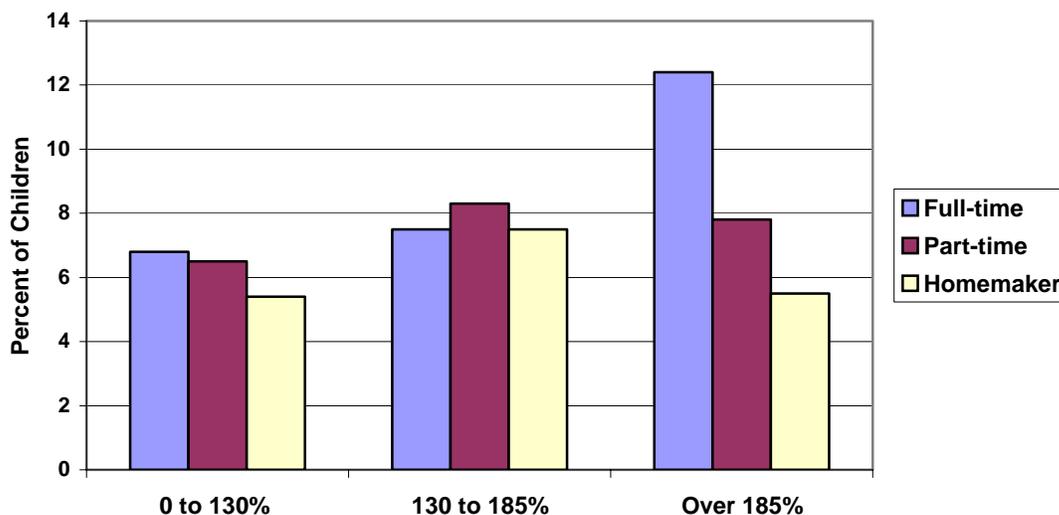
	Maternal Employment Status			All Children
	Full-Time	Part-Time	Homemaker	
By income category				
Under 130% of poverty				
Mother alone	75.1%	78.2%	75.6%	75.9%
Mother and other adults	18.1	15.3*	19.0	18.0
Other adults alone	6.8**	6.2	4.6	5.7
Children alone	0.0	0.3	0.8	0.4
Maximum sample size	1,716	883	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).

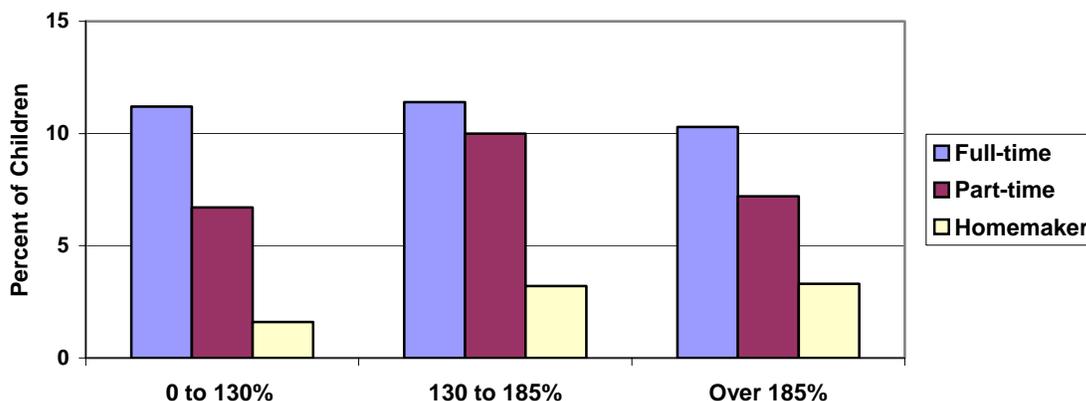
**Exhibit 2.5
Participation in Food Preparation**

	Maternal Employment Status			All Children
	Full-Time	Part-Time	Homemaker	
All children				
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
By age group				
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	
5 to 8 years				
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
9 to 12 years				
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
13 to 17 years				
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
By income category				
Under 130% of poverty				
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
130 to 185% of poverty				
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
Over 185% of poverty				
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.¹²

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.

¹² 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	
All children				
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 ^a	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
By age group				
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 ^a	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 ^a	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 ^a	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 ^a	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
By income category				
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 ^a	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

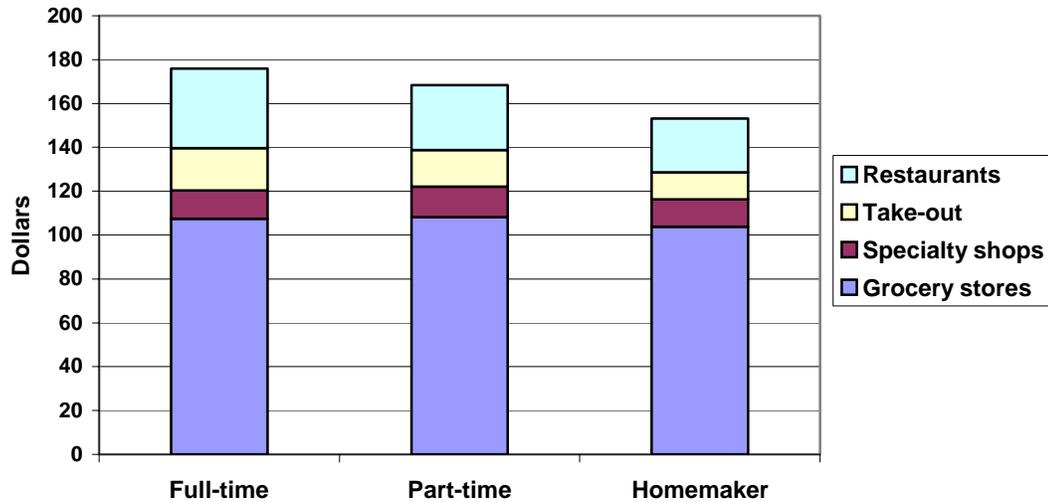
	Maternal Employment Status			All Children
	Full-Time	Part-Time	Homemaker	
130 to 185% of poverty				
Grocery stores	\$95.9	\$92.7	\$94.2	\$94.3
Specialty stores	10.7	8.4	8.8	9.5
Fast food/Carry-out	18.0***	13.2	11.7	14.9
Away from home ^a	23.0**	19.8	18.7	20.9
Total	147.5**	134.2	133.4	139.6
Maximum sample size	874	436	850	2,160
Over 185% of poverty				
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 ^a	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
By number of adults				
One				
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 ^a	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
Multiple				
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 ^a	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

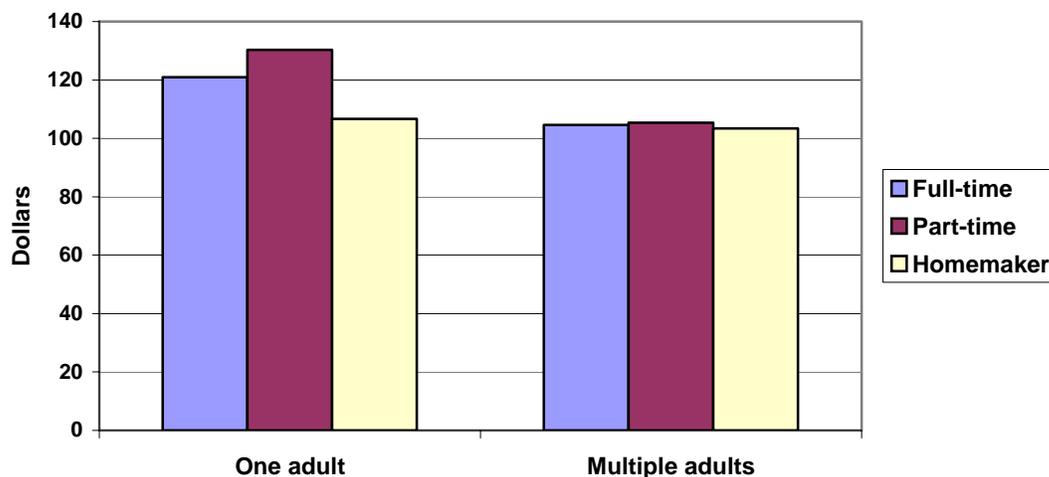
Exhibit 2.8**Monthly Food Expenditure per AME, by Source of Food and Maternal Employment Status**

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).¹³ 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

¹³ 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

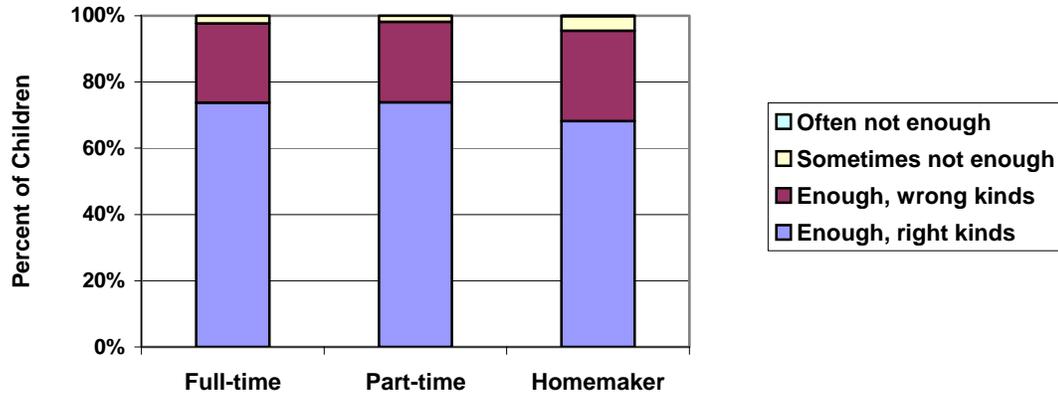
	Maternal Employment Status			All Children
	Full-Time	Part-Time	Homemaker	
All children				
Enough kinds and food	73.8%***	73.7%***	67.8%	72.1%
Enough food, not kinds	23.9**	24.3	27.2	24.9
Sometimes not enough food	2.3***	1.8***	4.4	2.8
Often not enough food	0.0***	0.1***	0.6	0.2
Maximum sample size	6,443	3,208	5,687	15,338
By age group				
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
By income category				
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**

	Maternal Employment Status			All Children
	Full-Time	Part-Time	Homemaker	
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
By number of adults				
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**

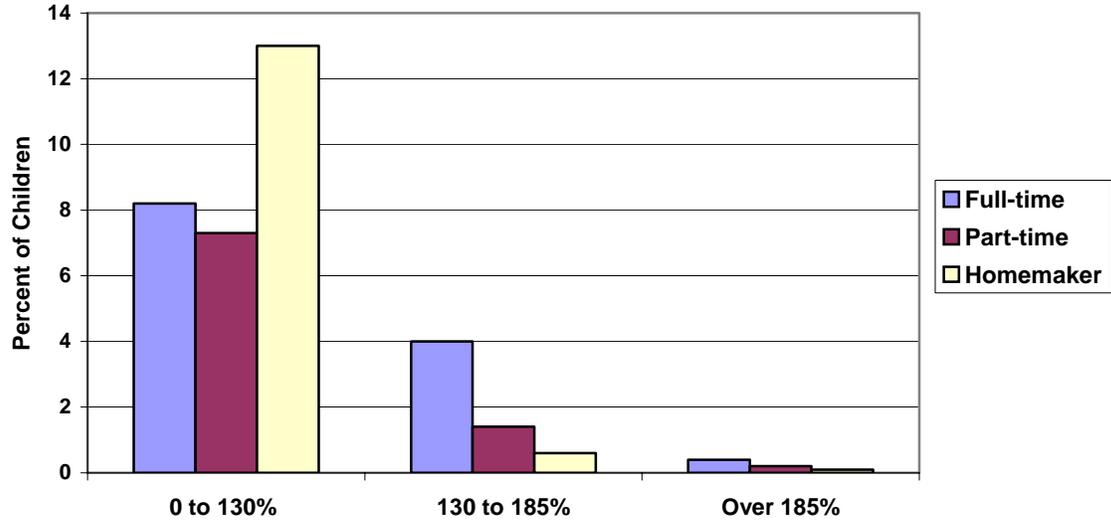
Exhibit 2.11**Household Food Sufficiency, by Maternal Employment Status**

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).¹⁴ 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:

¹⁴ 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),¹⁵ 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).¹⁶ 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).

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

¹⁶ 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)**

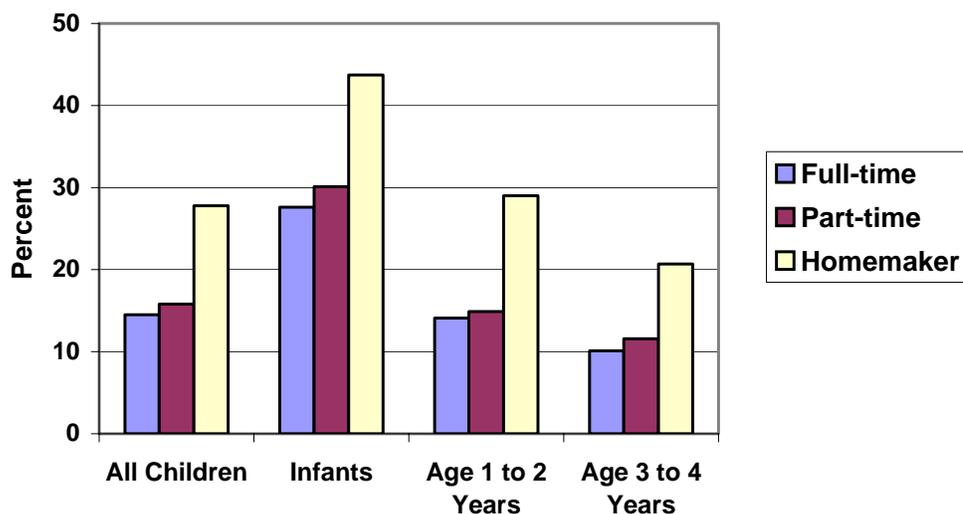
	Maternal Employment Status			All Children
	Full-Time	Part-Time	Homemaker	
All children				
WIC participation	14.5%***	15.8%***	27.8%	19.9%
Maximum sample size	2,864	1,523	2,925	7,312
By age group				
Infant (0 to 11 months)				
WIC participation	27.6%***	30.1%***	43.7%	35.1%
Maximum sample size	473	277	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
By income category				
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
By number of adults				
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	
All children				
WIC participation	35.4%***	35.9%***	46.4%	40.9%
Maximum sample size	1,078	602	1,710	3,390
By age group				
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
By income category				
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
By number of adults				
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.¹⁷

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).¹⁸ 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.

¹⁷ 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.

¹⁸ 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**

	Maternal Employment Status			
	Full-Time	Part-Time	Homemaker	All Children
All children				
FSP participation	7.7%***	11.0%***	22.4%	12.8%
Maximum sample size	6,430	3,188	5,687	15,305
By age group				
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
By income category				
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
By number of adults				
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

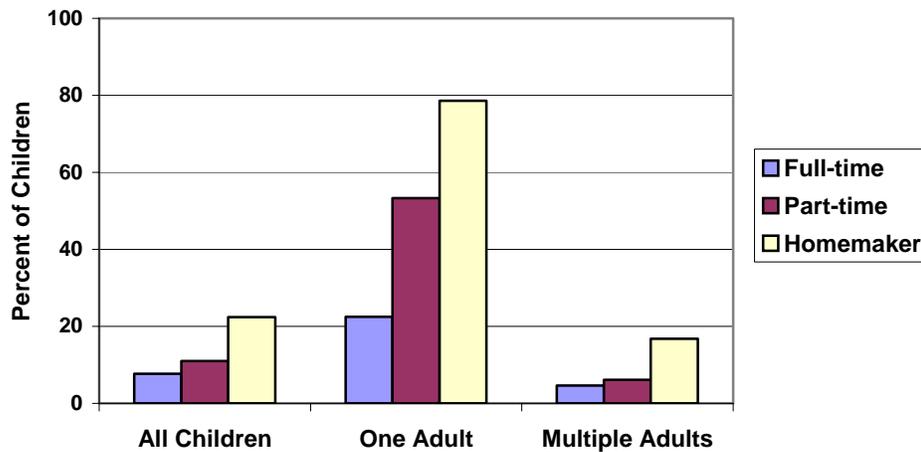
** Statistically significant difference from children whose mothers are homemakers at the 5 percent level

* 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).¹⁹

¹⁹ 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)**

	Maternal Employment Status			All Children
	Full-Time	Part-Time	Homemaker	
All children				
FSP participation	34.8%***	46.6%**	55.3%	46.1%
Maximum sample size	1,714	875	2,563	5,152
By age group				
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
By income category				
Under 130% of poverty				
FSP participation	34.8%***	46.6%**	55.3%	46.1%
Maximum sample size	1,714	875	2,563	5,152
By number of adults				
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).²⁰ 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	
All children				
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
By age group				
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

²⁰ 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

	Maternal Employment Status			All Children
	Full-Time	Part-Time	Homemaker	
By income category				
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
By number of adults				
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	
All children				
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
By age group				
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
By income category				
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	
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 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
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 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
By number of adults				
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 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
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 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

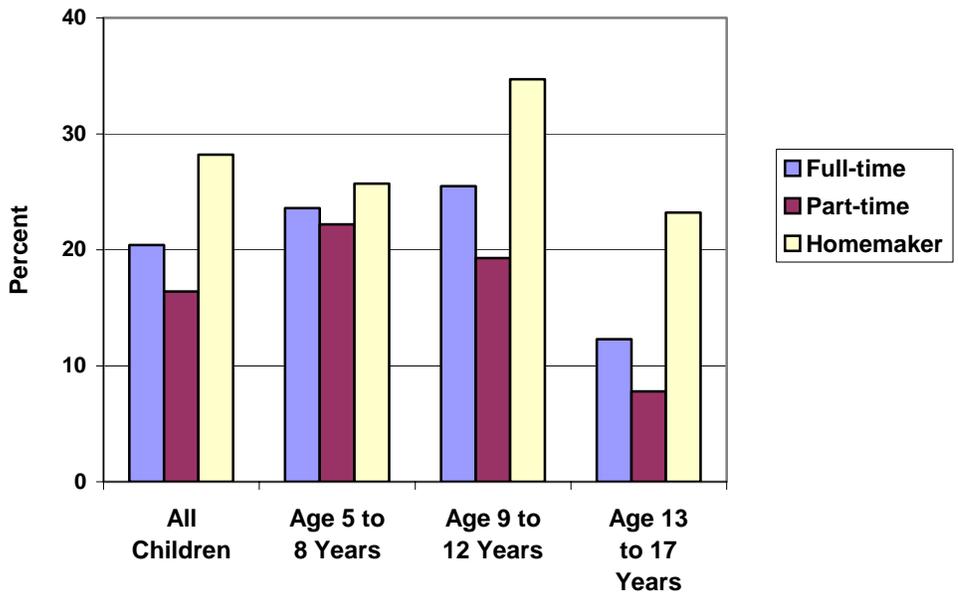
* Statistically significant difference from children whose mothers are homemakers at the 10 percent level

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



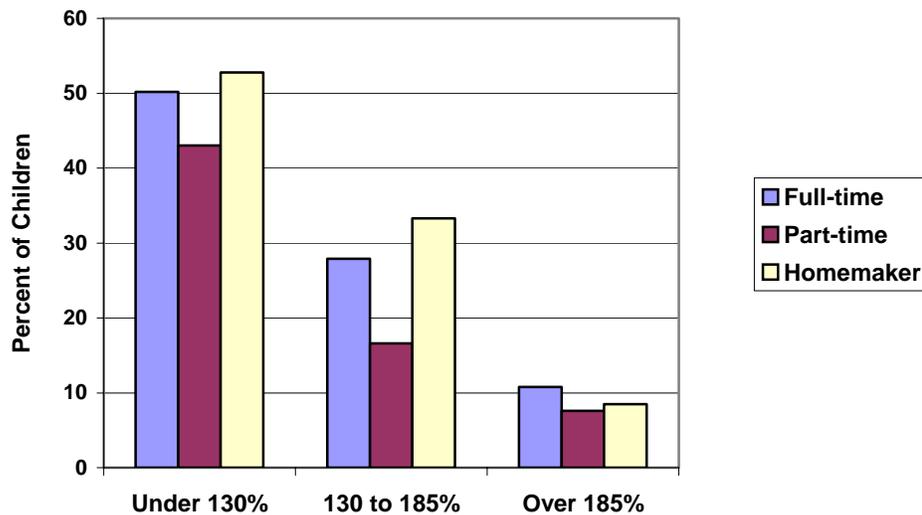
The patterns by household income are most striking. SBP participation is highly concentrated among lower-income children. Overall, 50 percent of school-aged children in households under 130 percent of poverty take school breakfasts, compared with only 26 percent and 9 percent in the two higher income 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	
All children				
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
By age group				
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
By income category				
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
By number of adults				
One				
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
Multiple				
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

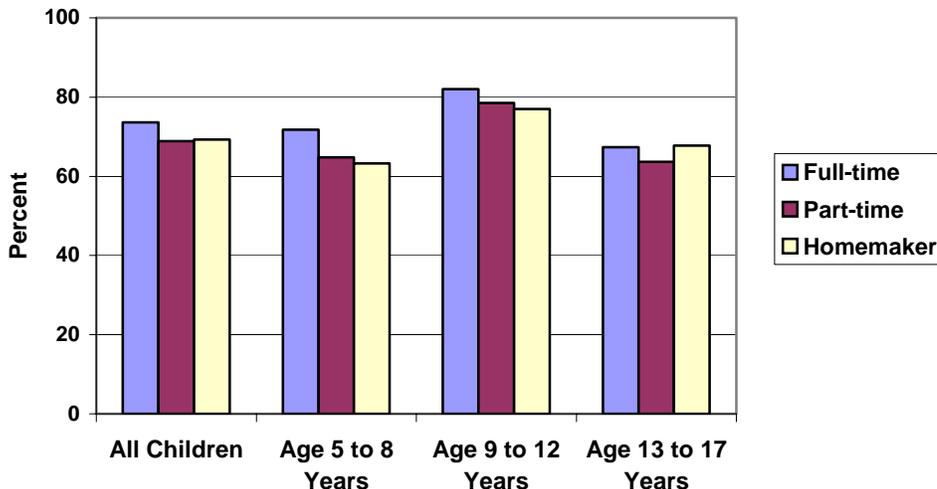


Exhibit 3.13

NSLP Participation, by Frequency of Use of the Program

	Maternal Employment Status			All Children
	Full-Time	Part-Time	Homemaker	
All children				
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
By age group				
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
By income category				
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
By number of adults				
One				
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
Multiple				
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

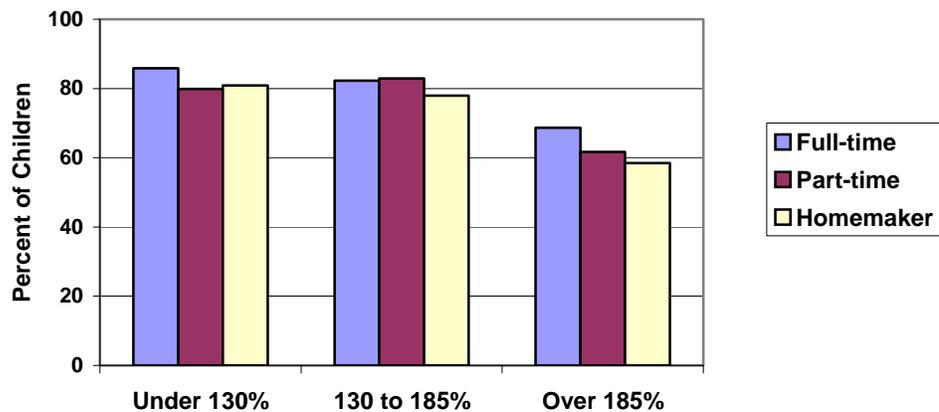
** Statistically significant difference from children whose mothers are homemakers at the 5 percent level

* 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.²¹ 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.

²¹ 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.²² A quarter of infants and toddlers do not watch at all, compared with only 4 to 8 percent in the older groups.

²² 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.

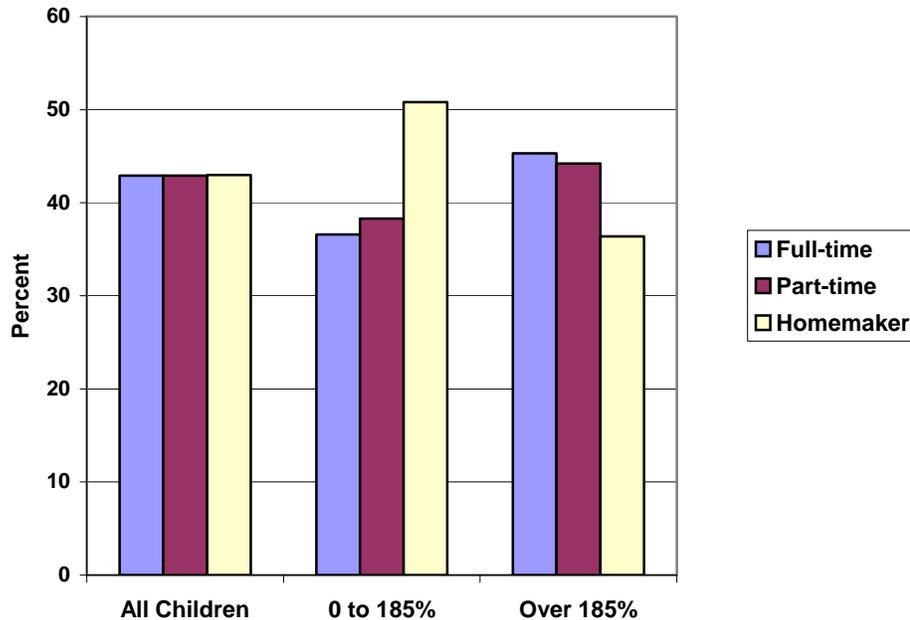
Exhibit 4.1**Frequency of Vigorous Exercise**

	Maternal Employment Status			All Children
	Full-Time	Part-Time	Homemaker	
All children				
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
By age group				
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
By income category				
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	
All children				
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
By age group				
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
By income category				
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

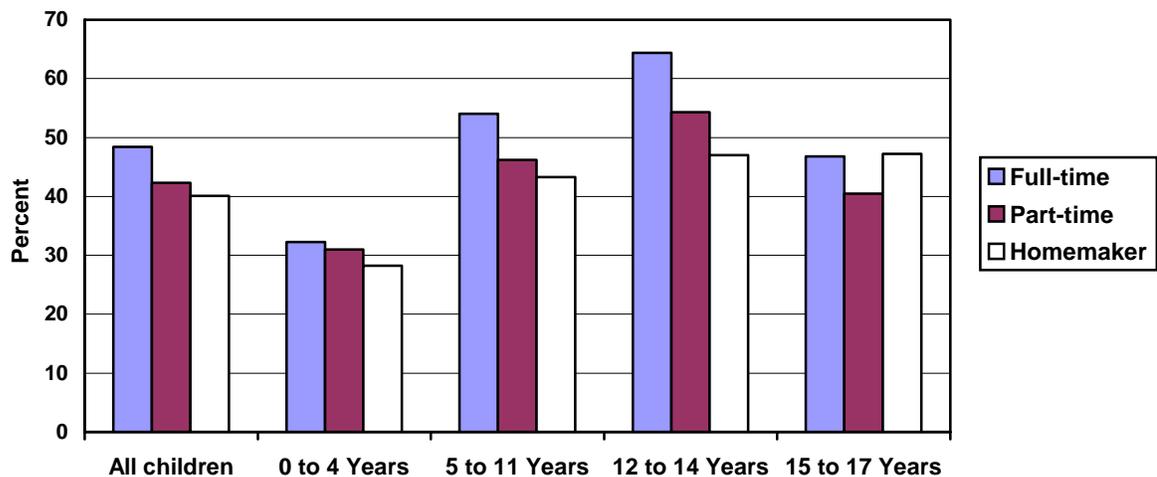
Hours of Television/Video Viewing

	Maternal Employment Status			All Children
	Full-Time	Part-Time	Homemaker	
By number of adults				
One				
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
Multiple				
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.²³

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.²⁴ 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).

²³ 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).

²⁴ 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^a**

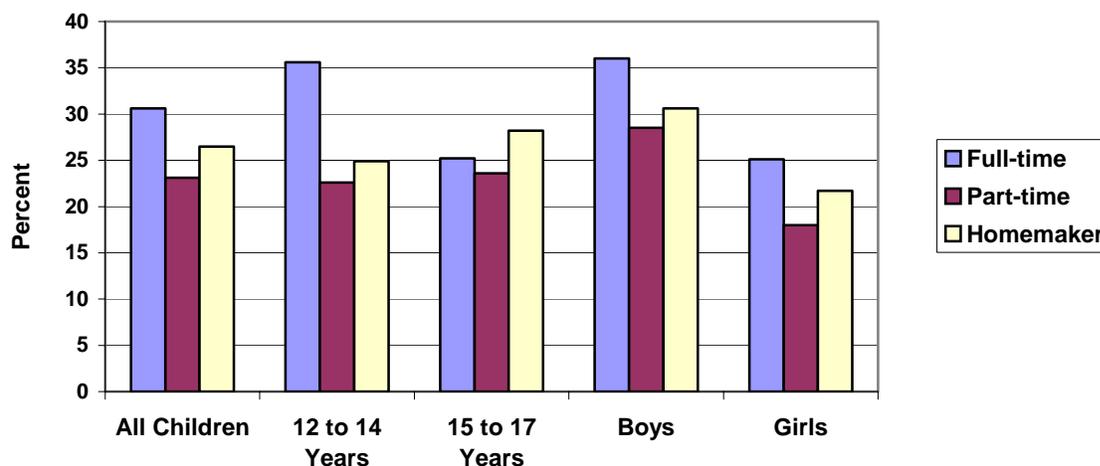
	Maternal Employment Status			All Children
	Full-Time	Part-Time	Homemaker	
All children				
Overweight	13.5%	7.8%	11.4%	11.7%
Overweight/At risk	30.6	23.1	26.5	27.7
Underweight	3.0	3.3	3.1	3.0
Maximum sample size	540	207	217	964
By age group				
12 to 14 years				
Overweight	13.7%	7.5%	10.1%	11.3%
Overweight/At 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
By gender				
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
By income category				
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.

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