

CHILD NUTRITION PROGRAMS RESEARCH



USDA's child nutrition programs give students a better chance for success. Well-nourished children are healthier, more able to learn in school, and more likely to grow into productive members of society. For the low-income children to whom the programs provide meals and snacks free or at reduced prices, the programs may be especially important in breaking the cycle of poverty.

Many of this Nation's children are served by one or more of USDA's child nutrition programs. The National School Lunch and School Breakfast Programs provide nutritious meals to children in participating schools: students from low-income families receive free or reduced-price meals. Higher income students purchase the meals at "full price," although their meals are still subsidized to a small extent by USDA. USDA also promotes nutrition education in schools through its Team Nutrition Initiative. The Child and Adult Care Food Program subsidizes healthy meals and snacks in participating child care centers, family daycare homes, and adult daycare facilities. The providers of care are reimbursed for each type of qualifying meal (breakfast, lunch/supper, or snack) they serve. The Summer Food Service Program funds meals for children in low-income areas when school is not in session.

Research Summary

FANRP research has provided insight on numerous issues related to the child nutrition programs. FANRP's comprehensive review of relevant evaluation studies found that there was little or no up-to-date information about the effects of USDA child nutrition programs because most of the previous studies of the school meal programs' impact on participants' nutrition and health were conducted before the 1995 start of the School Meals Initiative for Healthy Children that was designed to improve the nutritional quality of school meals. The other child nutrition programs, including the Child Care Food Program and the Summer Food Service Program, have not been well studied, primarily because of the difficulty and cost of collecting representative data on program participants (see the chapter on "Data Development" for information on FANRP's efforts to develop data and methodologies that will enhance the ability to study issues related to child nutrition programs in the future).

Recent FANRP studies have shown that younger children are more likely than older children to participate in school meal programs, and that, while almost all children from food stamp or TANF households receive free school meals, the reverse is not the case. FANRP has conducted a number of congressionally mandated studies regarding program operations, on issues related to plate waste in schools, the Fruit and Vegetable Pilot Program, tiering in the Child and Adult Care Food Program, and direct certification in the National School Lunch Program.

evidence that participation in the National School Lunch Program increases total household food expenditures, existing evidence of the program's impacts on nutrition and health outcomes is limited. Research suggests that low-income students are more likely to consume a substantial breakfast when the School Breakfast Program is available to them. However, the program's impact on students' dietary intakes, after the School Meals Initiative was implemented is unknown. Similarly, the effects of USDA-funded nutrition education on food choices both at school and elsewhere have not been evaluated in a nationally representative sample.

Studies of other child nutrition programs' impact on nutrition and health outcomes are lacking

Research Highlights

Assessing Diet and Health Outcomes

Child nutrition programs can have an important impact on children's diets. On an average schoolday, over half of all U.S. schoolchildren participate in the National School Lunch Program, and over 17 percent participate in the School Breakfast Program. Participating schools must serve lunches that meet Federal nutritional requirements and offer free or reduced-price lunches to needy children. During the summer when school is out, some children receive meals from the Summer Food Service Program. Children participating in the Child and Adult Care Food Program may eat multiple meals and/or snacks each day at the child care center or family daycare home where they participate. Many of these participants are preschoolers, an age crucial for growth and development and for the formation of healthy eating habits.

The impact of school meals on nutrition and health outcomes remains unresolved

The school meals programs have received the most evaluations of any of the child nutrition programs, yet their impact on nutrition and health is uncertain. In FANRP's comprehensive literature review of the effects of food assistance programs on nutrition and health, Fox et al. (2004) concluded that the National School Lunch and the School Breakfast Programs operations changed substantially after most of the available research was completed. For example, most of the studies predate the School Meals Initiative for Healthy Children, launched in 1995, which was designed to improve the nutritional quality of school meals (key components of the initiative included revised nutrition standards for school meals, a major restructuring of menu planning, and a broad-based nutrition education program). One cannot assume that findings from earlier research apply to today's school meals programs. While there is

The review by Fox et al. (2004) found that few studies had examined the effect of the Child and Adult Care Food Program on nutrition and health outcomes, and those that had are dated and/or severely limited. The impact of the Summer Food Service Program on the nutrition and health status of participants has not been studied. Evaluations of these programs have been limited by the difficulties and cost of collecting representative data on program participants.



Ken Hammond, USDA

The availability of a School Breakfast Program may have beneficial effects for children

Bhattacharya et al. (2004) examined the efficacy of school nutrition programs in improving a broad range of dietary outcomes by comparing the nutritional status of students and their families during the school year with students' nutritional status when school is out. Study results suggested that the School Breakfast Program is beneficial for children. The study found evidence that children who have a School Breakfast Program available consume a better overall diet, consume a lower percentage of calories from fat, are less likely to have a low intake of magnesium, and are less likely to have low serum levels of vitamin C and folate. For every outcome examined, School Breakfast Program availability either promoted better outcomes or at the least did not promote worse outcomes. While the study indicated that the National School Lunch program had little detectable effect on children's diet, these results were not as reliable as the school breakfast results due to methodological issues related to the National School Lunch Program's widespread availability.

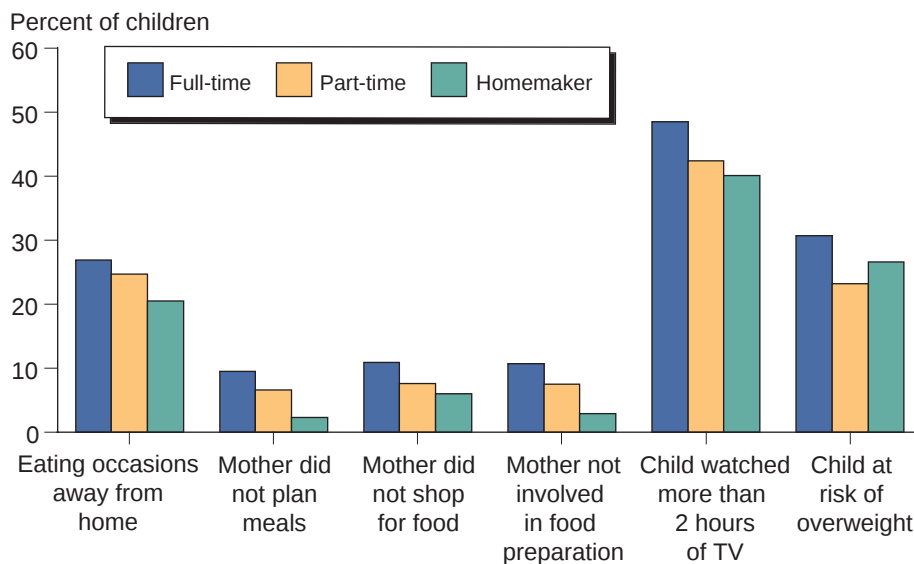
Maternal employment affects children's nutrition

As a result of the dramatic increase in labor force participation among women in recent decades, a majority of women with children are now employed outside the home. Economic theory suggests that families in which mothers work outside the home must make tradeoffs between the advantages of greater income and the disadvantages of less time for home food production and involvement in children's activities. Crepinsek and Burstein (2004b) examined differences in nutrition and nutrition-related outcomes among children whose

Figure 3-1

Nutrition-related outcomes by maternal employment status

Children of mothers who work full-time have worse outcomes



Source: Crepinsek and Burstein, 2004b.

mothers worked full-time, part-time, and not at all. The study found that working mothers participate less in meal planning, shopping, and food preparation and the children of full-time working mothers were 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 (fig. 3-1). However, for those children participating in Child and Adult Care Food Program, participation made substantial positive contributions to intakes of key nutrients, indicating the important role the program may play in promoting the well-being of children of employed mothers (Crepinsek and Burstein, 2004a).

Program Participation

FANRP research on the demographic characteristics of school meal participants may help program administrators more effectively target the program.

School meal participation is lower among older students

A study by Newman and Ralston (2006) that examined the economic and demographic characteristics of students served by the National School Lunch Program found that overall participation in the program (including free, as well as reduced- and full-price meals) was lower among high school students than among children ages 8-13. This finding is partly related to younger students' being more likely to have lower household incomes and thus more likely to qualify for free and reduced-price meals. Thirty-four percent of students ages 8-13 came from families below 130 percent of the poverty line while only 30 percent of students ages 15-18 did. Previous studies have also identified greater feelings of stigma regarding school meals among older students.

Most households with students receiving a free lunch were not participating in either the Food Stamp Program or TANF

Newman and Ralston (2006) also found that almost all students in households participating in the Food Stamp Program or TANF program received free lunches. However, two-thirds of students receiving free lunches through the National School Lunch Program were in households that did not participate in the Food Stamp Program or in TANF, even though their income levels were sufficiently low to qualify for benefits. The National School Lunch Program does not have some of the restrictions that may discourage participation in the Food Stamp Program and TANF, such as asset limits and proof of income, and schools also encourage families to apply for program certification by sending home application forms with students. The results suggest that there is room for expanding access to the Food Stamp Program and TANF among the many free-lunch beneficiaries who are possibly eligible for the other programs as well.

Program Administration

FANRP has conducted a number of studies examining issues related to the operation of child nutrition programs, including several that were conducted in response to congressional mandates.

Plate waste in schools reflects lost opportunities to improve children's diets

A report to Congress reviewed studies on the extent of plate waste in the school nutrition programs and the factors associated with it (Buzby and Guthrie, 2002). Some plate waste—the quantity of edible portions of food served through USDA's school nutrition programs that students discard

each year—is ubiquitous and unavoidable. Nevertheless, to the extent that meals—or particular items in those meals, such as fruits and vegetables—are not consumed by children, the full nutritional benefits of the program may not be achieved. Based on a review of the literature, the best national estimate available indicated that about 12 percent of calories from foods served as part of the National School Lunch Program are wasted, resulting in a direct economic loss of over \$600 million. Vegetables and fruits appear to be the most likely items to be uneaten. Possible causes of plate waste include wide variation in student appetites and energy needs, differences between meals served and student preferences, scheduling constraints that interfere with meal consumption or result in meals being served when children are less hungry, and availability of substitute foods from competing sources.

Fruit and Vegetable Pilot Program in schools found to be popular

To promote fresh fruit and vegetable consumption among the Nation's schoolchildren, the Nutrition Title of the 2002 Farm Act provided \$6 million for USDA to award to schools

through a Fruit and Vegetable Pilot Program for the 2002-03 school year. The pilot program provided fresh and dried fruits and fresh vegetables free to children in 107 elementary and secondary schools in Indiana, Iowa, Michigan, Ohio, and New Mexico. Pilot funds were allocated to each school on a per student basis, which amounted to \$94 per student. The pilot's intent was to determine the feasibility of such a program and its success as determined by the students' interest in participating. A congressionally mandated evaluation of the pilot found that almost all schools participating in the pilot considered the program to be very successful and would like the pilot to continue (Buzby et al., 2003). Of the 105 schools reporting on feasibility, 100 believed that it is feasible to continue the pilot if funding were made available. Schools reported that 80 percent of students were very interested in the pilot, and another 18 percent were somewhat interested; 71 percent of the schools reported that students' interest had increased during the pilot period. The positive results of this evaluation led to Congress' decision to extend the pilot program during the subsequent school year and to make the program permanent in 2004.



Direct certification increases participation in the National School Lunch Program

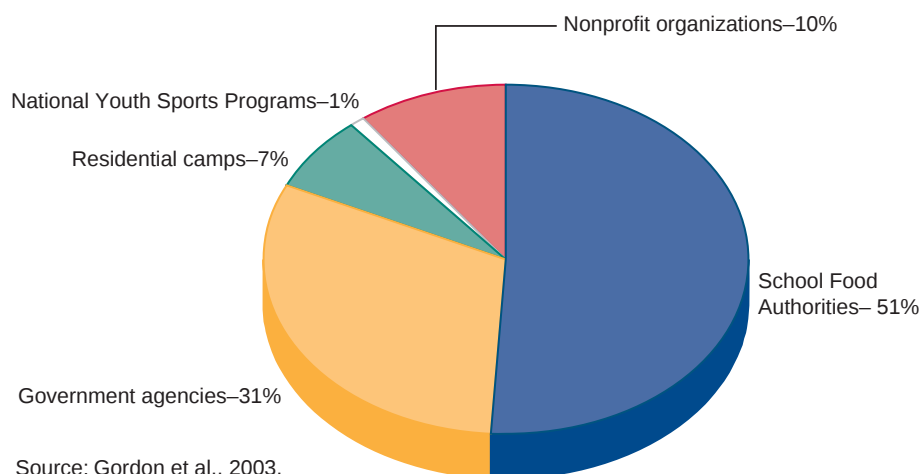
An important aspect of the National School Lunch Program is that low-income children can receive lunches free or at a reduced price. In the late 1980s, USDA introduced the policy of direct certification for free meals. Previously, all families who wished their children to receive free or reduced-price meals had to complete an application and provide data on family size and income. Under direct certification, school districts use information from State welfare or food stamp offices to certify children to receive free meals instead of requiring families to fill out applications. Direct certification was designed primarily to improve program access and administrative efficiency. Gleason et al. (2003) examined the prevalence of direct certification, its implementation methods, and its effects on program access and integrity. About 61 percent of school districts used direct certification in the National School Lunch Program in the 2001-02 school year, the same share as in 1996. About 18 percent of all students certified for free meals were directly certified. Direct certification increased the number of children certified for free meals by about 400,000 and slightly increased overall participation in the National School Lunch Program. The study was instrumental in the child nutrition reauthorization bill of 2004, which emphasized the use of direct certification to increase both program access and integrity.

School food policies affect students' dietary behaviors

A study of several Houston, TX, middle schools found that, after chips, candy, dessert foods, and sweetened beverages were removed from the schools' snack bars, students' consumption of milk increased while

Figure 3-2

Summer Food Service Program meals served by type of sponsor *School districts served over half of all meals*



consumption of sweetened beverages declined (Cullen et al., 2006). While chip consumption from the snack bar decreased after the policy change, consumption of chips and candy from school vending machines increased. The results indicate that while policy changes that affect foods sold in schools can result in changes in student consumption from the targeted environments, compensation may occur if all food environments do not make similar changes.

FANRP sponsored first major study of the Summer Food Service Program in 15 years

When school is not in session, the Summer Food Service Program is the major Federal resource available to provide children from low-income families with nutritious meals. The program, which served 2.1 million children in 2001, is small in comparison with the National School Lunch Program, which served 15.5 million children that year. Growing interest in improving Summer Food Service Program operations and expanding participation led FANRP to commission the first comprehensive examination of the program since 1986. The study found that in fiscal year 2001,

more than 4,000 local sponsors provided about 130 million meals at more than 35,000 feeding sites (Gordon and Briefel, 2003). On average, meals provided the levels of key nutrients recommended for school meals. However, breakfasts were slightly lower in food energy than recommended, and lunches were higher in fat. Half the program sponsors were school districts, which operated about half the sites and served about half the meals (fig. 3-2). Other sponsors included government agencies, private nonprofit organizations, and residential camps. Most site supervisors reported they could serve more children, but that various barriers, such as lack of transportation, may be reasons why more children do not participate in the program.

Mandated tiering refocuses CACFP benefits on low-income children

A 1995 study of the family child care homes portion of the Child and Adult Care Food Program (CACFP) found that nearly 80 percent of children served came from middle and higher income families. At that time, all meals served in CACFP child care homes received the same reimburse-

ment rate irrespective of the child's family income. To refocus the program on low-income children, the Personal Responsibility and Work Opportunities Reconciliation Act of 1996 mandated an income-targeted meal reimbursement structure and called for a study of its effects. A key finding from the report to Congress was that the family child care homes component of the CACFP became substantially more focused on low-income children after tiering was introduced (Hamilton et al., 2002). The share of meal reimbursement dollars for meals served to children with household incomes at or below 185 percent of the Federal poverty guideline doubled from 21 percent in 1995 to 45 percent in 1999 (fig. 3-3). Although tiering reduced the number of family child care homes participating in the program, it did not alter the number or nutritional quality of meals offered by them.

CACFP sponsors report administrative costs exceeding allowable reimbursements

While tiering was successful in refocusing CACFP family day care home

funding to serve low-income children as intended by Congress, the system created additional duties for CACFP sponsors that oversee those homes. This situation raised concerns as to the adequacy of reimbursements for sponsors' administrative expenses. The decline in the number of CACFP sponsors—a 6-percent drop between 1995 and 2001—further added to the concern. To address the issue, Pettigrew et al. (2006) explored the administrative cost reimbursement system for CACFP sponsors and found that costs reported by sponsors on average were about 5 percent higher than allowable reimbursement amounts.

Behavioral economics identifies options for improving students' diets

A study by Just et al., (2007) incorporated findings from behavioral economics, food marketing, and psychology to improve our understanding of food decisions and to identify possible options for improving the diets and health of participants in the food and nutrition assistance programs, including the school meals programs. For example:

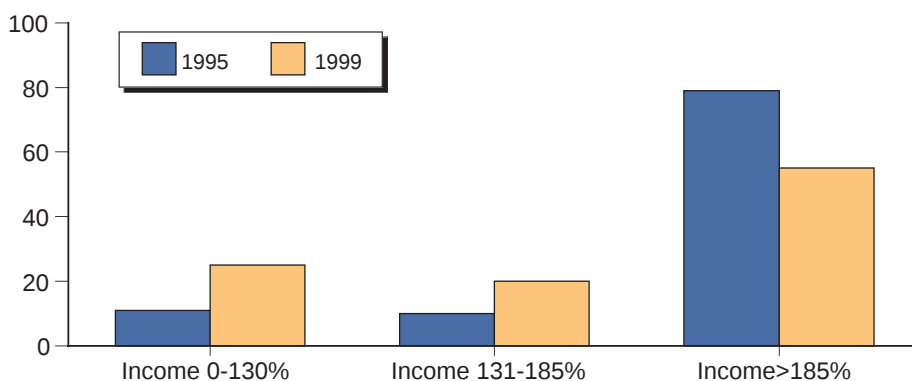
- People have problems of *self-control* when choosing food, either because they prefer immediate gratification or because they are under the influence of a visceral factor, such as feeling hungry. Letting students preselect menu options in the school meal programs may improve the healthfulness of their food choices.
- People place more weight on *default options*. Making the default menu option of school meals more healthful, such as a fruit salad instead of French fries, may increase the likelihood that they will choose more healthful foods.
- Food decisions are often based more on emotion than rational thought. *Impulsive behavior*, such as choosing less healthy foods over healthier foods, may result from how the food is presented. Drawing attention to more healthful foods—by making them more accessible or displaying them more prominently in school cafeterias—might mitigate the effects of a distracting environment and increase the likelihood that students choose more healthful menu options.
- *External cues* can have a major effect on the food selected, the amount consumed, and the eater's perception of how much was consumed. Noise levels, lighting, and distractions, as well as the size and shape of foods and food containers, affect how much people eat. Reducing the number of students seated at each table or making school cafeterias more brightly lit are possible options that might help students better monitor their actual consumption.

Figure 3-3

Allocation of Child and Adult Care Food Program meal reimbursements by participant income as percent of poverty

The introduction of tiered reimbursements concentrated program benefits more intensely on low-income children

Percent of meal reimbursement dollars



Source: Hamilton et al., 2002.