

## 2. Background

Both the School Breakfast Program (SBP) and the National School Lunch Program (NSLP) provide nutritionally balanced, low-cost meals to children each school day. Both programs are administered by the United States Department of Agriculture (USDA) through its Food and Nutrition Service (FNS). Participating school districts receive a cash and commodity subsidy for each meal they serve, and in turn, they serve meals which must meet minimum dietary standards. In this section, we describe these programs in some detail, and we review the literature that has evaluated them.

### 2.1. National School Lunch Program (NSLP)<sup>3</sup>

The NSLP was established by the National School Lunch Act in 1946 in response to nutrition deficiency-related health problems identified among young men being drafted during World War II.<sup>4</sup> Perhaps this is why the legislation governing the program states that, “It is declared to be the policy of Congress, as a measure of national security, to safeguard the health and well-being of the Nation's children and to encourage the domestic consumption of nutritious agricultural commodities and other food... [through] school lunch programs” (U.S. Congress, 2000). As this language suggests, a primary goal of the program is to provide meals that include minimum daily requirements of key nutrients. A secondary purpose was the disposal of agricultural surplus (Currie 2003).

Changes to the program over the past 20 years include attempts to alter meal guidelines in order to provide healthier meals and reduce waste, as well as to decrease emphasis on surplus commodity use. Other changes include the development of the “Offer vs. Serve” option, which allowed schools to be reimbursed for lunches in which students were offered all five components of the school lunch meal pattern, as long as students chose at least three components.<sup>5</sup>

The Food and Nutrition Service of USDA oversees administration of the program through local state agencies (usually departments of education). In turn, the state agencies provide technical assistance to local school food authorities, who provide assistance to individual schools. Children are eligible to receive free lunches if their family income is less than 130 percent of the poverty line and reduced-price lunches if their family income is between 130 percent and 185 percent of the poverty line. The schools may charge only up to \$0.40 for a reduced-price lunch.

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<sup>3</sup> Information on NSLP is available from the USDA/FNS website at <http://www.fns.usda.gov/cnd/Lunch/default.htm>. Unless otherwise noted, the information from this section comes from the NSLP Fact Sheet (<http://www.fns.usda.gov/cnd/Lunch/AboutLunch/NSLPFactSheet.htm>), participation totals (<http://www.fns.usda.gov/pd/slsummar.htm>), and budgetary totals (<http://www.fns.usda.gov/pd/cncosts.htm>).

<sup>4</sup> Prior to the National School Lunch Act, school lunch programs operated in some school districts on a temporary basis. This Act made school lunch programs a permanent program available nationwide.

<sup>5</sup> The five elements were one serving of a meat or meat alternate, two servings of vegetables, fruit and/or juice, one serving of bread or bread alternate, and one serving of milk.

The program provides a flat per meal subsidy to participating schools, as long as the meals conform to program guidelines. The subsidy depends on the income of the students served. For the 2003-2004 school year, the subsidies were \$2.19 per free meal, \$1.79 per reduced price meal, and \$0.21 for a full price meal.<sup>6</sup> Additionally, schools receive commodities for use in school lunches. These commodity subsidies are available regardless of the incomes of the students served.

In FY 2001, an average of 27.5 children ate lunch each school day through the NSLP, with an average of 12.9 million children (47 percent) receiving free lunches, 2.6 million receiving reduced-price lunches (9 percent), and 12.0 million (44 percent) receiving full-price lunches at school. The cash reimbursement totaled \$5.6 billion. Currently, the NSLP operates in almost 100,000 public and non-profit private school and residential child care institutions.

In 1994, Congress passed the Healthy Meals for Healthy Americans Act which required the Department of Agriculture to develop a new menu planning system to help schools meet specific nutrient standards set out in the Dietary Guidelines for Americans. Now, rather than choosing a specific number of items from a list, schools can use whatever portions and combinations of food they wish in order to meet these guidelines.<sup>7</sup> In response to the Act, USDA has also implemented the School Meals Initiative for Healthy Children to provide nutrition education to both children and food service staff (Hamilton and Fox 2000). USDA is also working to improve the nutritional quality of commodities distributed to NSLP schools by, for example, reducing the sodium in canned vegetables and offering low-fat beef patties.

## **2.2. School Breakfast Program (SBP)<sup>8</sup>**

The SBP was established in 1966 as a pilot program to provide categorical grants to schools to serve breakfast to the nutritionally needy. While the designation of nutritionally needy was not defined, schools that were first considered for the program included those located in poor areas or where children had to travel a long distance to get to school. Over the next several years, the program was expanded and changed to a per-meal reimbursement. In 1975, the SBP was made permanent, and continued to emphasize providing breakfast to low-income children. To encourage low-income schools to participate, the program offers a severe need payment. To be considered a severe need school, the school must show that the regular breakfast reimbursement rate per meal is insufficient to cover the costs of the school's breakfast program. The school must also show that the 40 percent or more of lunches served to students at the school

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<sup>6</sup> Reimbursement rates are higher in Alaska and Hawaii.

<sup>7</sup> The guidelines for school lunches include: (1) the provision of one-third of the recommended dietary allowances of protein, calcium, iron, vitamin A and vitamin C; (2) the provision of the lunchtime energy allowances for children; and (3) the applicable recommendations of the 1990 Dietary Guidelines for Americans which include eat a variety of food, limit total fat to 30% of calories, limit saturated fat to less than 10 % of calories, a diet low in cholesterol, and moderate use of salt and sodium.

<sup>8</sup> Information on SBP is available from the USDA/FNS website at <http://www.fns.usda.gov/cnd/Breakfast/Default.htm>. Unless otherwise noted, the information from this section comes from the SBP Fact Sheet (<http://www.fns.usda.gov/cnd/breakfast/AboutBFast/bfastfacts.htm>), participation totals (<http://www.fns.usda.gov/pd/sbsummar.htm>), and budgetary totals (<http://www.fns.usda.gov/pd/cncosts.htm>).

in the second preceding school year were served free or at a reduced price. Just as with the NSLP, the breakfasts that are served must meet minimum dietary requirements.<sup>9</sup>

In FY 2001, an average of 7.79 million children ate school breakfast daily, which is up from participation of 1.82 million children in 1975. The cash payments for this program in FY 2001 were \$1.5 billion. The SBP is currently available in more than 78,000 public schools or non-profit schools of high school grade or under, and residential child care institutions.

The eligibility requirements for free and reduced-priced meals are the same as those for the NSLP. In FY 2001, an average of 5.80 million participants (74 percent) received a free breakfast daily, 0.67 million participants (9 percent) received a reduced price breakfast daily, and 1.32 million participants (17 percent) received a full-price breakfast daily. School food programs get reimbursed from the USDA for each breakfast served that meets program requirements. Currently, programs are reimbursed \$1.20 for each free breakfast, \$0.90 for each reduced-price breakfast, and \$0.22 for each full price breakfast served.<sup>10</sup> Schools are reimbursed an additional \$0.23 for free and reduced-price breakfasts if they qualify for severe-need payments.

### **2.3. Evaluation Literature**

Several studies have examined the impact of SBP (Wellisch et al. 1983; Devaney and Fraker 1989; Burghardt, Devaney, and Gordon 1995; Gleason 1995; Devaney and Stuart 1998; Gleason and Sutor 2001).<sup>11</sup> These studies have focused on two questions: (a) does SBP increase the likelihood that children eat breakfast? (b) does SBP have positive impacts on the nutritional outcomes of children? Surprisingly, these studies have reached contradictory conclusions about the first question. While some found that SBP increases breakfast eating, other found that SBP decreases it and still others found no effect (Wellisch et al. 1983; Devaney and Fraker 1989; Burghardt, Devaney, and Gordon 1995; Gleason, 1995; Devaney and Stuart 1998; Gleason and Sutor 2001). Some of these studies have recognized that identifying the impact of SBP is difficult—a simple comparison of outcomes for children participating with those not participating will not give an adequate answer because participation is not randomly assigned. These same reasons also make obtaining an answer to the second question difficult. Some have found that SBP participants have higher intake of some vitamins but lower intake of others. One study finds that SBP is associated with a higher breakfast dietary intake of percentage of calories from fat and saturated fat (Burghardt, Devaney and Gordon 1995).

The NSLP studies have focused on the impact on nutritional outcomes, again with mixed results. Many studies find that NSLP participation is associated with both positive outcomes such as increased protein, vitamin A, and calcium and negative outcomes such as higher

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<sup>9</sup> These guidelines include: (1) the provision of one-fourth of the Recommended Dietary Allowance for protein, calcium, iron, Vitamin A, Vitamin C and calories, and (2) the applicable recommendations of the Dietary Guidelines for Americans which recommend that less than 30 percent of an individual's calories come from fat and less than 10 percent from saturated fat.

<sup>10</sup> Reimbursement rates are higher in Alaska and Hawaii.

<sup>11</sup> See Gleason and Sutor (2001) and Levedahl and Oliveira (1999) for more detailed reviews of the programs and the literature that has analyzed them.

percentages of calories from fat and saturated fat (Wellisch et al. 1983; Akin et al. 1983; Burghardt, Devaney, and Gordon 1995; Gleason and Sutor 2001).

Three studies have used explicit statistical techniques (beyond simple regression) in an attempt to obtain causal estimates of program participation.<sup>12</sup> Devaney and Fraker (1989) evaluate the SBP and find that participation positively affects breakfast intakes of calcium and magnesium and negatively affects breakfast intakes of cholesterol and iron. They use a selection bias model to estimate their results, but they have no exclusion restrictions to identify their participation equation. Consequently, whether their estimates are unbiased depends upon functional form assumptions that easily may be incorrect (Wooldridge 2002). Gordon, Devaney, and Burghardt (1995) evaluate the impact of SBP and NSLP on nutrient intake using an instrumental variables approach to handle the endogeneity of the participation decision; that is, their estimates rely on a variable that quasi-randomly assigns students to participating or not participating in a SBP.<sup>13</sup> However, they report that their first stage does not predict participation well, which amounts to a failure of quasi-randomization.<sup>14</sup> Not surprisingly, their results that are adjusted for endogenous participation do not differ much from their unadjusted results.

Bhattacharya and Currie (2001) estimate the effect of participation in school nutrition programs on selected nutritional outcomes of adolescents using a difference-in-difference methodology to address the endogeneity problem. Specifically, they rely on the insight that eligible children will receive the subsidized meals only when school is in session. They compare the changes across school being in session for those eligible (the first difference) to those who are not eligible (the second difference) to obtain an estimate of the impact of the program. They find that school nutrition programs cause students to consume higher quality diets—which means more fruits and vegetables and less fatty foods. However, they find little effect of the programs on nutritional outcomes like anemia and low serum vitamin levels. One exception to this latter finding is that, among children who are eligible for reduced-priced meals, they find that school nutrition programs lead to fewer children with high cholesterol levels.

There are several criticisms that apply to some or all of these studies. First, many of the studies that examine the 24-hour impact of program participation rely on dietary recall data to estimate dietary quality such as the intake of vitamin A. Such calculations require accurate dietary recall and accurate analysis of the likely contents of food. Even when these quantities are accurately obtained, one must still face the problem that nutrient intakes can vary considerably from day to day even in well-nourished populations.

Second, all of the studies have recognized that any evaluation is difficult given that program participation and program availability (for SBP) are jointly determined, but few have dealt with this problem convincingly. In fact, many of the SBP studies find the counterintuitive result that

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<sup>12</sup> Akin, Guilkey, and Popkin (1983) use a switching regression model to allow the behavior of poor and non-poor children to differ in obtaining their results. However, such a model does not allow for program participation to be endogenous within the income groups, and thus we do not consider it here.

<sup>13</sup> The instruments they use include the price of lunch, indicators for the price for which the student qualifies, the available alternatives to school lunch measured by an indicator for vending machines or school store, and the school's food characteristics measured by an indicator for *a la carte* service availability.

<sup>14</sup> See Bound, Jaeger, and Baker (1995) for a discussion regarding the problems with weak instruments.

SBP reduces the likelihood that children eat breakfast. It seems more likely that such an outcome is not causal, but rather an artifact of statistical methods that fail to account fully for endogenous participation. Namely, it is possible that the children who are most likely to participate are the same children whose households face the severest constraints.

Finally, none of the previous studies have considered the impact of SBP and NSLP on the household. If the programs free up household resources that could be redirected towards other household members, such as younger children or adults, then the true impact of the programs will have been understated.

In this study, we use explicitly address each of these drawbacks. First, our data includes nutritional information that is based on actual serum levels rather than dietary recall information. Second, we rely on an explicit and transparent identification strategy to uncover the causal impacts of the programs. Third, our data allows us to examine the impact of the programs on other household members.