

Appendix C

Characteristics of CSFII Sample Children, Households, and Mothers

This appendix presents descriptive information on the characteristics of the CSFII sample of children, their households, and their mothers, whose nutrition outcomes are tabulated in this report. Data are stratified by maternal employment status and have been weighted to achieve national representativeness. The broad underlying patterns are important to bear in mind in interpreting the differences in nutrition outcomes (Chapters 2 and 3) and related factors (reported in Volume II). The most striking patterns are generally differences between all working and nonworking mothers rather than between full-time and part-time working mothers.

With regard to **demographics**, compared with children of working mothers, children of homemaker mothers are:

- Younger;
- Less likely to be black and more likely to be Hispanic;
- Poorer and more likely to be receiving public assistance; and
- In households with more children.

These patterns are expected, given the developmental and financial reasons for mothers to stay at home with younger children, and the well-established employment patterns of working mothers by race/ethnicity (Burstein *et al.*, 2001).

Compared to working mothers, the homemaker mothers themselves:

- Are younger; and
- Have less formal education.

The most notable difference between children of mothers that work full-time and part-time is that the former are more likely to be non-Hispanic black and the latter are more likely to be non-Hispanic white. In addition, the households of full-time working mothers have somewhat higher incomes and are a little less likely to receive public assistance than the households of part-time working mothers. The full-time working mothers themselves tend to have less formal education than their part-time counterparts.

Because working mothers tend to have more formal education than homemakers, it seems likely that they will differ in their **nutrition knowledge**, including awareness of dietary recommendations, and their **attitudes** towards healthful dietary practices. Furthermore, through working, women may be exposed to a variety of cultural influences, which may have further effects on their attitudes toward diet and its relationship to health. Mother's nutrition knowledge and attitudes are expected to affect the foods they purchase, prepare, and serve to their children.

The analyses presented here provide some evidence that working mothers have more nutrition knowledge than homemakers, but not consistently so. In particular, they can more accurately identify

food sources of dietary fat and interpret nutrient composition information on food labels. In addition, a slightly larger share of working mothers can correctly report the Food Guide Pyramid serving recommendations for each of the five major food groups. On the other hand, working and nonworking mothers are equally capable of identifying foods that contain saturated fat and answering questions about fats and oils, and differences in mothers' awareness of diet-disease relationships are minimal.

In contrast to the trends for nutrition knowledge, attitudes toward the importance of nutrition among working mothers tend to be less favorable than among homemakers. Although greater nutrition knowledge among working mothers might mediate the effects of time constraints on their children's diets, this could be outweighed by their perceptions of the importance of dietary recommendations. Working mothers are especially less likely to feel that moderating salt/sodium intake or choosing a diet low in saturated fat and adequate in fiber are very important than nonworking mothers. In addition, part-time working mothers are the least likely to consider nutrition a very important factor when buying food.

Demographic Characteristics of Sample Children

As noted in Chapter 1, the CSFII sample children range in age from infancy to 17 years. Younger children (preschoolers) are naturally concentrated among nonworking mothers, reflecting considerations of child development and the need for child care (i.e., logistics and costs). Nearly two-fifths (37 percent) of children of nonworking mothers are under age 5, *versus* only a quarter (25 to 27 percent) of children of working mothers (Exhibit C.1). At the other end of the spectrum, teenagers comprise a greater proportion of children of mothers who work full-time (29 percent) or part-time (25 percent) than of mothers who do not work (18 percent).

Exhibit C.1

Demographic Characteristics of Sample Children

	Maternal Employment Status			All Children
	Full-Time	Part-Time	Homemaker	
Age				
0-4 years	24.8%	27.4%	37.4%	29.1%
5-8 years	22.8	24.7	24.3	23.6
9-12 years	23.3	23.4	20.3	22.4
13-17 years	29.1	24.6	18.0	24.8
Gender				
Male	50.9%	49.5%	52.0%	50.9%
Female	49.1	50.5	48.0	49.1
Race/Ethnicity				
Non-Hispanic white	64.4%	74.9%	62.9%	66.3%
Non-Hispanic black	17.0	10.8	9.8	13.5
Hispanic	13.4	10.7	20.7	15.0
Other	5.2	3.6	6.6	5.3
Sample size	7,365	3,376	4,603	15,344

Although there is practically no association between child's gender and maternal employment status, racial/ethnic background does vary markedly. Three-quarters (75 percent) of the children whose mothers work part-time are white, in contrast to less than two-thirds (63 to 64 percent) in the other two groups. Hispanic children are heavily concentrated among nonworking mothers, comprising 21 percent of this subgroup, *versus* only 11 to 13 percent of children of working mothers. Black children are especially likely to have full-time working mothers.

Household Composition, Income, and Location

CSFII data describe the households in terms of size, composition, annual income, receipt of public assistance, geographic region, and urbanicity of residence. These characteristics are tabulated below in two ways: as percentages of **children** and as percentages of **households**. Both vantage points are of interest because nutrition outcomes and factors affecting children's nutrition may be either child level (e.g., nutrient intake) or household level (e.g., food expenditures, food security).⁵⁸

The two sets of distributions shown below (Exhibit C.2) differ only to the extent that households with more children (more heavily weighted in the child-level tabulations) differ in their characteristics from households with fewer children. For example, mean household size is smaller when calculated at the household level than at the child level. For the former calculation, each household is counted once, regardless of size; for the latter calculation, households with multiple children count as many times as there are children. The **patterns** of household characteristics across maternal employment status, however, are qualitatively similar, whether viewed at the household-level or at the child-level.

Household Size and Composition

Including the maternal female and child who comprise a dyad, the number of household members ranges from 2 to 16. On average, households with homemaker mothers are somewhat larger (4.4 members) than households with full-time (3.8) or part-time (4.1) working mothers. The average number of adults⁵⁹ per household is the same (2.1 adults) regardless of maternal employment status; as expected, the number of employed adults is lower in homemaker households (0.9) than in households with mothers who work full-time (1.9) or part-time (2.0). Households with homemaker mothers also include more children on average (2.2) than households with working mothers (1.8 to 2.0). This same pattern holds for children under five years old; on average, households with homemaker mothers have more young children (0.8 children) than do households with who work full-time (0.4) or part-time (0.6). This is to be expected, given that child care costs incurred by working mothers increase with the number of children needing care.

⁵⁸ A small number of households include multiple maternal females. Those households in which these females vary in employment status have been excluded from the household-level tabulations, leaving a sample of 7,115 households. About half (75) of the 144 households that have two maternal females were excluded due to employment status variation. The child-level tabulations are based on the entire sample of 15,344 children (see Appendix A).

⁵⁹ Adults include household members aged 18 years or older, and members labeled as CSFII reference persons, their spouses, and their partners.

Exhibit C.2

Household Composition, Income, and Location

	Maternal Employment Status						All	
	Full-Time		Part-Time		Homemaker			
	House- hold	Child	House- hold	Child	House- hold	Child	House- hold	Child
Household size/ composition								
Mean number of household members	3.8	4.3	4.1	4.6	4.4	5.0	4.0	4.6
Mean number of adults	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
Mean number of employed adults	1.9	1.9	2.0	2.0	0.9	0.9	1.7	1.6
Mean number of children	1.8	2.2	2.0	2.5	2.2	2.8	1.9	2.5
Mean number of children under 5	0.4	0.5	0.6	0.6	0.8	1.0	0.6	0.7
Household income as percent of poverty								
Under 130%	14.4%	18.2%	19.1%	21.6%	31.3%	36.3%	19.8%	24.3%
130-185%	12.4	13.7	14.1	15.4	16.8	16.5	13.9	14.9
Over 185%	73.2	68.1	66.8	63.0	51.9	47.2	66.3	60.8
Median	300		273		194		271	
Public assistance								
Receiving public assistance	2.2%	3.1%	4.3%	5.1%	14.4%	17.1%	5.8%	7.7%
Not receiving public assistance	97.8	97.0	95.7	94.9	85.6	82.9	94.2	92.3
Region								
Northeast	16.1%	15.4%	21.6%	21.9%	20.8%	20.7%	18.5%	18.4%
Midwest	23.5	24.5	26.7	28.7	18.7	18.4	22.9	23.6
South	39.9	39.2	28.8	26.6	34.8	33.4	36.2	34.7
West	20.5	20.8	22.9	22.8	25.7	27.5	22.4	23.3
Urbanicity								
MSA, central city	27.8%	27.7%	30.0%	29.3%	29.9%	30.2%	28.8%	28.8%
MSA, not central city	50.2	49.6	51.8	52.4	51.7	51.3	50.9	50.7
Non-MSA	22.0	22.7	18.3	18.3	18.4	18.5	20.3	20.4
Sample size		7,365		3,376		4,603	7,115	15,344

MSA = Metropolitan statistical area

In many of the analyses of child nutrition and related outcomes in this report, the distinction is made between children in one-adult *versus* multiple-adult households. It seems likely that the time constraints of working mothers would be more binding if other adults were not available to share household tasks. It should be borne in mind, however, that one-adult households are financially less well off. Nearly half of these households (46 percent) have incomes under 130 percent of the federal poverty guideline, compared with only one-sixth (16 percent) of households with more than one adult (not shown).

Household composition figures at the child-level reflect the same patterns reported above at the household-level: more household members, more children, and more preschool children in the households of homemaker mothers than in the households of working mothers.

Household Income

Total annual income (before taxes) is expressed as a percentage of the federal poverty guideline, capped at 300 percent of poverty. The median income in the sample is 271 percent of poverty, and two-thirds of the households have income equivalent to more than 185 percent of poverty. A markedly higher proportion of households with homemaker mothers (48 percent) live at or below 185 percent of poverty, than do households with full-time (27 percent) or part-time (33 percent) working mothers. Overall, about 6 percent of the households receive public assistance, which includes AFDC and TANF, but excludes benefits from the FSP or WIC. Compared to households in which maternal females work full- or part-time, a substantially higher proportion of households with homemakers receive public assistance (14 percent *versus* 2 to 4 percent). Similar income and public assistance patterns are seen at the child level, i.e., lower income and more public assistance for children whose mothers are homemakers.

Geographic Location

A plurality of the households (36 percent) are located in the south. Compared to households with full-time working mothers (the largest group), households with part-time working mothers are relatively less concentrated in the south and more in the northeast, whereas households with homemaker mothers are relatively more concentrated in the northeast and west. Urbanicity is measured by MSA status. Half of the households are located in MSAs that are not central cities, 29 percent are in central city MSAs, and 20 percent are in non-MSAs. Urbanicity does not vary noticeably by maternal employment status. Similar patterns are seen for the distribution of children as for the distribution of households.

Demographic Characteristics of Maternal Females

Mothers range in age from 16 to 59 years (Exhibit C.3).⁶⁰ Approximately half of the children are cared for by mothers who are in their thirties, regardless of employment status. More of the mothers who work are in their forties, than among homemakers (26 to 27 percent *versus* 20 percent). Similar to their children, mothers who work full-time, part-time, and not at all are disproportionately likely to be non-Hispanic black, non-Hispanic white, and Hispanic, respectively. Finally, homemakers are substantially more likely than working mothers to have less than a high school education or GED (26 percent *versus* 10 to 11 percent). Among working mothers, post-secondary education is more prevalent among part-time than full-time workers (58 percent *versus* 53 percent).

⁶⁰ Because the usual unit of analysis is the child-maternal female dyad, characteristics of maternal females have been tabulated here based on the sample of 15,344 dyads, rather than on the smaller number of unique maternal females in these dyads.

Exhibit C.3

Demographic Characteristics of Maternal Females

	Maternal Employment Status			All Children
	Full-Time	Part-Time	Homemaker	
Age				
16-21 years	1.5%	2.7%	3.9%	2.5%
22-29 years	17.9	16.1	21.2	18.5
30-39 years	51.4	52.5	50.8	51.5
40-49 years	25.5	26.7	19.7	24.1
50-59 years	3.6	2.1	4.5	3.6
Race/Ethnicity				
Non-Hispanic white	66.4%	75.5%	63.9%	67.7%
Non-Hispanic black	16.4	11.1	9.5	13.2
Hispanic	12.5	10.2	20.5	14.4
Other	4.7	3.2	6.1	4.8
Education				
Less than high school/GED	10.4%	10.6%	26.3%	15.1%
High school/GED	37.0	32.0	33.5	34.9
More than high school/GED	52.6	57.5	40.2	50.0
Sample size	7,365	3,376	4,603	15,344

Mother's Nutrition Knowledge and Attitudes

A mother's specific nutrition knowledge, as well as her beliefs and attitudes toward healthful eating, can be expected to influence the diet and health of her children. Research is mixed, but has shown that this is more likely for preschool than older children (Blaylock *et al.*, 1999). Differences in nutrition knowledge and attitudes between working and nonworking mothers may help in understanding and interpreting differences in their children's nutrition outcomes.

The 1994 to 1996 Diet and Health Knowledge Survey (DHKS) provided information on nutrition and health knowledge and attitudes for a subset of adults aged 20 or older who also participated in the CSFII.⁶¹ Among all 15,344 mother-child dyads identified in the CSFII, there were 1,517 mothers (about 10 percent) who completed the DHKS. These mothers comprise the sample for analyses comparing the nutrition knowledge and attitudes of working and nonworking mothers.⁶²

Responses to survey items were used to develop measures of nutrition knowledge and attitudes in the following seven areas:

⁶¹ The DHKS also collected information on the respondent's own dietary behaviors, self-assessment of her diet, and use of food labels. These items were not examined here because they cannot reasonably be linked to children's diets.

⁶² The sample size did not allow for reliable estimates of outcomes by number of adults in the household, income below 130 percent of poverty, or further stratification by age of sample child.

Nutrition knowledge:

- Knowledge of Food Guide Pyramid recommendations
- Knowledge about dietary fat, saturated fat, and cholesterol
- Knowledge about nutrient information on food labels
- Awareness of diet-disease relationships

Attitudes:

- Attitudes toward importance of dietary guidelines
- Attitude towards importance of nutrition and other food purchasing considerations
- Beliefs about relationship between diet and health

For some of the topics, responses to individual survey items are presented. For others, summary measures were constructed, generally by summing the number of correct responses to a set of related questions or, for ordinal scales, computing the proportion of respondents who provided a positive response (e.g., agree or somewhat agree). The methodologies used to group survey items and summarize responses draw upon previous work with the DHKS by Colavito *et al.* (1996), Blaylock *et al.* (1999), Guthrie *et al.* (1999), and Gleason *et al.* (2000). Results for each nutrition knowledge and attitude domain are separately presented below.

Nutrition Knowledge

Knowledge of Food Guide Pyramid Recommendations

The Food Guide Pyramid is an educational tool designed to assist people in putting the *Dietary Guidelines for Americans* into practice. It is intended to promote balance, moderation and variety in one's diet. Recommendations for the number of daily servings from each of five main food groups are commonly presented as ranges, for example, "2 to 4 servings of fruit per day". For adults, the **specific** number of servings recommended depends mainly on their energy requirements. For children, the number of servings recommended also depends on age (USDA, 1992). It was expected that a mother's understanding of the appropriate number of servings for herself from each food group would carry over into appropriate meal planning for her children. The question in the DHKS about the Food Guide Pyramid recommendations was:

How many servings from the (FOOD GROUP) would you say a person of your age and sex should eat each day for good health?

Because the recommended ranges are so much more widely publicized than the specific values by age and calorie level, any response within the recommended range was considered "correct".

As shown in Exhibit C.4, mothers' knowledge of Food Guide Pyramid recommendations varies by food group. Almost three quarters (72 percent) of mothers' correctly report the recommended number of servings for the fruit group (two to three servings), whereas only 12 percent do so for the bread, cereal, rice and pasta group (six to 11 servings).⁶³ Although there are some differences, knowledge of recommendations follows a similar pattern for mothers of both younger (0 to 8 years old) and older children (9 to 17 years). The most notable differences in mothers' knowledge of Food Pyramid recommendations relate to income level. Low-income mothers (household income below 185 percent

⁶³ Virtually all of the mothers who did not answer correctly underestimated the recommendation for the bread group.

of poverty) are less likely to identify the number of servings recommended for all but the fruit group when compared with mothers whose income is higher (over 185 percent of poverty). For example, almost 20 percent fewer low-income mothers report the correct recommendation for the vegetable (three to five servings) and bread groups than higher-income mothers.

Exhibit C.4

Mothers' Knowledge of Food Guide Pyramid Recommendations, by Food Group^a

	Maternal Employment Status			All Children
	Full-Time	Part-Time	Homemaker	
All children				
Fruits	73.5%	72.9%	70.5%	72.2%
Vegetables	61.9	64.2	55.5	59.7
Milk, yogurt, cheese	60.0	61.3	57.8	59.7
Bread, cereal, rice, pasta	11.6	14.5	9.7	11.6
Meat, poultry, fish, dry beans, eggs, nuts	65.5	65.9	59.1	62.9
Maximum sample size	721	318	472	1,511
By age group				
0 to 8 years				
Fruits	76.0%	75.1%	69.7%	73.3%
Vegetables	70.4**	67.7	56.8	64.5
Milk, yogurt, cheese	55.1	57.6	55.1	55.5
Bread, cereal, rice, pasta	14.2	16.8	13.0	14.2
Meat, poultry, fish, dry beans, eggs, nuts	70.2**	67.9	56.2	64.1
Maximum sample size	310	138	275	723
9 to 17 years				
Fruits	70.8%	70.4%	71.4%	70.9%
Vegetables	52.5	60.4	53.9	54.5
Milk, yogurt, cheese	65.4	65.5	60.9	64.3
Bread, cereal, rice, pasta	8.8	11.9	6.0	8.7
Meat, poultry, fish, dry beans, eggs, nuts	60.2	63.6	62.3	61.4
Maximum sample size	411	180	197	788
By income category				
Up to 185% of poverty				
Fruits	75.3%	74.6%	67.5%	71.1%
Vegetables	55.2*	45.7	42.8	47.7
Milk, yogurt, cheese	42.0	60.6**	43.4	47.3
Bread, cereal, rice, pasta	5.9	8.2	6.8	6.7
Meat, poultry, fish, dry beans, eggs, nuts	61.5	70.8***	49.7	57.7
Maximum sample size	268	153	286	707

Exhibit C.4**Mothers' Knowledge of Food Guide Pyramid Recommendations, by Food Group^a**

	Maternal Employment Status			All Children
	Full-Time	Part-Time	Homemaker	
Over 185% of poverty				
Fruits	72.9%	72.0%	73.7%	72.8%
Vegetables	64.0	75.0	68.9	66.6
Milk, yogurt, cheese	66.2	61.2*	72.8	66.7
Bread, cereal, rice, pasta	13.5	18.4	12.7	14.4
Meat, poultry, fish, dry beans, eggs, nuts	66.7	62.7	68.6	65.8
Maximum sample size	453	165	186	804

a The recommended number of USDA Food Guide Pyramid servings per day varies by age and gender. The ranges for each food group are: fruits, 2-4 servings; vegetables, 3-5 servings; milk, yogurt, cheese, 2-3 servings; bread, cereal, rice, pasta, 6-11 servings; meat, poultry, fish, dry beans, eggs, nuts, 2-3 servings (Bowman *et al.*, 1998).

*** 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

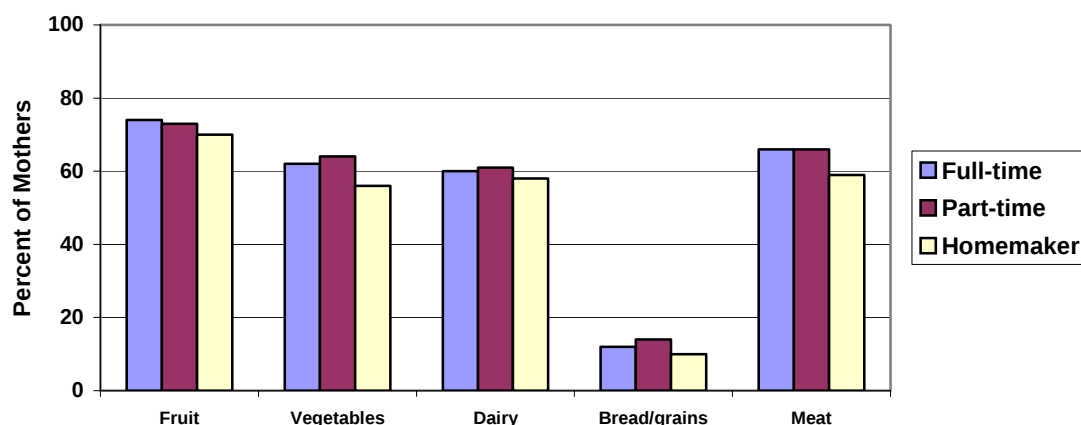
Knowledge of Food Guide Pyramid recommendations does not differ significantly by maternal employment status, although greater proportions of working mothers correctly report the recommendations for each of the five food groups (Exhibit C.5). Among low-income mothers and those with younger children, maternal employment is positively and significantly related to knowledge of some, but not all, of the Food Guide Pyramid serving recommendations. For example, significantly more low-income mothers who work part-time compared with low-income homemakers know the recommendations for the milk, yogurt, and cheese (61 *versus* 43 percent) and the meat, poultry, fish, and meat substitutes groups (71 *versus* 50 percent). Working mothers with children up to 8 years old, especially those who work full-time, are more likely to know the recommended number of servings for the vegetable and meat, poultry, fish, and meat substitutes (two to three servings) groups than homemakers (70 *versus* 56 to 57 percent reporting correctly for both food groups).

Knowledge About Dietary Fat, Saturated Fat and Cholesterol

Lowering dietary intake of fat, saturated fat and cholesterol has been a target of the *Dietary Guidelines for Americans* since 1980. Most people know that high levels of saturated fat and cholesterol can increase blood cholesterol and risk for heart disease, and that high fat diets are linked to some types of cancer. They also need to know, however, how to make appropriate food choices with respect to these dietary components. The comparisons discussed below are based on three sets of questions that addressed this type of knowledge. For example, DHKS respondents were asked:

Based on your knowledge, which has more saturated fat: butter or margarine?

Exhibit C.5**Mother's Knowledge of Food Guide Pyramid Recommendations, by Food Group and Employment Status**



The average percentages of correct responses were computed for four such items about saturated fat, and six similar items about total fat. In addition, the percentage of correct responses to four items pertaining to the general concepts about saturated fat, unsaturated fat, and cholesterol was computed to represent principles related to dietary fat and cholesterol. An example of this type of question is:

If a food has no cholesterol is it also: low in saturated fat, high in saturated fat, or could it be either high or low in saturated fat?

On average, mothers are able to correctly answer 71 percent of the questions about food sources of total fat and two thirds of the questions about saturated fat. They know the correct response to less than half (41 percent) of the questions on general principles related to fats and cholesterol (Exhibit C.6). The pattern is similar for mothers with younger and older children, but varies by income level. Scores on all three measures are lower for low-income mothers compared with higher income mothers.

Exhibit C.6

Mothers' Knowledge about Sources of Dietary Fat and Cholesterol^a

	Maternal Employment Status			All Children
	Full-Time	Part-Time	Homemaker	
All children				
Total fat	73.2%***	76.1%***	65.7%	71.2%
Saturated fat	67.7	69.8	65.5	67.6
Fats and cholesterol	42.0	42.0	39.3	41.4
Maximum sample size	726	318	473	1,517
By age group				
0 to 8 years				
Total fat	72.0%**	74.1%***	63.5%	68.9%
Saturated fat	67.4	68.2	67.3	67.5
Fats and cholesterol	40.4	38.2	40.4	40.0
Maximum sample size	312	138	276	726
9 to 17 years				
Total fat	74.5%**	78.4%***	68.3%	73.8%
Saturated fat	68.1	71.6*	63.4	67.7
Fats and cholesterol	43.8*	46.2*	37.9	42.9
Maximum sample size	414	180	197	791
By income category				
Up to 185% of poverty				
Total fat	66.3%***	69.7%***	56.8%	62.4%
Saturated fat	62.3	64.6	57.6	61.3
Fats and cholesterol	35.1	36.1	32.4	34.3
Maximum sample size	268	153	287	708
Over 185% of poverty				
Total fat	75.5%	80.5%*	74.9%	76.2%
Saturated fat	69.6*	72.7	73.8	71.2
Fats and cholesterol	44.4	46.1	46.5	45.3
Maximum sample size	458	165	186	809

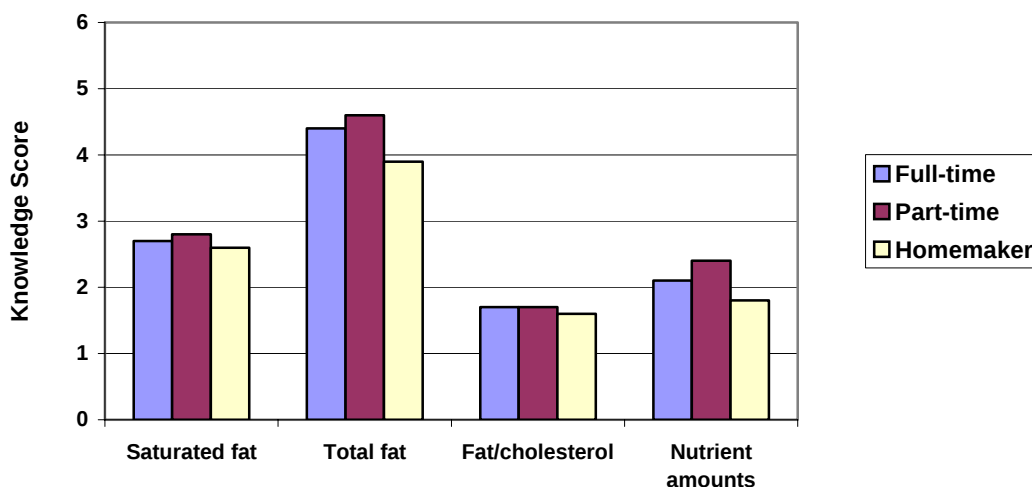
a Based on the average percent of correct responses to four questions about saturated fat, six questions about total fat, and four questions about principles related to dietary fat and cholesterol.

*** 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

With regard to maternal employment, the only difference found in mothers' knowledge of dietary fat, saturated fat, and cholesterol overall is for total fat scores (Exhibit C.7). Working mothers have a significantly higher percent of correct responses when identifying food sources of total fat than homemakers (73 to 76 percent *versus* 66 percent). Results are consistent across both age groups examined, but are less pronounced among mothers with incomes over 185 percent of poverty.

Exhibit C.7**Mothers Knowledge About Fat and Cholesterol and Nutrient Information on Food Labels, by Employment Status*****Knowledge About Nutrient Information on Food Labels***

Another type of knowledge that may influence food choices is the ability to interpret label information on the nutrient composition of foods. The Nutrition Facts section of food labels is one source of this information. A question on the DHKS asked:

Now think about the section of the food label that tells the amount of calories, protein, and fat in a serving of the food. If it showed that one serving of the food contained (AMOUNT OF NUTRIENT), would you consider that to be a low amount or a high amount?

The question was asked about five nutrients: fat, saturated fat, cholesterol, sodium, and dietary fiber. A summary score was computed based on the percent of correct responses.

Results show that mothers of both younger and older children are able to discern between high and low amounts in a food for an average of 41 percent of the nutrients examined (Exhibit C.8). Consistent with other measures of maternal nutrition knowledge, low-income mothers do more poorly in this area than higher income mothers (32 versus 46 percent correct).

There is a significant positive relationship between employment status and mothers' ability to interpret nutrient information on food labels. Both full- and part-time working mothers have higher scores on this measure than homemakers (42 and 48 versus 35 percent correct). Mothers who work part-time correctly answer the most nutrient composition questions for all age and income groups considered (Exhibit C.8). This finding is consistent with the fact that part-time working mothers have higher levels of formal education compared with both homemakers and mothers who work full-time.

Exhibit C.8**Mothers' Knowledge about Nutrient Information on Food Labels^a**

	Maternal Employment Status			All Children
	Full-Time	Part-Time	Homemaker	
All children				
Nutrient amounts	42.4%***	47.9%***	35.2%	41.0%
Maximum sample size	726	318	473	1,517
By age group				
0 to 8 years				
Nutrient amounts	43.5%**	47.7%***	35.3%	41.0%
Maximum sample size	312	138	276	726
9 to 17 years				
Nutrient amounts	41.1%	48.2%***	34.9%	41.1%
Maximum sample size	414	180	197	791
By income category				
Up to 185% of poverty				
Nutrient amounts	29.8%	43.0%***	27.6%	31.9%
Maximum sample size	268	153	287	708
Over 185% of poverty				
Nutrient amounts	46.6%	50.4%*	43.1%	46.2%
Maximum sample size	458	165	186	809
a	Based on the average percent of correct responses to questions about amounts (high versus low) per serving of five nutrients: fat, saturated fat, cholesterol, sodium, and dietary fiber.			
***	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			

Awareness of Diet-Disease Relationships

The final aspect of nutrition knowledge considered here reflects an individual's awareness that certain health problems are related to dietary practices. This type of knowledge may motivate a person to learn more about nutrition and adopt healthy eating behaviors. A mother who is aware that a particular eating behavior has health implications will presumably try to influence the corresponding aspect of her child's diet. The relevant DHKS item was:

Have you heard about any health problems caused by:

- *eating too much fat?*
- *not eating enough fiber?*
- *eating too much salt or sodium?*
- *not eating enough calcium?*
- *eating too much cholesterol?*
- *eating too much sugar?*
- *being overweight?*

The proportion of mothers with a “yes” response to each part of the question was calculated and compared across employment categories.⁶⁴

Overall, most mothers are aware of a causal relationship between each dietary behavior queried and health problems (Exhibit C.9). Awareness is highest for “being overweight” (95 percent) and lowest for “not eating enough fiber” (68 percent). This pattern is qualitatively the same regardless of age of child or income category. Diet-disease awareness is lower among low-income mothers (54 to 91 percent) compared with higher income mothers (77 to 97 percent).

Exhibit C.9

Mothers’ Awareness of Diet-Disease Relationships, by Dietary Practice

	Maternal Employment Status			All Children
	Full-Time	Part-Time	Homemaker	
All children				
Eating too much fat	88.6%	90.7%	90.9%	89.9%
Not eating enough fiber	68.5	70.2	68.0	68.8
Eating too much salt/sodium	92.8	84.6	89.2	89.9
Not eating enough calcium	90.7***	90.3**	80.4	87.2
Eating too much cholesterol	93.5	89.3	88.9	91.1
Eating too much sugar	82.4	77.0	84.1	81.8
Being overweight	96.6	94.3	93.5	94.9
Maximum sample size	714	315	466	1,495
By age group				
0 to 8 years				
Eating too much fat	86.8%	87.3%	90.0%	88.2%
Not eating enough fiber	65.7	63.6	65.7	65.3
Eating too much salt/sodium	92.0	79.1	86.0	87.3
Not eating enough calcium	91.8**	88.0	80.3	86.5
Eating too much cholesterol	93.7	87.9	87.5	90.2
Eating too much sugar	82.0	76.8	82.9	81.4
Being overweight	97.0	90.9	90.0	93.1
Maximum sample size	310	136	273	719
9 to 17 years				
Eating too much fat	90.6%	94.5%	91.9%	91.8%
Not eating enough fiber	71.7	77.6	70.5	72.7
Eating too much salt/sodium	93.8	90.7	92.8	92.9
Not eating enough calcium	89.5*	92.9**	80.6	88.0
Eating too much cholesterol	93.4	90.9	90.5	92.1
Eating too much sugar	82.9	77.2	85.4	82.3
Being overweight	96.2	98.1	97.3	96.9
Maximum sample size	404	179	193	776

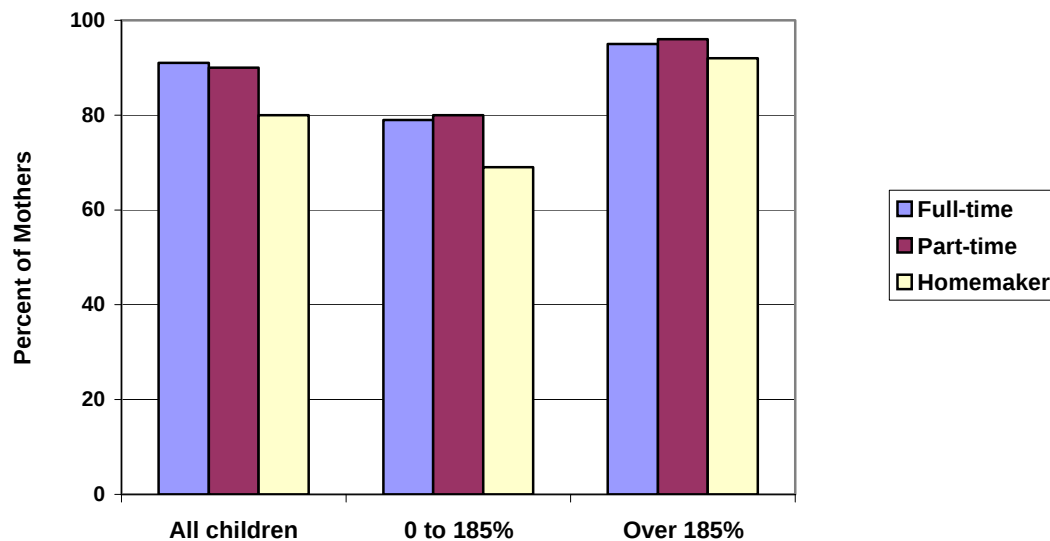
⁶⁴ Although some researchers have defined diet-health awareness based on the respondent being able to correctly identify specific dietary practice-health problem links (e.g., sodium consumption and hypertension), it is felt that the “perception” of a relationship alone can affect dietary behavior (communication with Linda Cleveland, USDA Food Surveys Research Group).

Exhibit C.9**Mothers' Awareness of Diet-Disease Relationships, by Dietary Practice**

	Maternal Employment Status			All Children
	Full-Time	Part-Time	Homemaker	
<i>By income category</i>				
Up to 185% of poverty				
Eating too much fat	76.8%*	82.2%	86.4%	83.0%
Not eating enough fiber	50.6	57.7	53.1	54.1
Eating too much salt/sodium	83.2	76.3	85.7	83.4
Not eating enough calcium	79.2*	80.5*	68.6	74.8
Eating too much cholesterol	82.5	76.5	83.1	81.7
Eating too much sugar	77.9	75.4	84.4	80.1
Being overweight	95.3	91.4	88.6	91.0
Maximum sample size	260	150	280	690
Over 185% of poverty				
Eating too much fat	92.6%	95.4%	95.6%	93.7%
Not eating enough fiber	74.6*	77.4	83.2	77.0
Eating too much salt/sodium	96.1	89.1	92.8	93.5
Not eating enough calcium	94.6	96.0	92.5	94.1
Eating too much cholesterol	97.3	97.0	94.8	96.3
Eating too much sugar	84.0	78.3	83.7	82.8
Being overweight	97.1	96.0	98.2	97.1
Maximum sample size	454	165	186	805
*** 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				

There is little to no difference in the diet-disease awareness of working mothers compared with homemakers. The only significant difference overall is a ten-percentage-point increase in the share of working mothers aware of a relationship between not eating enough calcium compared with homemakers. Results do not vary by age of child or income, but the difference for calcium is smaller and non-significant among higher income mothers (Exhibit C.10).

Exhibit C.10**Mothers' Awareness of a Relationship Between Not Eating Enough Calcium and Health Problems, by Household Income Relative to Poverty and Employment Status**



Attitudes***Attitudes Toward the Importance of Dietary Guidelines***

Although knowledge and awareness of dietary recommendations may play a role, favorable attitudes are also necessary and important influences on dietary behavior. The seriousness with which mothers view various dietary guidelines may be reflected in the corresponding aspects of their children's diets, for example, the components of the Healthy Eating Index. The DHKS asked mothers how important 11 positive dietary practices were to them, specifically:

To you personally, is it very important, somewhat important, not too important, or not at all important to:

- ***Use salt or sodium only in moderation?***
- ***Choose a diet low in saturated fat?***
- ***Choose a diet with plenty of fruits and vegetables?***
- ***Use sugars only in moderation?***
- ***Choose a diet with adequate fiber?***
- ***Eat a variety of foods?***
- ***Maintain a healthy weight?***
- ***Choose a diet low in fat?***
- ***Choose a diet low in cholesterol?***
- ***Choose a diet with plenty of breads, cereals, rice and pasta?***
- ***Eat at least two servings of dairy products daily?***

The proportions of mothers who felt the behavior was “very important” were compared across employment groups. At least half of all mothers feel that eight of the 11 guidelines are very important to them (Exhibit C.11). The guideline considered very important to the most mothers involves maintaining a healthy weight (79 percent); close to one-third of mothers feel that choosing a diet with plenty of breads and grains is very important (35 percent). Mothers’ attitudes follow a similar pattern across child age and household income groups. An interesting exception is the finding that 14 percent more low-income than higher income mothers feel that eating at least two servings of dairy products daily is very important.

Exhibit C.11

Mothers’ Attitudes Toward Dietary Guidelines: Percent Reporting Positive Behavior Is Very Important to Them

	Maternal Employment Status			All Children
	Full-Time	Part-Time	Homemaker	
All children				
Salt/Sodium	47.7%	40.9%**	54.6%	48.6%
Saturated fat	50.9**	52.9	62.2	55.3
Fruits and vegetables	67.4	76.1	72.5	70.8
Sugars	47.7	48.3	53.1	50.1
Fiber	46.3**	53.5	56.9	51.3
Variety	56.7	55.4	61.2	58.3
Weight	76.7	77.8	80.8	78.7
Fat	59.9	56.9	64.1	61.3
Cholesterol	53.8	53.2	62.1	56.8
Breads, cereals, rice, pasta	32.1	36.0	39.5	35.4
Dairy products	43.0	43.4	51.3	45.9
Maximum sample size	720	306	451	1,477
By age group				
0 to 8 years				
Salt/Sodium	46.4%	34.1%**	52.3%	46.6%
Saturated fat	47.7*	40.4**	60.8	51.6
Fruits and vegetables	69.5	71.6	73.4	71.4
Sugars	46.0	34.8**	55.0	47.6
Fiber	43.9	41.7	54.1	47.6
Variety	51.4	44.2	59.1	53.2
Weight	74.0*	73.8	84.1	78.0
Fat	55.0**	53.1	67.2	59.5
Cholesterol	48.5**	47.0	61.9	53.6
Breads, cereals, rice, pasta	31.7	30.6	40.3	35.0
Dairy products	46.0	43.2	54.9	49.0
Maximum sample size	309	130	263	702
9 to 17 years				
Salt/Sodium	49.0%	48.5%	57.1%	50.8%
Saturated fat	54.4	66.7	63.7	59.2
Fruits and vegetables	65.0	81.1	71.6	70.0
Sugars	49.6	63.2	51.0	52.8
Fiber	49.1	66.4	60.1	55.4
Variety	62.6	67.8	63.5	64.0

Exhibit C.11

Mothers' Attitudes Toward Dietary Guidelines: Percent Reporting Positive Behavior Is Very Important to Them

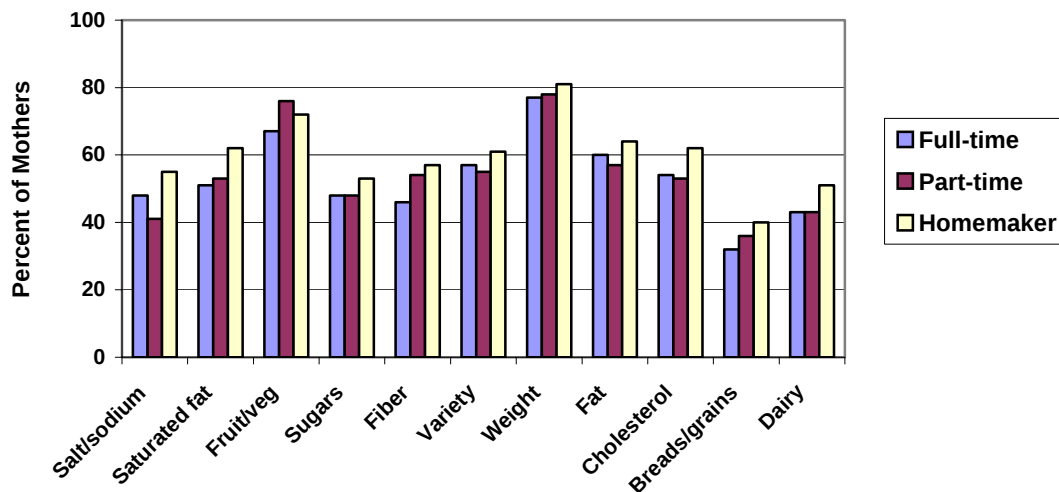
	Maternal Employment Status			All Children (cont.)
	Full-Time	Part-Time	Homemaker	
Weight	79.6	82.2	77.2	79.6
Fat	65.3	61.1	60.7	63.3
Cholesterol	59.5	60.1	62.3	60.3
Breads, cereals, rice, pasta	32.4	41.9	38.5	35.9
Dairy products	39.8	43.6	47.3	42.4
Maximum sample size	411	176	188	775
By income category				
Up to 185% of poverty				
Salt/Sodium	49.4%	44.1%	52.9%	50.7%
Saturated fat	53.5	49.9	55.2	54.1
Fruits and vegetables	71.2	71.3	69.6	71.3
Sugars	53.1	46.8	51.2	51.7
Fiber	53.3	49.1	52.8	52.5
Variety	51.6	57.6	50.9	53.4
Weight	78.3	82.0	81.1	81.0
Fat	57.4	55.4	60.8	59.5
Cholesterol	55.2	50.7	54.0	54.1
Breads, cereals, rice, pasta	34.0	28.9	35.6	33.3
Dairy products	55.4	52.8	54.0	54.8
Maximum sample size	268	149	269	686
Over 185% of poverty				
Salt/Sodium	47.0%	38.9%**	56.3%	47.5%
Saturated fat	50.1***	55.4*	69.1	55.9
Fruits and vegetables	66.0	79.3	75.7	70.5
Sugars	45.9	49.4	54.9	49.2
Fiber	44.0**	56.1	61.0	50.6
Variety	58.6**	53.2**	71.2	61.0
Weight	76.2	75.0	80.6	77.5
Fat	60.9	57.7	67.7	62.4
Cholesterol	53.4***	54.6*	70.1	58.3
Breads, cereals, rice, pasta	31.4	41.3	43.3	36.5
Dairy products	38.8	37.4	49.0	40.9
Maximum sample size	452	157	182	791
*** 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				

In contrast to the trends reported above for nutrition knowledge, working mothers tend to have less favorable attitudes towards the importance of all 11 dietary guidelines than homemakers (Exhibit C.12). Differences in the proportions of working and nonworking mothers who feel the practices are very important are statistically significant for only three of guidelines examined: fewer part-time working mothers find the use of salt/sodium in moderation to be very important compared with

homemakers (41 *versus* 55 percent), and full-time working mothers are the least likely to feel that choosing a diet low in saturated fat or adequate in fiber is very important (a difference of about ten percentage points between working and nonworking mothers for both guidelines). Maternal employment status is more strongly associated with attitudes towards dietary guidelines among mothers with children age 0 to 8 years old and in higher income households (over 185 percent of poverty).

Exhibit C.12

Mothers' Attitude Towards Importance of Dietary Guidelines, by Employment Status



Attitude Toward Importance of Nutrition and Other Food Purchasing Considerations

It was expected that when purchasing food, working mothers would put relatively more emphasis on **ease of preparation** and perhaps **how well the food keeps** (to minimize shopping trips), whereas nonworking mothers put relatively more emphasis on **price**. The importance of these considerations associated with time *versus* money pressures may spill over for either group into putting less emphasis on **nutrition**. To explore these issues, responses of “very important” to the following DHKS item were tabulated:

When you buy food, how important is (FACTOR)—very important, somewhat important, not too important, or not at all important?

- *How safe the food is to eat?*
- *Nutrition?*
- *Price?*
- *How well the food keeps?*
- *How easy the food is to prepare?*
- *Taste?*

Taste has been shown to be the most important factor in food selection in studies conducted over the last decade (Guthrie *et al.*, 1999), and remains important here. Approximately 88 percent of all mothers rate **taste** as very important when buying food (Exhibit C.13). In contrast to past studies, **food safety** is rated just as high (88 percent).⁶⁵ **Nutrition**, which is rated very important by two-thirds of all mothers, has received slightly higher ratings in other studies (74 to 78 percent), but is typically considered more important than **price** and other attributes. The exception in this sample is among low-income mothers where **nutrition**, **price** and **how the food keeps** are considered very important by equal proportions of mothers. Not surprisingly, **price** is much less important among higher income mothers.

Exhibit C.13

Mothers' Attitudes Toward Nutrition and Other Factors in Buying Food: Percent Reporting Factor Is Very Important to Them

	Maternal Employment Status			All Children
	Full-Time	Part-Time	Homemaker	
All children				
Safety	88.3%	88.9%	85.8%	87.7%
Nutrition	67.9	55.7**	69.5	66.7
Price	42.7***	38.5***	63.0	48.5
How well food keeps	59.6	53.3	58.9	58.3
Ease of preparation	44.5	34.5	40.4	41.0
Taste	88.3	87.9	84.9	87.5
Maximum sample size	722	315	473	1,510
By age group				
0 to 8 years				
Safety	88.3%	87.4%	86.7%	87.5%
Nutrition	64.4	46.3***	72.4	64.4
Price	44.2***	32.6***	62.3	49.4
How well food keeps	59.6	50.7	61.1	58.6
Ease of preparation	43.7	34.2	37.7	39.6
Taste	85.9	84.6	86.9	86.1
Maximum sample size	312	137	276	725
9 to 17 years				
Safety	88.3%	90.6%	84.7%	87.9%
Nutrition	71.8	66.2	66.3	69.2
Price	40.9***	45.0**	63.7	47.5
How well food keeps	59.5	56.1	56.4	58.0
Ease of preparation	45.3	34.9	43.4	42.6
Taste	91.1*	91.7*	82.6	89.1
Maximum sample size	410	178	197	785

⁶⁵ Because food safety in a literal sense is virtually a non-issue in the United States, respondents who emphasize this factor are presumably thinking about such considerations as absence of pesticides, lack of irradiation, and freshness.

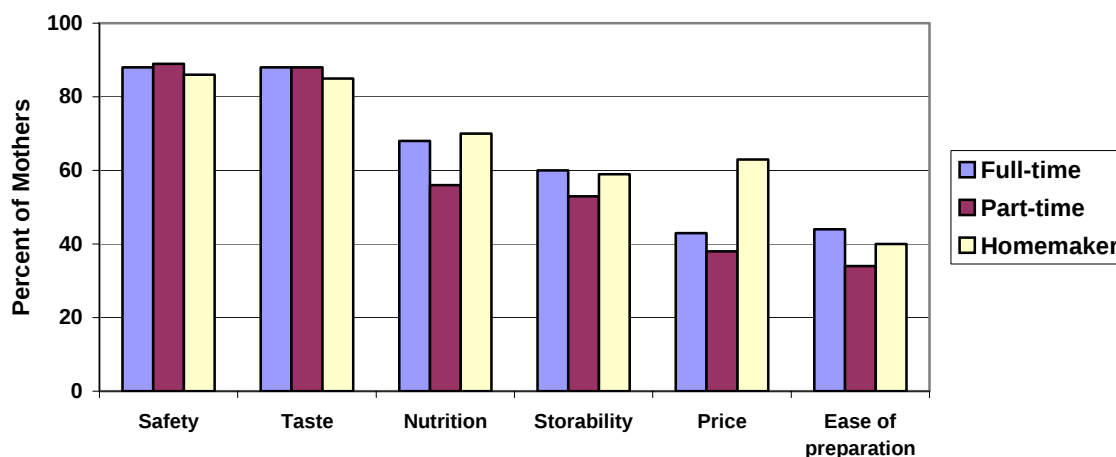
Exhibit C.13

Mothers' Attitudes Toward Nutrition and Other Factors in Buying Food: Percent Reporting Factor Is Very Important to Them

	Maternal Employment Status			All Children
	Full-Time	Part-Time	Homemaker	
By income category				
Up to 185% of poverty				
Safety	85.1%	84.8%	83.9%	84.8%
Nutrition	63.4	64.2	69.2	67.0
Price	68.7	53.8***	76.3	69.7
How well food keeps	76.3	69.6	67.4	70.9
Ease of preparation	51.9	32.6	44.0	44.3
Taste	93.3**	93.1*	82.0	88.3
Maximum sample size	267	150	287	704
Over 185% of poverty				
Safety	89.4%	90.4%	87.6%	89.3%
Nutrition	69.5	51.2***	70.0	66.5
Price	33.7**	28.2***	48.9	36.5
How well food keeps	53.9	42.6	49.8	51.2
Ease of preparation	42.0	35.0	36.5	39.2
Taste	86.7	84.7	87.9	87.0
Maximum sample size	455	165	186	806
***	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			

As predicted, homemakers are more likely to report **price** as a very important factor in buying food than either full-time or part-time working mothers (63 percent *versus* 43 and 38 percent, respectively). This is illustrated in Exhibit C.14 and probably reflects the lower average household income for this group compared with working mothers. The differences in attitudes toward **price** are significant across most child age and income groups, but are smaller in magnitude for low-income mothers. Surprisingly, there were no significant differences in the importance of **ease of preparation** or **how well the food keeps** between working and nonworking mothers.

Oddly, part-time working mothers are significantly less likely to report **nutrition** as very important than homemakers (56 *versus* 68 percent). This difference tends to be concentrated among mothers of young children and with higher family incomes.

Exhibit C.14**Importance of Nutrition and Other Factors to Mothers in Buying Food, by Employment Status**

Beliefs About Relationship Between Diet and Health

A mother's opinion about the benefits and the barriers associated with a particular dietary practice may influence the quality of her child's diet. Three items from the DHKS in particular can be thought of as representing barriers or facilitators to healthy eating. These items are:

- (1) Some people are born to be fat and some thin; there is not much you can do to change this.***
- (2) There are so many recommendations about healthy ways to eat, it's hard to know what to believe.***
- (3) What you eat can make a big difference in your chance of getting a disease, like heart disease or cancer.***

The proportions of mothers indicating that they "somewhat/strongly disagree" (statements 1 and 2 above) or "somewhat/strongly agree" (statement 3) were used to compare beliefs of working and nonworking mothers.

The vast majority of mothers overall (92 percent) agree with statement 3, suggesting they believe in the relationship between diet and disease risk. This belief should, theoretically, enhance the adoption of healthful eating behaviors among their children. Mothers in higher income households are somewhat more likely to hold this belief than those in low-income households, but age of child makes no difference (Exhibit C.15). Most mothers (63 percent) disagree with the statement (1) inferring that a person's weight is unrelated to diet (or other factors, e.g., exercise), but a fairly large proportion believe this to be true. Only one-fifth of all mothers disagree that it is difficult to know which, among many, dietary recommendations to believe (statement 2). These beliefs may represent a barrier to adopting healthful dietary practices. Based on their responses to statements 2 and 3, a larger share of low-income mothers hold beliefs that are considered barriers to healthy eating compared with higher income mothers.

Maternal employment does not seem to be associated with the diet- and health-related beliefs examined here. There are no significant differences in the responses of working and nonworking mothers overall. Low-income working mothers are significantly less likely to feel that it is difficult to know which dietary recommendations to believe than homemakers in the same income category (10 *versus* 18 percent disagreed with statement 2). In addition, among higher income mothers, more of those working than not working believe a person's weight can be affected by diet (62 to 63 *versus* 78 percent disagreed with statement 1).

Exhibit C.15

Mothers' Beliefs in Diet and Health Relationship

	Maternal Employment Status			All Children
	Full-Time	Part-Time	Homemaker	
All children				
Born to be fat/thin, can't change (% disagree)	61.2%	60.0%	67.2%	62.6%
Don't know what recommendations to believe (% disagree)	20.0	23.8	24.3	22.1
Diet can affect risk for disease (% agree)	94.2	88.0	90.2	91.8
Maximum sample size	726	317	473	1,516
By age group				
0 to 8 years				
Born to be fat/thin, can't change (% disagree)	62.5%	57.2%	64.1%	62.2%
Don't know what recommendations to believe (% disagree)	19.9	30.0	25.0	23.7
Diet can affect risk for disease (% agree)	93.5	87.4	91.6	91.7
Maximum sample size	312	138	276	726
9 to 17 years				
Born to be fat/thin, can't change (% disagree)	59.8%	63.1%	70.6%	63.2%
Don't know what recommendations to believe (% disagree)	20.1	17.0	23.4	20.3
Diet can affect risk for disease (% agree)	94.9	88.7	88.7	92.0
Maximum sample size	414	179	197	790
Up to 185% of poverty				
Born to be fat/thin, can't change (% disagree)	57.8%	54.4%	56.0%	56.4%
Don't know what recommendations to believe (% disagree)	10.3**	10.3*	18.2	13.9
Diet can affect risk for disease (% agree)	88.5	76.6	85.9	85.1
Maximum sample size	268	153	287	708

Exhibit C.15**Mothers' Beliefs in Diet and Health Relationship**

	Maternal Employment Status			All Children
	Full-Time	Part-Time	Homemaker	
Over 185% of poverty				
Born to be fat/thin, can't change (% disagree)	62.3%**	62.7%*	78.2%	66.1%
Don't know what recommendations to believe (% disagree)	23.3	31.4	30.5	26.8
Diet can affect risk for disease (% agree)	96.1	95.3	94.9	95.6
Maximum sample size	458	165	186	809
*** 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				
