

# CHOICES



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## THEME OVERVIEW: WEIGHING HEALTHY CHOICES FOR THE SCHOOL MEALS PROGRAM

Helen H. Jensen

The National School Lunch Program touches the lives of almost all school children in the United States today. The lunch program is available in 99% of U.S. public schools and 83% of private and public schools combined. In addition, the School Breakfast Program is available in 85% of public schools. For children who participate in the breakfast and lunch program, the school meal setting offers nearly half of the meals they consume during a week. In 2007, the school lunch program served over 30 million school children in a day.

The primary source of funding is through federal reimbursement to school districts for free and reduced-price meals. In addition, the U.S. Department of Agriculture (USDA) provides commodities to states for use in school lunches. In some areas, state and local governments also provide some subsidies or support for the meal programs. The investment made in the programs holds the potential to provide nearly all school children nutritious, low-cost meals to support growth, development, and health and build the foundation for healthy eating habits. The school meal programs are scheduled for reauthorization within the next year, so now is the time to address the current challenges of providing and paying for healthful meals to meet students' needs.

At the request of USDA, the Institute of Medicine undertook a study of the meal programs and the food and nutritional needs of school-aged children. The study committee used the 2005 Dietary Guidelines for Americans and up-to-date scientific evidence on the diets of school-aged children to make recommendations for changes in the meal programs. The recommendations include a new focus on increasing fruits and vegetables and whole-grain-rich foods, and reducing the amounts of saturated fat and sodium. In addition, the committee recommended establishing meal plans with a range of calories (with expressed minimum and maximum amounts), and moving away from the current minimum calorie requirement. In fact, the recommendations are consistent with a growing body of research, as well as encouragement from stakeholder groups to change the school meals to be consistent with the dietary needs of school children today.

The articles in this theme address several dimensions of the school meals program that are important to the ongoing deliberations on school meal policies. Guthrie and co-authors provide an outline of the school meal programs and their role today in meeting the needs of school children. They summarize recent findings on how the programs measure up in terms of student participation, diet quality, and food security. Peterson examines the role of commodity programs for school meals. Research from Minnesota provides evidence on the use and cost of commodities by the school system and is used to support recommendations to improve the financing of foods for the meals program. Ghosh and Senauer consider the issue of how reimbursement rates are set and applied to reimburse schools for the cost of free and reduced-price meals. Wilde and Kennedy focus on the financial side of providing food and the challenge to the school food system of meeting cost constraints. School systems face important decisions about funding and the school food environment. Finally, Just and Wansink offer insight from behavioral economics that suggests opportunities to address the competing goals of improving nutrition and meeting the cost of the meals. Interventions that help trigger healthy food choices in the lunchroom can make adjustments in the meals effective tools to improve student health. Key to their contribution are clues as to what works well in the school setting to improve school food choices and what does not. Through the range of topics covered in these articles on the school meal program and setting, the reader gains an appreciation for the challenges—and opportunities—involved in

improving the meal offerings in schools.

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## USDA SCHOOL MEAL PROGRAMS FACE NEW CHALLENGES

Joanne Guthrie, Constance Newman, and Katherine Ralston

In 2008, the USDA's National School Lunch Program (NSLP) and School Breakfast Program (SBP) fed almost 31 million children each school day. On a typical school day, lunch participants obtain more than one-third (35%) of their daily caloric intake at school; for children participating in both breakfast and lunch, the contribution of school food to caloric intake rises to almost one-half (47%) (Story, 2009). The programs promote the food security of low-income households with children by providing meals to those children at free or reduced price. In addition, the programs strive to improve the diets and health of all participating children.

When school meal programs began (see timeline, Table 1), their focus was on ensuring that all children had something to eat for lunch. Today, overweight and obesity have become the most common nutrition problems among American children. Children are described as "overweight but undernourished" as they consume diets high in saturated fat, added sugars, and sodium, but low in fruits, vegetables, whole grains, and lowfat milk. Public concern has risen concerning the quality of foods available to schoolchildren and whether USDA school meal programs contribute to the growing problem of childhood obesity. In response, there is a desire to update and strengthen nutritional requirements for USDA-funded school meals and regulate the nutritional content of other foods and beverages sold at school—often referred to as "competitive foods."

At the same time, the economic downturn has brought renewed emphasis on the role of the programs as a nutrition safety net for children, with advocates proposing changes to make more children eligible for free meals. However, there is an important issue related to this. School meal providers find it challenging to cover program costs and encourage student participation while improving the quality of meals served to children. Here, drawing primarily on a review by Ralston et al. (2008), we briefly discuss the history of the national school meal programs, current evidence of their association with children's diet and health, and proposed changes in the programs to meet the changing nutrition problems facing American children.

### The School Meal Programs: Yesterday and Today

The NSLP was founded in 1946, building on smaller, localized efforts to provide school meals to needy children. Over time, federal involvement in providing meals to children and youth expanded, with the creation of the School Breakfast Program, the Child and Adult Care Food Program, and the Summer Food Service Program (see Table 1). In 2008, combined Federal spending for these programs reached \$14.4 billion, second in terms of expenditures only to the Supplemental Nutrition Assistance Program or SNAP, (formerly known as the Food Stamp Program) (see Figure 1).

USDA's Food and Nutrition Service (FNS) administers the child nutrition programs and reimburses participating schools' foodservice departments for the meals served to students. Schools must provide meals for free or at a reduced price to children eligible on the basis of household income and USDA reimburses those meals at a higher level. Children from families with incomes at or below 130% of the poverty level are eligible for free meals. Those with incomes between 130% and 185% of the poverty level are eligible for reduced-priced meals. Students in the reduced-price category pay no more than \$0.40 for lunch and \$0.30 for breakfast.

**Table 1**  
**USDA School Meals Program Timeline**

1900s	Private charities and local school boards provide funding for school lunches in some locations in response to concern over learning abilities of malnourished students.
1932	Locally organized school lunch programs receive Federal loans and agricultural surpluses.
1935	The Works Progress Administration (WPA) provides labor and equipment for cooking and serving lunches.
1936	USDA becomes authorized to purchase surplus farm commodities and distribute them to local school lunch programs.
1946	The National School Lunch Act (NSLA) establishes the NSLP, which includes the following requirements: <ul style="list-style-type: none"> <li>meals must meet minimum nutritional standards</li> <li>lunches must be available to low-income students at no cost or reduced price without discrimination</li> <li>program must be nonprofit</li> <li>school lunch must use surplus commodities to the extent practical</li> <li>schools must report expenditures and receipts to State educational agencies</li> </ul>
1962	NSLA is amended to change funding from grant aid to States to a guaranteed meal reimbursement, and additional funding is provided to schools with high percentage of low-income children.
1966	Child Nutrition Act (CNA) is signed into law. The act funds 2-year pilot school breakfast program.
1968	CNA is amended to extend program authority for the School Breakfast Program to 1971; amendment also creates the Summer Food Service Program and the Child and Adult Care Food Program.
1973	CNA amendment makes the School Breakfast Program permanent.
1980	First Dietary Guidelines for Americans published.
1980-81	Omnibus Budget Reconciliation Acts of 1980 and 1981 are enacted. The acts: <ul style="list-style-type: none"> <li>reduce reimbursement rates for reduced-price and paid lunch</li> <li>reduce the cash value for commodities</li> <li>raise income limit for free lunches from 125 to 130 percent of poverty, and lower limit for reduced price from 135 to 155 percent of poverty.</li> </ul> <p>In response to lower reimbursement rates, SBPs raise prices for paid lunches, and participation rates fall by 14 percent.</p>
1983	Restriction on sales of foods of minimal nutritional value is relaxed; sales are prohibited only in foodservice areas during meal times, rather than all through the school day, throughout the school.
1993	Results from the 1991-92 School Nutrition Dietary Assessment (SNDA-1) find that school meals generally meet the nutritional needs of children but school lunches exceed the dietary guidelines for fat and saturated fat as a percent of calories.
1994	Healthy Meals for Healthy Americans Act requires school lunches to conform to the Dietary Guidelines by 1996 and requires that commodities account for at least 12 percent of total assistance. USDA launches the School Meals Initiative for Healthy Children to implement changes in meal requirements and support improvements in the nutritional content of school lunches through technical assistance, nutritional improvement in commodity donations, and an alternative nutrient-based meal planning system.
2001	Results from the 1998-99 School Nutrition Dietary Assessment (SNDA-2) find that the average fat content of school lunches has fallen from 39 percent to 35 percent of calories but still exceed the 2000 Dietary Guidelines.
2002	Nutrition Title of 2002 Farm Act (Farm Bill) provides \$6 million for the Fruit and Vegetable Pilot Program to provide free fresh and dried fruits and fresh vegetables to designated schools in four States and one Indian Tribal Organization. Fifty million dollars is allocated for fresh produce for school meals through the Department of Defense.
2004	The Child Nutrition and WIC Reauthorization Act of 2004 is enacted. The act: <ul style="list-style-type: none"> <li>authorizes Fresh Fruit and Vegetable Pilot as a permanent program and expands to new States and Indian Tribal Organizations</li> <li>requires schools food authorities to develop wellness plans specifying nutritional standards for all foods in schools and goals for physical fitness of students.</li> </ul>
2005	Release of 2005 Dietary Guidelines for Americans has implications for school meal requirements. New guidelines recommend different calorie limits for different levels of activity; recommend fat intake between 20 and 35 percent of calories, rather than below 30 percent; and encourage a shift from refined to whole grains. Agriculture, Rural Development, Food and Drug Administration and Related Agencies Appropriations Act of 2005 further expands the Fresh Fruit and Vegetable Program to a total of 375 schools in 14 States and 3 Indian Tribal Organizations.
2008	The Food, Conservation, and Energy Act of 2008 (Farm Bill): <ul style="list-style-type: none"> <li>expands Fresh Fruit and Vegetable Program to all States, with participating elementary schools to be selected on the basis of highest proportion of children eligible for free or reduced-price meals</li> <li>establishes pilot project to purchase whole grain and whole-grain products for use in school meal programs.</li> </ul>
2009	The American Recovery and Reinvestment Act of 2009 provides \$100 million in equipment grants to improve the quality and safety of school meals, expand participation, and increase energy efficiency.

Source: Adapted from Ralston et al., *The National School Lunch Program Background, Trends, and Issues*, 2008.

USDA reimbursement rates are adjusted annually for inflation, using the Consumer Price Index (CPI) for Food Away from Home for Urban Consumers. Table 2 shows reimbursement rates for school year 2009-10. For both lunch and breakfast there is a standard rate and a higher rate provided to schools with higher proportions of needy students. Because the SBP targets low-income districts, the severe-need reimbursement is common; in school year 2005-06, 89% of all free breakfasts served were reimbursed at the severe-need rate (USDA, 2008). The use of the CPI for food away from home for the annual rate adjustment is somewhat controversial; it has been argued that it may not reflect increases in labor costs for schools, because their employees are more likely to receive benefits than are workers in other food-away-from-home outlets.

Besides cash reimbursement, USDA also provides commodities to states for use in school lunch but not for school breakfast. In FY 2007, the commodities given to schools were worth 17 cents per meal for a total of \$1.04 billion. States select from a wide variety of foods, based on local preference. In addition to the basic “entitlement” commodities, “bonus” commodities are sometimes available through USDA’s price support and surplus removal programs.

Critics of the NSLP have charged that commodities tend to be high-fat meats and cheeses, undercutting efforts to reduce the fat content of school meals. During the 1990s, USDA increased efforts to provide lower fat meat, poultry, and cheese products as commodities. There have been recent federal efforts to use farm bill provisions as a means of making fruits and vegetables more available to schools. The 2002 Farm Bill directed that USDA spend \$200 million of entitlement funds for fruits and vegetables from 2002 through 2007, and the 2008 Farm Bill increased that amount to \$406 million by 2012.

### **Student Participation Has Increased, Especially Among Low-Income Students**

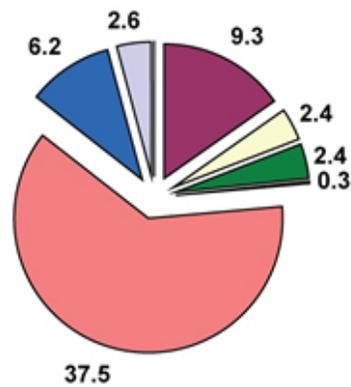
In 2008, the USDA School Meal Programs served 30.9 million lunches and 10.6 million breakfasts on an average school day, more than half of them for free or at a reduced price (see Figure 2). In terms of participation, these programs reached more Americans that year than any other food assistance program. SNAP (formerly known as the Food Stamp Program) reached a smaller number of individuals in 2008—in that year, 28.4 million people lived in households receiving SNAP benefits. However, SNAP’s higher benefit levels make it the largest USDA food assistance program in terms of expenditures.

Student participation in the NSLP has increased over most of the life of the program, with 62% of American school children participating in the program in 2008. There was a drop in participation in the early 1980s when the Omnibus Budget Reconciliation Act of 1980 and 1981 reduced the reimbursement rates for full and reduced-price lunches, and raised the household income limit for eligibility for free lunches. Since 1990, the increase in participation among children receiving free and reduced-price lunches has outstripped that of full-price participants, with the program now serving more free and reduced-price meals than full-price meals.

In contrast, the SBP has always served primarily low-income students. The program began with a very targeted focus on needy schools. The number of schools participating in the SBP has grown dramatically, with the program now offered in the majority of schools. In 2008, 81,517 schools participated in the SBP, up from 79,915 in 2007. In comparison, the NSLP operated in 96,038 schools in 2008. Student breakfast participation also has grown considerably. In fiscal 2008, 10.6 million students participated in the program daily, 3.2% more than the previous year. Nevertheless, participation continues to be much lower than for lunch and to be concentrated among low-income students who also participate in the lunch program.

**Figure 1 Child Nutrition Program Expenditures Make Up 24% of USDA Food Assistance Spending**

**USDA Food Assistance Program Expenditures, FY2008  
(\$ Billions)**



- National School Lunch Program (NSLP)<sup>1</sup>
- School Breakfast Program (SBP)<sup>1</sup>
- Child and Adult Care Food Program (CACFP)<sup>1</sup>
- Summer Food Service Program (SFSP)<sup>1</sup>
- Supplemental Nutrition Assistance Program (SNAP)<sup>2</sup>
- Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)<sup>3</sup>
- Other

<sup>1</sup> Further information on this program at <http://www.ers.usda.gov/Briefing/ChildNutrition/>

<sup>2</sup> Further information on this program at <http://www.ers.usda.gov/Briefing/SNAP/>

<sup>3</sup> Further information on this program <http://www.ers.usda.gov/Briefing/WIC/>

Source: Based on data provided by the Food and Nutrition Service, U.S. Dept. of Agriculture, November, 2008.

**Table 2**

**School Breakfast and Lunch  
Reimbursement Rates SY 2009-10\***

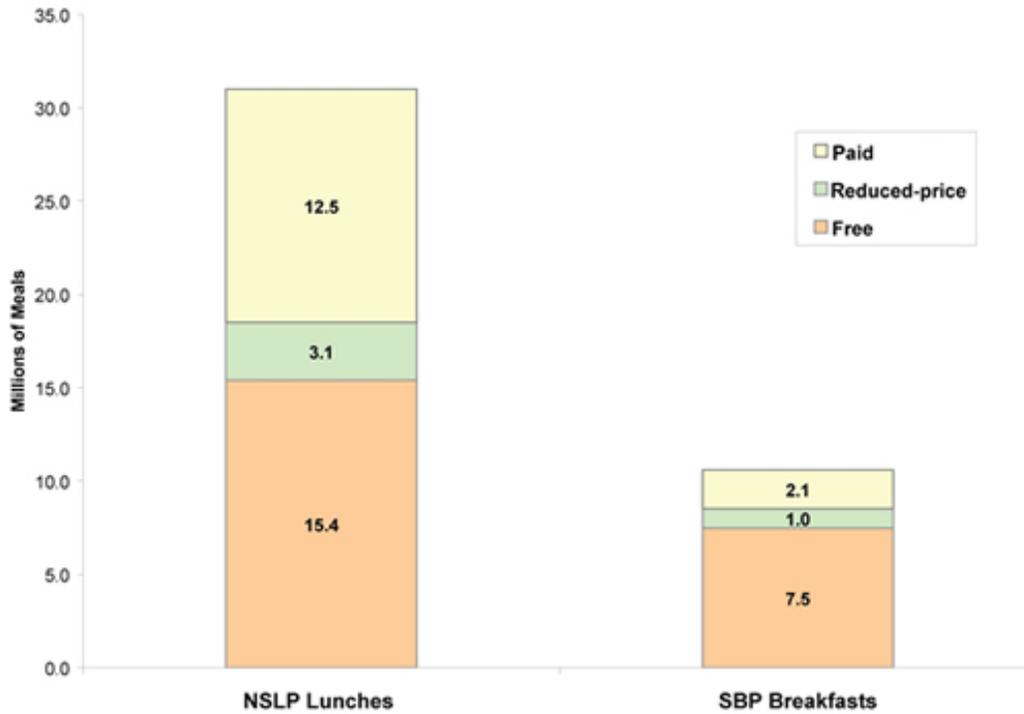
Reimbursement Category	Breakfast Rate		Lunch Rate	
	Standard	Severe Need <sup>1</sup>	Standard	Higher Need <sup>2</sup>
Free	\$1.46	\$1.74	\$2.68	\$2.70
Reduced Price	\$1.16	\$1.44	\$2.28	\$2.30
Full Price	\$0.26	\$0.26	\$0.25	\$0.27

<sup>1</sup> districts serving at least 40% of breakfasts at free or reduced-price

<sup>2</sup> districts serving at least 60% free/reduced price meals

\*In addition to these needs-based adjustments in reimbursement rates, there are higher meal reimbursement rates for Alaska and Hawaii.

**Figure 2 Millions of School Meals Served, by Payment Category, FY 2008**

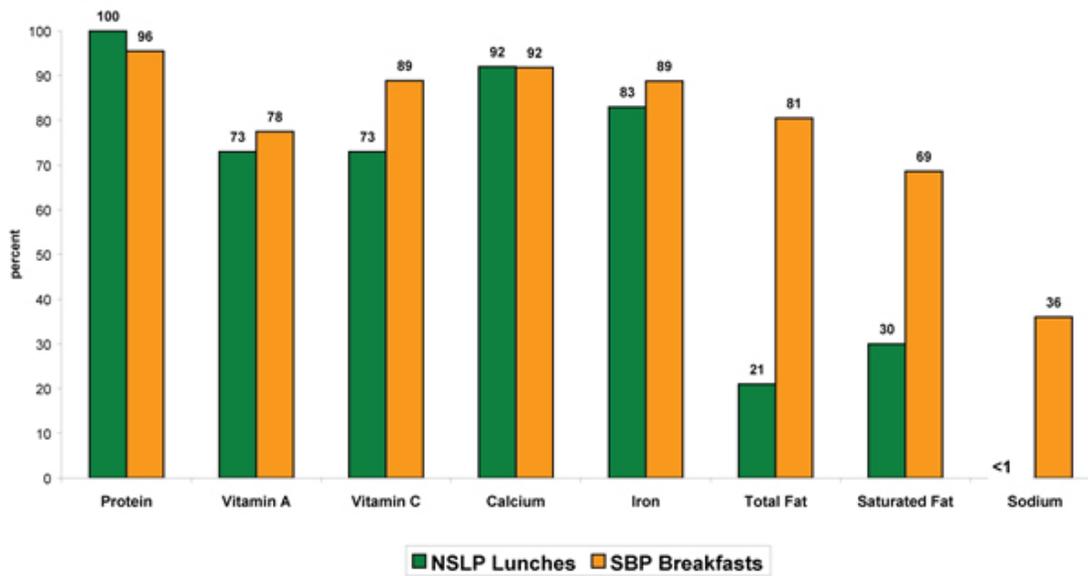


Source: Program Data, Food and Nutrition Service, USDA; June, 2009.

### Effects on Nutrition and Food Security

Program regulations require that schools serve lunches that meet one-third and breakfasts that meet one-quarter of the 1989 Recommended Dietary Allowance (RDA) of protein, calcium, iron, and vitamins A and C. No more than 30% of the meal's calories can come from fat, and no more than 10% can come from saturated fat. Schools are also encouraged to minimize sodium but are not held to a specific standard. Findings from the third School Nutrition Dietary Assessment (SNDA-III), conducted in the 2004-05 school year, indicate that most schools serve lunches and breakfasts that meet nutrition standards for protein, vitamins, and minerals, but many fewer meet standards for total fat and saturated fat (Story, 2009). This is especially true for lunch; schools are more successful in meeting fat and saturated fat standards for breakfast (see Figure 3). The sodium content of meals is also high, compared to the federal *Dietary Guidelines for Americans*.

**Figure 3 Percent of Schools Serving Meals that Meet Nutrition Standards Based on Dietary Guidelines for Americans**



<sup>1</sup> Based on weighted nutrient analysis of menu data for one week, taking into account the number and types of foods actually served to children. Note: USDA meal standards do not require that recommended sodium levels be met; all other standards are requirements. Source: Story (ed.), *Journal of the American Dietetic Association*, Vol. 109, No. 2, Supplement 1, 2009.

### **Effects on Diet Quality**

School meals are higher in total fat, saturated fat, and sodium than is recommended—but so are the diets of most Americans. Analyses of the SNDA-III data (Story, 2009) found that the majority of American school children need to lower their intakes of these nutrients. Participation in the NSLP did not have a statistically significant effect on total or saturated fat intake, but it was associated with higher sodium intake. Lunch entrees, many of them commercially prepared items such as pizzas, chicken nuggets, or burritos, were leading sources of fat and sodium, suggesting a need for improved food products to be made available for school food service.

School meal participation was associated with some positive nutrition outcomes (Story, 2009). Very few children suffered from inadequate vitamin and mineral intakes, but school meal participation appeared to further reduce the likelihood of inadequacy. School lunch participants were significantly more likely to drink milk and to eat fruit and vegetables at lunchtime and less likely to eat desserts and snack items. Their intakes of sugary beverages at lunch were sufficiently lower at lunch to result in a lower overall daily intake. Milk is served with USDA school meals, but sugar sweetened beverages are often sold at school in competition with the USDA meal, from vending machines and other sources. In 2004-2005, these competitive foods were available in 73% of elementary schools, 97% of middle schools, and 100% of high schools (Story, 2009). Children who did not participate in the NSLP were more likely to consume competitive foods. Whole grains and orange/dark-green vegetables, two types of foods stressed by current Federal Dietary Guidelines, were very rarely consumed by either participants or nonparticipants.

### **Obesity**

Originally designed to prevent undernutrition, it has been argued that school meal programs may now be contributing to overconsumption and obesity among American children. The program may encourage overeating by making food more available and inexpensive to children, especially those children receiving meals free or at a reduced price, or by offering meals high in fat and calories.

Ralston et al. (2008) found that while the available research evidence is not conclusive, there is little evidence that school lunch participation promotes obesity. Several studies that made simple comparisons of the weight status of NSLP participants and nonparticipants have found NSLP participants more likely to be

overweight. However, in most studies that attempted to account for characteristics associated with likelihood of participating in the NSLP, such as income, age, gender, and ethnicity, those differences disappeared and NSLP participants were no more likely to be overweight than nonparticipants. This is true for a study using SNDA-III, the most recent data on USDA school meal programs. However, there is one contradictory study that found an obesity-promoting effect among nonpoor first graders, using data from a large, national, longitudinal data set.

Participation in the SBP may actually reduce obesity risk (Story, 2009). Analysis of SNDA-III data identified a relationship between participating in SBP and a lower Body Mass Index (BMI), a measure of weight status. Program participation appeared to increase the likelihood of eating breakfast, and of having a more substantial breakfast. Through these means, participation is associated with spreading calories more evenly over the course of the day; an eating pattern that appears to help maintain a healthy body weight. Another study, using a national, longitudinal sample of elementary-school students, also found the SBP to possibly have a protective effect against obesity. However, other studies have found no effect.

Given these conflicting findings, more research on program effects is warranted. It may be that the programs' effects differ across subgroups. Or they may differ across schools, given different menus and other aspects of implementation.

### **Food Security**

Food security is defined as a condition in which a household, for economic or social reasons, has limited or uncertain access to adequate food. In 2007, 12.4 million children lived in households that were food insecure at some time during the year (Nord, Andrews, and Carlson, 2008). Access to school meal programs may help shield children from the effects of a limited household food supply. In addition, other household members may indirectly benefit if school meals add to the household's overall food resources.

The probability of children from lower-income families participating in the SBP has been found to rise when local food prices increase (Datar and Nicosia, 2009). SBP availability has been linked to a lower probability of anxiety over possible food shortages among families at risk for food security. Still, analysis of a national sample of elementary-aged students found that 38% of children from food insecure households did not participate in the SBP (Bartfeld et al., 2009).

In summer, school meals are available to some children attending summer school. In addition, USDA's Summer Food Service Program (SFSP) provides meals to children living in low-income areas. These efforts provide limited coverage: Nord and Romig (2006) found a higher prevalence of food insecurity in the summer, particularly for households with school-age children. Higher state levels of summertime participation in the NSLP and SFSP were associated with lower likelihood of food insecurity.

Summarizing, there is no clear evidence that USDA school meals are major contributors to childhood obesity. In fact, school breakfast may reduce obesity risk for many children. School meals also are associated with reduced risk of inadequate intakes of some vitamins and minerals, and reduced consumption of sugar-sweetened beverages, the major source of added sugar calories for most American children. The child nutrition programs, especially the SBP, also may promote the food security of low-income households with children. Nevertheless, given the important role they play in the everyday diets of millions of school children, it is reasonable to examine how school meals can do more to improve nutrition and reduce the high prevalence of overweight among American children.

### **The Challenge: Balancing Nutrition, Participation, and Cost**

Given the mixed record of school meals in meeting Dietary Guidelines, the Food and Nutrition Service of USDA has commissioned the Institute of Medicine (IOM) to review and update nutrition standards and meal requirements for the NSLP and SBP. The committee is expected to provide its recommendations for the NSLP and SBP in October 2009.

This will present a new challenge to school food authorities as they strive to meet food security, nutrition, and obesity prevention objectives. To succeed, meals planned according to these new standards must be appealing, so that students will continue to participate and to eat the healthier foods provided. At the same time, meals must be affordable for school food authorities to prepare and serve. Balancing nutrition,

participation, and cost is the “trilemma” that must be solved by successful school food authorities.

The IOM committee has noted that the school meal programs operate in a challenging economic environment, with many school foodservice representatives stating that costs are a barrier to meal improvement. The USDA-sponsored School Lunch and Breakfast Cost Study II (SLBCS-II) (USDA, 2008) found that in school year 2005-06, most schools were able to serve NSLP lunches for a reported cost that was below the free price reimbursement rate. However, when unreported costs which vary across schools but often include such items as administrative labor, equipment depreciation, and utility costs were added, these “full costs” exceeded the free price reimbursement rate in 68% of School Food Authorities (SFAs). The study concluded that breakfast costs generally exceeded reimbursements. When reported costs of breakfast were considered, the applicable reimbursement rate was exceeded in 64% of SFAs; when the full cost of breakfast was calculated, 82% of SFAs exceeded the reimbursement. One problem may be the lower participation rate for breakfast; smaller case studies have found that breakfast programs must achieve some minimum participation level to cover food and labor costs. Once this is achieved, the relatively lower food and labor costs for breakfast can make it more financially viable (Hilleren, 2007).

The SLBCS-II findings, along with concern that improving the nutritional quality of school meals will result in higher costs, have led some interest groups to press for increased meal reimbursements. In addition, it has been argued that funding for such capital improvements as modernized equipment is needed. As part of the American Recovery and Reinvestment Act of 2009, USDA obtained \$100 million in equipment grants to improve the quality and safety of school meals, expand participation, and increase energy efficiency.

### ***Actions to Limit Competitive Foods***

Policy changes intended to improve child nutrition may decrease school revenue opportunities, further exacerbating school foodservice concerns about cost. In past years, many schools have sought to increase revenue by selling additional foods and beverages outside the USDA school meals. Because these “competitive foods” are generally low in nutrients and high in added sugars or fats, child health advocates have called for the removal or limitations on the sale of such foods. The Child Nutrition Reauthorization Act of 2004 required school food authorities that participated in the USDA school meal programs to establish wellness committees that would set local policies on foods sold in school. Many localities responded by limiting competitive foods and 27 states have set nutrition requirements for competitive foods sold in schools. The accompanying article in this theme by Just and Wansink provides some interesting insights for consideration.

In 2009, the Child Nutrition Promotion and School Lunch Protection Act of 2009 was introduced in both the Senate and the House of Representatives. This bill would amend the Child Nutrition Act to require the Secretary of Agriculture to establish science-based nutrition standards for all foods served in schools, not just USDA school meals.

### ***Proposals to Expand Program Benefits to Needy Children***

Along with concerns for improving school foods, there are proposals to expand program benefits to needy children. Some advocates urge that the reduced-price category be dropped and free meal benefits be extended to children in households earning up to 185% of the Federal poverty level. A recent study estimated that this would result in a 13% increase in the likelihood of participating in the NSLP among students currently eligible for reduced-price meals (Moore, Hulsey, and Ponza, 2009).

Advocates have also argued for further expanding the availability of breakfast to ensure access for more low-income students. Low breakfast participation rates could make this economically difficult for some schools as participation rates may be too low to cover minimum costs.

Other proposals include expansion of program benefits to provide coverage when school is not in session. For example, legislation has been introduced that would expand Child Nutrition Program benefits to allow provision of evening meals to children in low-income areas who are attending after-school programs (currently after-school snacks can be provided to such programs through Child Nutrition Programs). Proponents argue that this expansion will provide support for at-risk children of parents working long or non-standard hours.

## A Look Ahead

With reauthorization of Child Nutrition Programs now scheduled for 2010, many changes in the school meal programs are under consideration. Child obesity levels remain high, but an economic downturn has given renewed emphasis to the programs' role in assuring the food security of needy children. While improving nutrition and increasing program access are more important than ever, in a time of budgetary constraint evidence of the effectiveness and efficiency of program changes will be demanded by policymakers. The ERS food assistance and nutrition research program conducts, supports, and disseminates research on the child nutrition programs that may be useful to program administrators and policymakers. In addition, a number of other agricultural economists can play an important role in providing decision makers with the timely, policy-oriented research they need.

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## EVALUATING THE SUCCESS OF THE SCHOOL COMMODITY FOOD PROGRAM

Cora Peterson

Since its origin in the middle of the 20<sup>th</sup> century, the National School Lunch Program (NSLP) has provided a direct policy link between agriculture and child nutrition through its allocation of commodity foods as in-kind benefits to schools. When nutrient deficiency was the primary concern for children's health, the school commodity program provided a convenient policy solution for lawmakers, for it simultaneously supported agricultural producers through consolidated purchases and assisted schools to provide meals to students.

While the broad objectives of federal agriculture policy—to support market growth and stable prices—have remained relatively constant over the past half century, the objectives for children's health policy have been significantly redirected because of new concerns about nutrition and obesity. School operational capabilities have also changed substantially since the NSLP's first years. Despite these changes, little research has been conducted to examine whether the link between agriculture and health within the school commodity program continues to offer benefits for its intended beneficiaries.

This article reviews the school commodity program's original policy objectives in light of current information about the program's impact on schools, child nutrition, and the agricultural sector.

### School Commodity Program History

The school commodity program began as an agriculture initiative to provide an outlet for excess production by American farmers. In the debates leading up to the 1946 passage of the National School Lunch Act, policymakers from the Agriculture Committee in the House of Representatives expressed hope that a federally funded lunch program would create new and lasting demand for American agriculture.

This concept is known as *additionality*, which in this case means the amount by which a dollar of government program spending results in additional food consumption. Lawmakers assumed that donations of surplus foods would also provide a financial and nutritional benefit to schools and students.

In 1973 the United States Department of Agriculture (USDA) informed Congress that it could not continue to guarantee sufficient levels of school commodities because market conditions—which had changed substantially from the time of the first federal commodity donations to schools during the Depression era—dictated the department's annual commodity acquisitions (United States Congress, 1994a). As a result, in 1974 Congress amended the National School Lunch Act to require the USDA to use NSLP funds to purchase commodities to “maintain the annual programmed level of assistance for schools” (United States Congress, 1994a).

This legislation marked a permanent shift in the philosophy of school commodity foods. The USDA had previously channelled foods to schools from its existing stocks that accumulated as a result of surplus removal programs; now the USDA was instructed by Congress to purchase products on behalf of schools to maintain an annual level of commodity assistance. In 1994, the role of “entitlement” commodities in the NSLP was enhanced when Congress amended the National School Lunch Act to require that no less than 12% of total assistance for the NSLP be dispensed to state agencies as commodity foods (Richard B. Russell

National School Lunch Act).

### **Criteria for Evaluating Policy Success**

The school commodity program's current success in terms of supporting the agriculture sector is best evaluated through evidence that the program has created the additionality—meaning consumption in excess of that which would occur without the program—that policymakers originally expected.

Ironically, however, any evidence of additionality due to the school commodity program may also be interpreted as a policy failure with respect to the nutrition goals of the school lunch program, now that overconsumption of calories is a primary challenge to children's health.

In terms of child nutrition, the most desirable evidence of the commodity program's policy success would be findings that show that the program improves school meal nutrition or compliance with USDA nutrition standards.

The most desirable evidence of the commodity program's success in terms of school finance would be that which proves that schools can obtain foods more cheaply through the USDA than through commercial vendors.

### **Current Research**

#### ***Impact on Agriculture***

The most recent study to assess additionality for agriculture due to the NSLP is based on data from the early 1980s. After controlling for factors affecting NSLP participation, demographic factors, household factors, and geographic factors, it was reported that for each dollar of federal NSLP benefits—both cash and commodities—received, households reduced their spending by only 61%, or \$0.61, rather than a full dollar (Long, 1991).

One way to interpret this result is that the NSLP reduces household food expenditures. Another way to interpret this result is that NSLP benefits do not fully replace household food expenditures; thus, the total effect of each federal dollar spent on NSLP reimbursable meals is an estimated \$1.39 for the agricultural sector.

The per-lunch federal cash reimbursement rates for school year (SY) 2009-10 for free, reduced-price, and full-price lunches are \$2.68, \$2.28, and 25 cents, respectively, while the commodity benefit provides an additional 0.195 cents per meal served, regardless of student payment (USDA Food and Nutrition Service, 2009). Based on 39 cents additionality for every dollar of federal NSLP benefits received by households, it may be inferred that the school commodity program estimated additionality for the agricultural sector due to the school commodity program is 8 cents for each lunch served in schools.

However, there are significant drawbacks to applying this estimate to assess the additionality of the school commodity program. First, this estimate is nearly 30 years old. Second, this estimate includes only the federal per meal reimbursement, which represents just part of the full cost of the commodity program at the federal, state, and local levels. Thus while it is accurate to say that every \$1 in school commodity benefits received by households results in additionality according to this estimate, it is inaccurate to say that \$1 in public spending on the commodity program results in additionality.

Finally, the use of household food expenditures to estimate additionality due to the commodity program, specifically, is a convoluted means of measurement. The more accurate way to determine whether the school commodity program creates additionality for the agricultural sector would be to assess school food expenditures among schools that have "cash in lieu of commodities" or commodity letters of credit (CLOC)—which enable school districts to conduct local procurement of foods specified by the USDA—compared to food expenditures among schools that receive commodities.

Kansas is the only state with 100% cash in lieu of commodities, though a few other school districts across the country have cash in lieu or CLOC programs that remain from a 1980s pilot study of alternatives to the

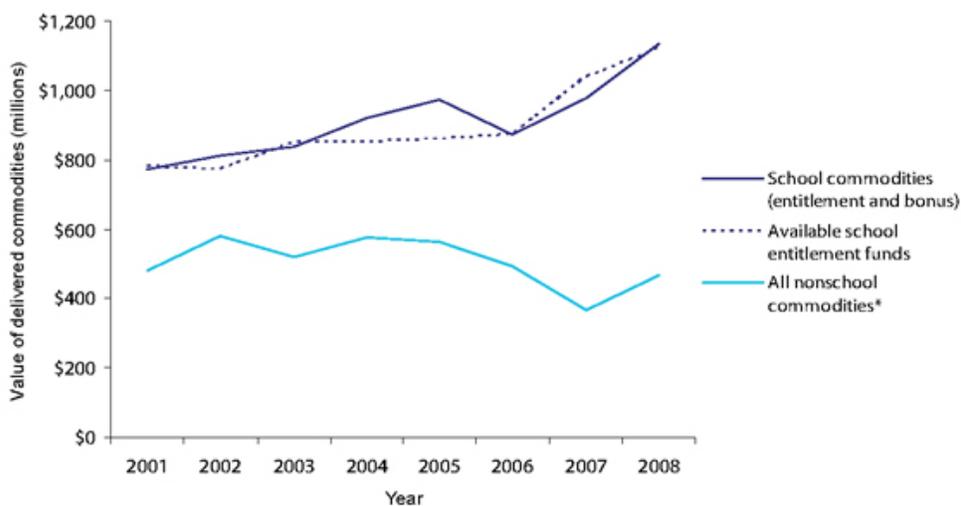
commodity program. No comparative research has evaluated school food expenditures among commodity schools compared to cash in lieu or CLOC schools; thus, no direct estimates exist of additionality due to the school commodity program.

It is clear, however, that the combined value of all federal commodity purchase programs—including the school commodity program—are marginal with respect to total annual farm receipts. In 2007, national farm receipts exceeded \$284 billion, while the reported value of commodities delivered to all federal programs was just \$1.3 billion, or 0.5% of farm receipts (USDA Economic Research Service, 2009; USDA Commodity Food Network, 2009).

Schools receive the majority of government commodities purchased for food assistance programs, as demonstrated in Figure 1. USDA data indicate that the school commodity program received 70% of the total value of commodity foods delivered to all federal food assistance programs in 2008 (the data range for 2001 to 2008 is 58% to 72%) (USDA Commodity Food Network, 2009).

As also demonstrated in Figure 1, for several years from 2001 to 2008 schools did not receive the full value of commodities that was allocated, even if the value of bonus commodities was included. Each year that this occurred represents a loss to both the agricultural sector and schools. Just one recent study—detailed below—has assessed the factors that contribute to schools' failure to obtain the full value of allotted commodities funding.

**Figure 1 Value of Government-Purchased Commodities for School and Nonschool Recipients**



Source: USDA Commodity Food Network data, 2009. \*Domestic food assistance programs eligible to receive commodity foods: Area Agencies on Aging, Bureau of Prisons, Child and Adult Care Feeding Program, Charitable Institutions, Commodity Supplemental Food Program, Disaster Feeding Emergency Food Assistance Program, Elderly Nutrition Pilot Program, Food Bank Demonstration Projects, Food Distribution Program on Indian Reservations, Nutrition Program for the Elderly, Summer Camps, school food programs, Summer Food Service Program, Soup Kitchens and Food Banks.

### **Impact on Child Nutrition**

Commodity foods constitute approximately 15% of foods in school meals, while the remainder are purchased commercially (USDA Food and Nutrition Service, 2008). The USDA list of available commodity foods in SY 2008-9 contained over 180 items. State agencies and school officials are responsible for selecting and ordering commodities from the USDA.

It is unlikely that a direct connection between consumption of school commodities and children's health could be found. For example, there is no evidence in the published literature that commodity cheese or canned pears have unique nutritional attributes compared to their commercial equivalents.

In some cases, schools may be able to specify nutritional attributes—such as “low sodium” or “zero

transfat”—for end products made with commodity foods that have been ordered from the USDA and diverted to commercial manufacturers for further processing. Schools may order bulk commodity food products from the USDA and divert them to commercial food manufacturers for conversion to end products; for example, bulk chicken could be converted to chicken nuggets (USDA Food and Nutrition Service, 2007a). However, this does not necessarily mean that products with similar specifications are not available through local commercial markets.

In the School Nutrition Dietary Assessment Study III, researchers mention that some prepared foods—including pizza, chicken patties, French Fries, and breakfast sandwiches—are manufactured exclusively for school food services (USDA Food and Nutrition Service, 2007b). However, researchers do not provide insight into whether these school-only foods have nutritional attributes that are superior or inferior to commercial formulations or identify whether commodity foods are used in the preparation of such school-only foods.

The Food Research and Action Center recently concluded that the commodity program likely provides significant political support at the national level for the NSLP, though decision-makers at the national and state levels could do more to improve the quality and nutrition content of commodity foods that are offered to schools (Food Research and Action Center, 2008). Further, researchers noted that the commodity program leaves little room for wider fresh fruit and vegetable offerings because the program’s ordering, purchasing, storage, and transportation methods tend to require shelf-stable products, rather than perishable items.

Despite the commodity program’s proclivity for shelf-stable products, the Department of Defense operates a “DOD Fresh” program to provide fruits and vegetables to schools in most states. An evaluation by the USDA’s Economic Research Service in 2003 reported that children consumed 92% to 93% of servings offered during a brief pilot program in 2002, and that 71% of the school administrators believed that students’ interest in fresh fruits and vegetables served at school had increased during the pilot period (Buzby, Guthrie, and Kantor, 2003). However, the value of DOD Fresh commodities accounted for just 4% to 6% of the total school commodity value at the national level from 2006 to 2008 (USDA Commodity Food Network, 2009). There is also limited evidence that some districts may be able to purchase fruits and vegetables more cheaply in their local commercial markets (Hecht, et al., 2008).

A report published by the Robert Wood Johnson Foundation assessed commodity orders among California schools in SY 2005-6 and reported that over 82% of the state’s school entitlement value was directed toward meat and cheese products (Hecht, et al., 2008). Though researchers pointed out that these products are high in fat and saturated fat, this information offers little evidence that could be used to assess whether the commodity program has an impact on child nutrition or adherence to USDA nutrition standards. School meals are required to have minimum calorie content, and thus it is reasonable that some food items in school lunches will have higher calorie and fat content. Also, it would be rational for schools to allocate their commodity funds toward products with the greatest price advantage over equivalent commercial products, and it may be that meat and cheese items offered the best price advantage that year to schools in California.

Definitive conclusions about the commodity program’s impact on child nutrition could only be achieved from schools’ ordering information if it were proved that some aspect of the commodity program leads schools to order and serve more foods that have undesirable nutritional attributes than they would in the absence of the commodity program. Therefore, current evidence about the commodity program’s impact on school operations and finances would be a useful element in an assessment of the program’s impact on child nutrition.

### ***Impact on School Finances***

The USDA is responsible for providing a systematic review of the costs and benefits of providing commodities, according to the National School Lunch Act, though the most recent study with a direct comparison of commercial and USDA commodity food prices was published over 10 years ago.

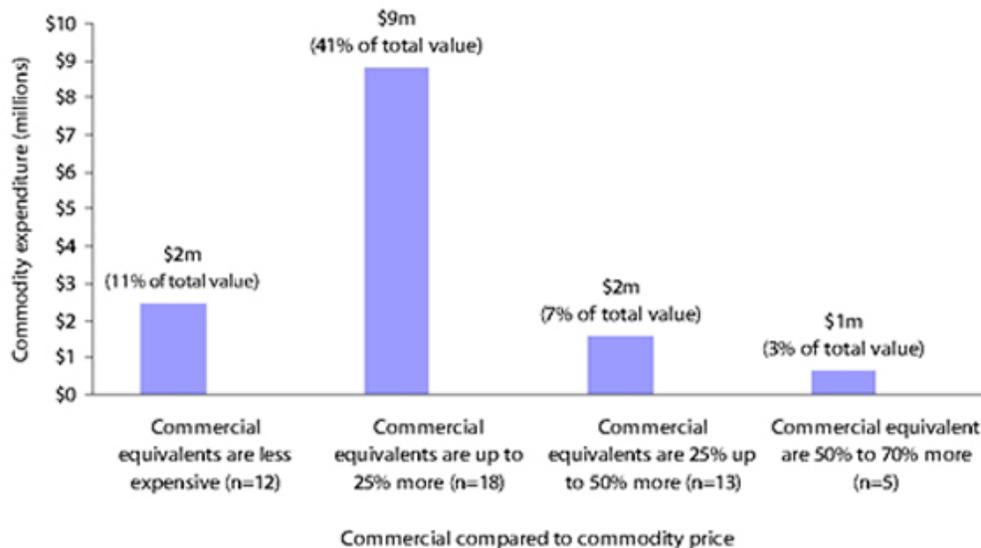
In 1998, the USDA published a report on the prices paid by one of its procurement arms, the Farm Service Agency (FSA), compared to prices of equivalent commercial products (MacDonald, Handy, and Plato, 1998). The report compared just six products and reported that USDA prices were 4% to 38% lower than equivalent commercial products.

Despite high expectations for operational efficiencies from the use of government-procured commodity foods in the NSLP, as early as 1965 there is evidence from U.S. congressional hearings that some schools were having difficulty with the provision of foods, rather than cash, as a portion of federal program funding. The American School Food Service Association wrote to the Agriculture Committee in 1965 to “request that commodity purchases be limited” (United States Congress, 1966). The association’s representative explained that “many costs are involved in storage and transportation at the state and school district levels which add substantially to the costs of [commodity] purchases.” The letter concluded, “We are confident that...school districts would effectively utilize reimbursement payments at local markets.”

Recent research from Minnesota provides empirical evidence that this statement remains relevant. Based on order data from all Minnesota schools in SY 2008-9, it was estimated that for every \$1 spent on USDA commodity products, schools pay on average an additional 12 cents to 27 cents to transport and store those products, compared to an additional 2 cents to 3 cents for commercial equivalents (Peterson, 2009). This research was restricted to regular packaged commodities and did not include commodities diverted for further processing. However, the products in the Minnesota analysis constituted over 60% of the collective commodity order value among schools in the state.

The Minnesota research also compared commodity food prices for 48 products to prices for commercial equivalents to test the USDA’s claim that the commodity program offers lower unit prices to schools (USDA Food and Nutrition Service, 2008). As demonstrated in Figure 2, 25% of the USDA commodities were more expensive than commercial equivalents that were locally available. Once full procurement costs—including product cost, handling, transportation, administrative labor, warehousing, inventory investment, and cost of risk to hold inventory—were included in the cost assessment, commercial products on average were estimated to be 9% less costly for schools than equivalent USDA commodity products.

**Figure 2 Commodity Expenditure among Minnesota Schools, School Year 2008-9**



Source: Minnesota Department of Education, (2008-9). Food Distribution Program data. NB: Only spending on regular packaged commodities is demonstrated, which constituted 62% of total commodities expenditure for SY 2008-9.

An analysis of Minnesota schools’ commodity spending highlights further concerns about the assumed financial benefits that the commodity program provides to schools. As also demonstrated in Figure 2, Minnesota schools directed just 3% of their collective entitlement funding toward commodity products with the greatest price advantage over commercial products, and 11% of their entitlement value toward commodity products for which commercial equivalents were less expensive.

The Minnesota research did not offer an opportunity to closely examine the factors that motivate an individual school district’s ordering decisions. However, it was reported that prices paid for commodities were substantially different from prices schools had seen at the ordering stage. From SY 2005-6 to SY 2008-9, the

average one-year price change across all food groups was an increase of 12%. It was also reported that school districts received the same quantity of regular packaged commodities as ordered for only 54% of orders, and 9% of commodity orders were delivered late to the state warehouse. Imperfect price information and an unreliable supply chain may contribute to schools' apparently inefficient allocation of commodity resources.

### **Challenges and Opportunities for the School Commodity Program**

The modest level of evidence currently available about the commodity program's impact on agriculture, children's health, and school finances suggests that the school commodity program does not achieve substantial advantages for its intended beneficiaries.

Opportunities for improvements that could benefit both food producers and schools include the following:

- The DOD Fresh program appears to be well received by schools, though the program is limited in scope compared to the total school commodity program and there is currently no evidence that the program provides foods at a lower cost than commercial vendors.
- Cash in lieu and commodity letters of credit programs are understudied, despite statements from school officials in congressional testimony that such programs—particularly CLOC—would offer better benefits to schools than the current system of USDA purchases (United States Congress, 1994b).
- Targeted commodity products that offer a substantial price advantage to schools could be offered by the USDA if the department engaged in research to ascertain which commodities are consistently less expensive than commercial equivalents.
- An improved supply chain for school commodities has the potential to make the commodity program more beneficial for schools. However, this would likely involve increased costs at the federal level.
- Prices to food producers—a primary concern for the lawmakers that supported the original NSLP legislation—could be higher if schools were permitted to conduct 100% of their own procurement. As indicated by research from Minnesota, product prices for commodity foods are, on average, lower than prices for equivalent commercial products, though extra costs of transportation and storage due to an unreliable commodity supply chain mean that commodity foods were found to be ultimately more costly for schools. Permitting schools to make local decisions about all food purchases, therefore, may result in both higher prices to farmers and cost savings for schools.

At this time, there is no evidence to suggest that USDA commodity foods are nutritionally distinct from commercial equivalents. The issue that should be used to judge the school commodity program's success, therefore, is whether commodities provide a financial benefit to schools and food producers. Based on the limited research that is available, it appears that the school commodity program provides little, if any, benefit to agriculture, and may actually create greater costs for schools.

Ultimately, school officials are likely in the best position to judge whether the commodity program provides a benefit to school meal programs. It is likely that some products or aspects of the commodity program are more desirable to some schools than others. Therefore, in the absence of evidence that the current system provides substantial benefits to agriculture, it may be reasonable to allow schools to choose either to continue with the existing commodity program or to opt for a more flexible option, such as commodity letters of credit or cash in lieu of commodities.

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## ADEQUACY OF FEDERAL SCHOOL LUNCH REIMBURSEMENT ADJUSTMENTS

Koel Ghosh and Benjamin Senauer

Cash reimbursements provided by the United States Department of Agriculture (USDA) for each National School Lunch Program (NSLP) meal served form the bulk of the support provided to schools to enable them to achieve the policy goal of “safeguarding the health and well-being of the nation’s children” (USDA, FNS, 2009). The reimbursement rate is adjusted each July 1 for the next school year to help cover changes in the cost of providing school lunches. The adequacy of the annual adjustment in the NSLP federal reimbursement rate became a crucial issue with the rapid rise in food prices in 2007 and the first half of 2008, and considering possible future food price volatility.

### Background

In July 2008, the USDA announced the new federal reimbursement rates for the NSLP for the 2008-09 school year: \$2.57 for free lunches, \$2.17 for reduced-price lunches, and 24 cents for paid lunches in the 48 contiguous states serving less than 60% free and reduced-price lunches. These figures compare to \$2.47, \$2.07, and 23 cents in the 2007-08 school year. These adjustments in the reimbursement rates for the 2008-09 school year reflected the annual increase of 4.26% from May 2007 to May 2008 in the Consumer Price Index for All Urban Consumers for Food Away from Home (CPI-FAFH). For the current 2009-10 school year the reimbursement rates are \$2.68, \$2.28, and 25 cents. For school districts with 60% or more of their students eligible for free or reduced-price lunches, the reimbursement rates are two cents higher. Students must come from low-income families to qualify for free or reduced-price meals. The reimbursement rates are higher for Alaska and Hawaii, because the cost of living is higher in those two states (*Federal Register, 2008*). Further federal support is provided by USDA to the schools in the form of commodities, which were worth on average 20.75 cents per meal in 2008-09, an increase of 1.25 cents over the prior year.

However, the cost of serving nutritious school lunches increased much more in 2007 and the first half of 2008 than did federal reimbursements. According to the School Nutrition Association, average lunch costs increased 10% from \$2.63 to \$2.90 between the 2007-08 and 2008-09 school years (School Nutrition Association, 2008a). About three-quarters of U.S. school districts had to raise the price of their lunches for the 2008-09 school year, because the increase in the federal reimbursement rate was inadequate given the rise in the cost of food (Kingsbury, 2008). The average price increase was about 25 cents per day for the typical lunch.

The School Nutrition Association reported that schools had to pay 14% more for milk in fall 2008 compared to a year earlier, 13% more for fruits and vegetables, 11% more for meat and meat alternatives, and 15% more for bread, all key components in providing balanced, nutritious school lunches (School Nutrition Association, 2008b). To counter the cost increases, school food services were forced to make menu substitutions, offer fewer choices, delay purchases of much-needed equipment, and increase the price of the “paid” school lunch. Reductions were required particularly in categories that are crucial to providing healthier meals, such as whole grains and a variety of fruits and vegetables, because they are relatively more expensive. For example, the Roseville School District in a suburb of St. Paul, Minn., removed salad bars in the spring of 2008 when they faced escalating prices for fresh produce.

In her testimony before a congressional committee on July 9, 2008, Kate Houston, the then deputy under-

secretary of USDA for Food, Nutrition, and Consumer Services, suggested that the annual adjustments in the NSLP reimbursement rate in relation to actual cost changes faced by school food services averaged out over time. She specifically said that “The annual adjustments in cash and commodity reimbursement rates help schools deal with rising costs over time; however, near-term cost increases can be challenging to schools” (Houston, 2008).

There is a clear sense of inadequacy about the NSLP reimbursements provided, particularly in the years of rapidly rising food prices. This merits a closer look at the CPI-FAFH as the basis of adjustments in reimbursement rates. How is this index designed? Do near-term cost increases faced by schools versus federal reimbursement rates actually average out over time when using this index? What evidence and data are available to research these questions? What options are available to better address the cost increases experienced by school food services? This article attempts to answer these questions. We do not examine the higher cost of providing healthier meals that meet the 2005 Dietary Guidelines, about which the Institute of Medicine has released a report this fall (Institute of Medicine, 2009). In addition, this study does not deal with the issue of whether the reimbursement rates should be adjusted more frequently than annually.

### **Basis of Reimbursement Adjustments**

Currently the annual adjustment in the federal payment rate for the NSLP effective July 1–June 30 reflects the May-to-May (preceding 12 month) change in the CPI-FAFH determined by the Bureau of Labor Statistics (BLS). The CPI-FAFH is structured into five strata: “full-service restaurants,” “limited-service restaurants,” “food at employee sites and schools,” “food from vending machines and snack bars,” and “other food away from home.” Full and limited-service restaurants collectively account for 88% of the weight used in the index’s computation (BLS, 2008). With such a high weighting for these two strata, it is questionable how well the index reflects changes in school lunch prices.

Commercial food service and school lunch are very different types of operations. In full-service restaurants, the cost of food and beverages accounts for about 32% to 33% of their total sales. For limited-service fast food restaurants, food costs average only 30% of sales (National Restaurant Association, 2008). In comparison, food and beverage costs represent 37% of the total costs of the typical school lunch (Newman, Ralston, and Clauson, 2008). Restaurants and other food service operations spend more on labor and overhead costs, such as the space or building. Moreover, the composition of meals is typically very different. Each NSLP meal is required to include a serving of milk. School lunches are supposed to comply with certain nutritional guidelines, which is not required of commercial food service meals.

### **Analysis**

Only a few states provide publicly available average costs or prices for NSLP lunches across the school districts in their states on an annual basis. Minnesota is one of those states (MNED, 2009). The Department of Education in California posts on its website the average price paid annually for NSLP lunches in California in contrast to the average costs reported in Minnesota (CAED, 2009). The average meal prices for California are for paid lunches. Table 1 shows average costs per lunch in Minnesota, average prices for paid lunches in California, and the NSLP federal reimbursement rates for school years 2000-01 to 2007-08. Only a few urban and suburban Minnesota school districts substantially improved the quality of the meals served, so that series primarily reflects increases in food, labor, and other costs (MNED, 2009). Data for California were not available for the years 2000-01 through 2002-03.

**Table 1****School Lunch Costs, Prices Paid and NSLP Federal Reimbursement Rates, 2000–2008**

School Year	Minnesota Average Cost per Lunch <sup>a</sup>	California Average Price Charged per Lunch <sup>b</sup>	NSLP Federal Reimbursement Rate <sup>c</sup>
2000–2001	2.14	N/A	2.02
2001–2002	2.20	N/A	2.09
2002–2003	2.15	N/A	2.14
2003–2004	2.33	1.75	2.19
2004–2005	2.47	1.84	2.24
2005–2006	2.56	1.93	2.32
2006–2007	2.65	1.99	2.40
2007–2008	2.82	1.98	2.47

<sup>a</sup>Minnesota Department of Education

<sup>b</sup>California Department of Education

<sup>c</sup>Contiguous States, Free Lunch, for Participation <60%

The California paid price is so low because the state government provides an additional reimbursement of over 20 cents per lunch served. Free and reduced-price meals also accounted for 75% of the lunches served in 2007-08, whereas the comparable figure for Minnesota was only about 30%. Many California schools thus have a large, stable demand for NSLP meals, and receipts for free and reduced-price meals can be used to subsidize paid lunches. With the exception of 2002-03 in Minnesota and 2007-08 in California, all three series (columns) in Table 1 were higher every year compared with the prior year. Because of the 2001–2003 U.S. economic downturn, districts tried to hold down the cost and price of school lunches. With the economic recovery, costs that had been held back increased sharply, particularly in Minnesota in the 2003-04 school year. A few school districts also improved the nutritional quality of their meals. The reason that the California price may have decreased by 1 cent in 2007-08 is that even more students were receiving free and reduced-price lunches as the California economy began to fade.

Table 2 shows the percentage change from the previous year in the three data series—Minnesota average cost per lunch, CPI-FAFH, and the reimbursement rate. As shown in Table 2, the Minnesota cost per lunch increased by 31.78% between 2000-01 and 2007-08 whereas the federal reimbursement rate increased by only 22.28% over the same period. Table 2 also shows that the average annual percentage increase in this period is 4.07% in the Minnesota cost per lunch, whereas that of the federal reimbursement rate is only 2.93%. The near-term increases in school lunch costs do not average out over time with changes in the reimbursement rate as argued by the deputy under-secretary of USDA. Schools were able to close this gap by fully utilizing the commodity program and by using a la carte foods, which are not part of the NSLP, to cross-subsidize the program. Furthermore, some districts in Minnesota with 60% or more of their students eligible for free or reduced-price lunches qualified for the higher reimbursement rate, as discussed previously. The State of Minnesota also provides a small additional subsidy to fund the NSLP, which was 8 cents per lunch in 2004-05 and is currently 12 cents (2009-10).

**Table 2****Annual Change in School Lunch Cost, CPI-Food Away From Home, and NSLP Federal Reimbursement Rates, 2001–2008**

School Year	Percent Change		
	Minnesota Average Cost per Lunch <sup>a</sup>	CPI-Food Away From Home <sup>b</sup>	NSLP Federal Reimbursement Rate <sup>c</sup>
2001–2002	2.80	2.85	3.47
2002–2003	-2.27	2.60	2.39
2003–2004	8.37	2.20	2.34
2004–2005	6.01	2.87	2.28
2005–2006	3.64	3.16	3.57
2006–2007	3.52	3.17	3.45
2007–2008	6.42	3.29	2.92
<b>Percentage Change 2001–2008</b>	31.78	21.94	22.28
<b>Average Percentage Change</b>	4.07	2.88	2.93

<sup>a</sup>Minnesota Department of Education

<sup>b</sup>Percentage change in the CPI-FAFH index for any school year, for example 2002-03, is the percentage change in the index from May 2001 to May preceding that school year, i.e. May 2002.

<sup>c</sup>Contiguous States, Free Lunch, for Participation <60%

**Possible Options**

The CPI for food in August 2009 was only 0.4% higher than in August 2008, so food price increases have receded as a pressing current issue for the NSLP. However, at some point in the perhaps not-so-distant future, rapidly rising food prices are again likely to be a crucial concern. Now is the time to consider possible alternatives to the CPI-FAFH for determining the annual adjustments in the federal reimbursement rates.

Interestingly, BLS recently started to derive a CPI for Elementary and Secondary School Food (CPI-ESSF) from 2005, based on only a very small sample. BLS warns that because of the small sample, the results are not reliable. However, BLS has clearly worked out the methodology to collect this index. Simply by way of comparison, the CPI-ESSF increased by 4.79% between May of 2006 and May of 2007; based on this index the adjustments in reimbursement rates for school year 2007-08 should have reflected an increase of 4.79%. The federal reimbursement rate increased only 2.92%, reflecting an increase of 3.29% in the CPI-FAFH, whereas the cost of Minnesota school lunches rose 6.42%, as shown in Table 2 for 2007-08. The CPI-ESSF provides a potentially better alternative for adjusting the NSLP reimbursement rate. The feasibility and cost of basing this index on a nationally representative sample of schools need to be studied.

The use of the CPI-ESSF could be subject to the basic problem of simply building increased costs of production, due to inefficiency and not just unavoidable input cost changes, into the reimbursement rate. This problem could be largely avoided by surveying only those school food service operations that would be

judged to be “top performers” and exemplify “best practices.” In conversations with school food service directors and various states’ Department of Education officials, we have found that they are well aware of which school districts have the best food service operations in their states, based on the quality of food served and their costs. In a sense, the “top-performing” school districts would serve as a “benchmark” for other school food services.

Cost-of-living adjustments (COLAs) or cost index adjustments will always raise questions. Since the adjustment for a future period is based on price changes in a prior one, it will usually trail the actual price/cost changes. For example, the change in the overall CPI for the third quarter compared to the previous year’s third quarter determines the annual COLA for Social Security benefits starting with the December payment. The use of COLAs is deeply ingrained in many government policies and programs, labor agreements, and business contracts, and the success of any dramatically different approach is likely to meet strong political resistance.

Another possibility would be to use inflation forecasts by some authoritative government body. However, basing the adjustments in payments for government programs, such as School Lunch and Social Security, on some prediction of future cost increases could easily degenerate into a political morass, with various factions presenting their own forecasts that support their self-interest. One can only imagine the political pressures from using inflation predictions for the next year by the Federal Reserve Bank or White House Council of Economic Advisers to set government program payments, or a forecast by USDA’s Economic Research Service for cost increases over the next 12 months to set the NSLP federal reimbursement rate on July 1 for the next school year. The fundamental problem is that the future is unknowable with a high degree of certainty, as the last 12 months have clearly demonstrated.

However, for the NSLP reimbursement rate adjustment, an appropriate CPI for Elementary and Secondary School Food may well be a better alternative for its determination than the current use of the CPI for Food Away from Home. As part of the reauthorization of the Child Nutrition Act, Congress could request that USDA conduct a study of the feasibility and cost of using this alternative for determining the adjustments in the NSLP federal reimbursement rates.

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## THE ECONOMICS OF A HEALTHY SCHOOL MEAL

Parke Wilde and Mary Kennedy

**A**t first, the question seems simple: “Is it economically feasible to serve healthy food in school?”

And, at first, the road to an answer seems equally simple: one must estimate the cost of serving a meal and then confirm that revenue suffices to cover this cost.

The federal government uses this type of straightforward comparison of costs and revenues to judge whether the federal reimbursement rate for meals served by the National School Lunch Program (NSLP) and School Breakfast Program (SBP) is adequate. The influential periodic federal *School Lunch and Breakfast Cost Study*, completed most recently in April 2008, estimated that the national mean cost to provide a school lunch was \$2.28 in the 2005-06 school year, which was less than the federal reimbursement per free lunch of \$2.51 that year (USDA/FNS, 2008). Perhaps there was even a little change left over.

The School Nutrition Association, the trade association for school food service operations, uses a similar straightforward comparison, though, not surprisingly, it reaches a different conclusion. Its September 2008 report, *Heat's On: School Meals Under Financial Pressure*, based on a less systematic survey of 45 large school districts, estimated that median costs had risen to \$2.92 for the 2008-2009 school year, while the federal reimbursement per free lunch had risen only to \$2.78. Especially when one considers the growing public pressure to provide better and more nutritious food, these estimates imply a painful financial shortfall.

Yet, neither of these comparisons of costs and reimbursements can answer the original question. First, there are diverse ideas about what is a “healthy” meal. To qualify for the federal lunch and breakfast programs, meals are expected to provide foods from multiple food groups and to meet general nutrient guidelines. In many local districts, school food programs face rising expectations for quality and nutrition characteristics that exceed federal minimum standards. Second, the economics of school food service are both more complex and more fascinating than these simple comparisons allow.

### The School Food Service as a Business

Think of a school food service operation as a business. It is a not-for-profit business, in the sense that there are no dividends for private shareholders or owners. Yet, most school food services are required to break even, so the economic pressures are very similar to those facing any business.

The business has many products to sell. The free federal lunches for low-income children, whose reimbursements were summarized above, are just one fraction of this business. Within the NSLP, the school food operation also serves reduced-price lunches for moderate-income children and “paid” lunches for children from better-off families. The “paid” lunches are still federally subsidized to some extent as long as the meal meets the requirements of the federal lunch program the school food service gets to set its own price for the meal. Meanwhile, the school food service also sells *a la carte* items, trading off the loss of federal subsidy against the advantages of being able to sell more desirable or profitable products that would not qualify as a reimbursable meal. Then, many school food services offer a federally subsidized School Breakfast Program and a whole array of unsubsidized products through sales to teachers, snack bars,

vending machines, and, commonly, a catering business for school events that offer food.

In each of these business lines, the school food service faces a different consumer demand curve (the economist's tool for explaining how sales will respond to changes in price and other factors), a different menagerie of competitors, and a different library of external rules and non-economic pressures. In some school districts, the vending machine line will be a small monopoly for the school food service director, while in others the school food service director must compete with vending machines set up by coaches or administrators, who use them for additional program revenue. In some districts, the school food service will provide the only lunches for sale at high school, competing only with bagged or boxed lunches from home, while in other districts an open-campus policy will require the school food service to compete with nearby stores and restaurants for lunch sales. Some school districts have strong rules about the nutritional quality of "competitive foods", a catch-all term for all food and beverage lines that compete with the federal meals programs, while other districts have little regulation beyond a very mild federal requirement about "foods of minimal nutritional value" which prohibits sale of a very limited group of treats, only during meal time, and only in the vicinity of the cafeteria.

Any successful business must understand the economic interactions across its product lines, but these interactions are particularly intense for a school food service. A child who consumes a reimbursable lunch and breakfast will have lower demand for *a la carte* items, while a child who skips a real meal may be hungrier for a snack. This interaction means that school food service decisions about competitive foods strongly affect the federal school meals program, and vice versa.

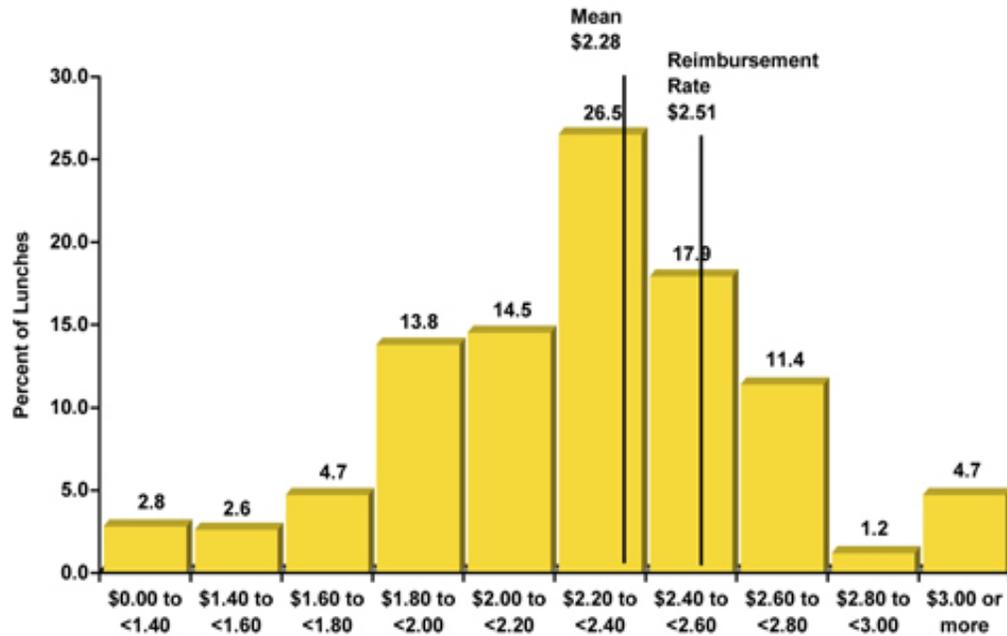
The simple cost and reimbursement comparisons at the start of this article essentially suppose economic success depends primarily on having the federal reimbursement exceed an average cost per reimbursable lunch. However, the school food service's success really depends jointly on the economics of serving free reimbursable meals, partially subsidized reimbursable meals, and the competitive food businesses.

If the subsidized meal program brings in comparatively high net revenue per student, then a school food service director has a strong incentive to maintain sales in the subsidized program, proceeding cautiously with any reforms that threaten the student appeal of the meal. On the other hand, if the competitive foods bring in comparatively high net revenue per student, then, paradoxically, efforts to improve the appeal of the subsidized lunches could harm the bottom line of the school food service as a whole.

The *School Lunch and Breakfast Cost Study II* gives a preliminary indication of the cross-subsidization patterns on average. In contrast with school lunches, the average federal reimbursement for a school breakfast was insufficient to cover the average cost. Meanwhile, although the reimbursement for "free" lunches exceeded the costs, the average revenue for "paid," only partly subsidized, lunches was below the cost of producing the meal. More surprisingly, the report found that revenue from *a la carte* or nonreimbursable sales was insufficient to cover the costs on average.

Moreover, these averages tell only part of the story. Figure 1 shows the best known statistics from the federal *School Lunch and Breakfast Cost Study II*, including average costs of \$2.28 and a federal reimbursement of \$2.51 per free lunch. The figure also shows a striking diversity across districts. About 24% of free lunches cost less than \$2.00, far below the reimbursement rate, suggesting that the free lunch program in some districts may in effect cross-subsidize other business lines for the school food service. At the other end of the spectrum, about 17% of free lunches cost more than \$2.60, suggesting that the free lunch program effectively is subsidized by other sales. Some school food services earn higher profits at the margin by promoting *a la carte* sales at the expense of reimbursable meals, while others earn more by strongly backing the federal lunch program.

**Figure 1 Distribution of Lunches by Reported Cost per Reimbursable Lunch.**



Source: Reprinted from the USDA School Lunch and Breakfast Cost Study-II Final Report, April 2008.

### Costs of Improving Meals

If we think of the school food service as a business, we need to understand the costs and revenues for different food and beverage offerings, and to understand how nutrition quality improvements affect both costs and revenues. Surprisingly, there is promising evidence to suggest that more healthful choices can be provided while costs are kept in check. According to the results of the California-based Linking Education, Activity and Food (LEAF) program, increased costs associated with greater fruit and vegetable purchases, packing, and storage were offset, in large part, by increased meal sales and other measures that increased the efficiency of the food service operation (Woodward-Lopez et al., 2005).

An important concern with this approach is that it may require capital investment in the beginning. A case study of the Hopkins School District 270 in Minnesota demonstrates this point nicely (Grainger, Senauer, and Runge, 2007). This school district completely overhauled its school food service program after 2003: they opened a Health Nut Café, which served foods free of trans-fats and high in fiber with low levels of sugars; they removed the soda from the vending machines and replaced it with water and 100% juices; they switched to low-fat salad dressings and cheese, and whole wheat breads and pizza crusts; and they added more vegetables to many dishes. These more nutritious foods were prepared from scratch on-site, making the shift from the previous practice of simply warming the food prior to service. While the Hopkins food service program was able to remain financially viable, it would have been impossible to get up and running without a significant capital expenditure at the beginning. Most schools do not have the tools necessary to prepare healthful foods. They need an initial investment to improve the kitchen equipment so they can shift from simply heating foods to preparing meals from scratch. Additionally, they need money to train school food service workers to prepare more healthful meals. The LEAF program emphasizes this point. The program awarded grants of approximately \$200,000 over a 21-month period to 16 middle and high schools in nine California school districts in order to pilot test the implementation of stricter nutritional standards for both meals and competitive foods. The evaluation indicated that capital expenditures for food service equipment was one of the primary uses of these grant funds (Woodward-Lopez et al., 2005).

The need for capital investment was addressed in the American Recovery and Reinvestment Act of 2009 (ARRA), which was signed into law by President Obama on Feb. 17, 2009. The ARRA provides a onetime appropriation of \$100 million for equipment purchase assistance to school food authorities (SFAs) participating in the NSLP. As stipulated in the ARRA, priority will be given to SFAs for equipment for schools

in which at least 50% of the students are eligible for free or reduced-price meals (USDA, 2009).

### **Revenue from Improving Meals**

In addition to costs, the business must consider how healthier meals might affect revenues. School cafeterias will not be able to stay in business, no matter what the reimbursement rate, if students do not choose to purchase the food offered in the cafeteria. While many believe that students will not be willing to purchase nutritious foods, there is evidence to suggest otherwise.

In 2005, the USDA released a report entitled *Making It Happen! School Nutrition Success Stories*. This report included case studies of 32 schools and school districts that have made innovative changes to improve the nutritional quality of their food programs. One of the overarching conclusions from the report is that students will buy and consume healthful foods and beverages—and schools can make money from healthful options. Of the 17 schools and districts that reported sales data in the report, 12 made more money and four made the same amount of money after making nutrition improvements (USDA, 2005). That was certainly the case at the Hopkins School District 270 in Minnesota where they noted a steady improvement in the nutritional quality of students' food choices. An analysis of their sales data revealed that students were clearly making healthier choices in April 2005 than they were in November 2004 (Grainger, Senauer, and Runge, 2007).

This finding comes with one caveat: it appears that there may be a period of decreased revenue while students make the transition to the more healthful offerings. At the Byfield Elementary School in Bristol, R.I., one of the schools highlighted in USDA's report titled *Making It Happen!*, income from the new "wholesome snack" *a la carte* items did decrease \$5 to \$10 per day during the first year they were introduced; however, second-year sales recovered, and average daily revenue increased slightly above original levels. These new sales levels were maintained through year three (USDA, 2005).

### **NSLP Improvements Depend on Rules for Competitive Foods**

Finally, to understand school food service as a business, one must pay attention to the competitive environment. The adequacy of the reimbursement rate for the National School Lunch Program depends in part on the nature of the NSLP's competitors. Every day students have the choice of what to buy for lunch. In addition to the menu offered from the NSLP, they have the option to purchase food from a school store or vending machine, to buy one or more *a la carte* items, or—if they go to school on an open campus—they could choose to go to a nearby food vendor (e.g., fast food establishment) to purchase lunch. Only one of the choices mentioned is likely to provide a nutritious meal. School meals must meet nutrition standards in order for a school food service program to receive federal subsidies. In contrast, foods sold outside the meal programs (i.e., competitive foods), including those sold in vending machines, *a la carte* lines, school stores, snack bars, and fund raisers, are not required by the USDA to meet comparable nutrition standards (MAHK, 2007).

Policies to limit access to competitive foods may impact the financial viability of school lunch programs, and ultimately affect their ability to offer more healthful selections. Studies have noted that as income from *a la carte* sales increases, student participation in meal programs decreases (USDA, 2005). The severity of this was illustrated in a 2003 survey of all 1,256 school districts in Texas. The survey, conducted by the state's Department of Agriculture, found that sales of competitive foods resulted in up to \$60 million in lost income from school meals (USDA, 2005). The LEAF program fiscal impact report reinforces this point, finding that the greatest meal revenue increases were seen in sites that completely eliminated *a la carte* food sales (Woodward-Lopez et al., 2005).

Additionally, open-campus policies seem to pose a significant threat to the financial viability of the NSLP. A 2008 USDA report on the background, trends, and issues of the NSLP cited an open-campus policy as a characteristic that contributed to a school's difficulty in maintaining net income from their school food service business (USDA, 2008). This evidence suggests that strict rules for competitive foods and access to off-site restaurants during the school day can play an important role in helping school districts meet nutrition quality goals while simultaneously satisfying the economic constraints of the school food service business.

### **Multiple Routes to a Single Destination**

Reviewing school food service as a business offers insight into what policies could facilitate a healthier

school environment. This review suggests that there may be multiple strategies to enable school food services to improve their offerings without violating their economic constraints.

First, and most obviously, with a higher reimbursement rate or greater local subsidies, schools could better afford appealing, healthy foods even in those circumstances when they are more expensive. Second, with money for capital investments, it may be possible to improve nutritional quality and taste even at a constant per-meal reimbursement rate. But, these are the easy remedies. Hoping for additional resources is like wishing the harder challenges would just go away.

In the likely case that additional resources are limited because federal and local governments face continued severe budget constraints, school districts may consider measures that protect the federal meals programs from less healthy competition. Through local wellness policies, districts can establish rules about the nutritional quality of competitive foods and a “closed-campus” policy that limits competition from nearby restaurants and convenience stores at lunch time. Because of the interactions across business lines, such policies can improve the economic feasibility of serving healthy meals through the federal programs themselves.

These limitations on competitors may seem like a strange policy prescription. Who ever heard of an agricultural economist tacitly endorsing limitations on consumer choices? Certainly, the nutritional and economic advantages of such policies must be weighed against the real welfare value of allowing children to express their own food preferences at school, as they do outside of school. The Just and Wansink article in this theme warns against unintentionally increasing the appeal of unhealthy products by banning them outright. Nevertheless, placing some reasonable limits on competitive food is not really economic heresy. For centuries, economists have admired markets as a coordinating tool for economic decisions in communities composed of households, but economists have always acknowledged beneficent non-market decision-making within households. Schools are not marketplaces but educational institutions responsible for the welfare of their charges. If schools are expected to respond to the current epidemic of childhood obesity by improving the school food environment, and taxpayers are reluctant simply to provide more resources, then there is some merit in considering measures to enhance the relative competitive position of healthy meals served through the National School Lunch Program and School Breakfast Program.

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## SMARTER LUNCHROOMS: USING BEHAVIORAL ECONOMICS TO IMPROVE MEAL SELECTION

David R. Just and Brian Wansink

**R**ising obesity rates among children have led many to lay the blame for this situation at the feet of the school lunch program. Local school lunch administrators experience tremendous pressure from parents and activists to drop higher calorie items from the menu. Proponents of these measures argue that if children can't buy items of this type, they will not consume the items, thus reducing the child's total intake of calories. Additional pressure has pushed for healthier fare in the USDA subsidized school lunches. Here proponents have pushed to replace the familiar pizza, hot dogs, and burgers with items involving words such as "whole grain," "organic," "vegetarian," and "raw."

At the same time, strong demands are placed on district school lunch programs to be financially solvent. With declines in property values and other income, school budgets are declining. While not run for profit, school lunch programs must keep participation levels high and must meet costs in order to preserve the education budget of the school district. Thus, school lunch administrators must also worry about what will sell. It may be possible to replace the standard cheese pizza on white flour crust with pizza smothered in spinach, artichoke hearts, and other vegetables on a whole wheat flaxseed crust. But the healthier pizza is more expensive, and fewer children may want to eat it. Hence many school districts walk a tightrope. School districts must increase the health content of their sales while trying to avoid any reduction in their financial viability. Eliminating the less nutritional items often means eliminating the meal budget's highest margin items. Further, child patronage of the school lunch program is understandably dependent upon schools offering foods that students are familiar with and that they like, and that will satisfy their appetites.

Economists and psychologists are developing a new set of tools that promise to help relax the tension between these two competing views of school lunches. These new tools are based in the emerging discipline of *behavioral economics*. Behavioral economics combines the behavioral models of psychology with the decision models of economics to help highlight how biases in perception, memory, or thought processes may influence purchasing decisions. This new approach helps us to identify the behavioral triggers that lead to the selection and consumption of healthier foods and healthier quantities of food. As well, we can determine the subtle and inadvertent signals that school cafeterias may send that trigger less nutritional eating. Moreover, many of the factors identified by behavioral economics can be exploited with very little investment.

Much of the apparent tension between health and cost is due to the particular approaches taken to each problem. Introducing ultra-nutritious products into the lunchroom requires a significant increase in spending while risking reductions in unit sales and total participation levels. Banning popular items for their content also directly reduces sales. But suppose that instead of these drastic measures, we could simply rearrange items that are currently offered within the school to encourage children to buy more of the more nutritional items and less of the less nutritional items. Such a strategy costs very little, has a negligible impact on overall revenue, and may provide a way for school districts to show a demonstrable increase in the nutritional content of their meals. By using tools that will both increase the sales of more nutritional foods and decrease the sales of less nutritional foods, behavioral tools can achieve nutritional goals while having a minimal impact on the bottom line.

## What Is Behavioral Economics and Why Is It in My Child's Lunch?

With obesity rates on the rise among all age cohorts, policy has increasingly focused on the youngest among us. The reasons for this focus on childhood obesity are relatively clear. While childhood obesity rates are no greater than adult rates, it is generally believed that it is much easier to prevent obesity than to combat it once it takes hold. To do this, we need to help children develop healthy eating habits. Two very simple principles from psychology tell us something about how this can be accomplished. The first is called *reactance*. When people feel coerced into doing something, they often react to this coercion by intentionally rebelling. Thus, forcing kids to abstain from a lunchtime cookie or brownie every day may unintentionally pave a direct afterschool path to the convenience store or their home where they can find cookies or brownies thus avoiding the heavy hand of the school lunch administrator. In fact, there is some evidence that students try to compensate for the more heavy-handed actions by schools. Moreover, when people are coerced through elimination of choices or through undue incentives being placed on specific choices, long-term behavior is unlikely to change. Once the heavy restrictions are no longer there, individuals will return to the equilibrium of the foods they like.

The second principle is *self-attribution*. When people feel as if they have freely and consciously made a decision, they take ownership of that decision and tend to have a greater enjoyment of the outcome. As a simple example, consider a small child being asked to go to bed. If told that bedtime is at 8:30 p.m., the child may be irritated and angry because he or she is being forced to go to bed. If—instead of dictating the bed time—a parent lets the child choose between going to bed at either 8:00 or 8:30, the child may willingly choose 8:30 and go happily to bed—glad to have had the choice. Such ownership in an environment where all options are available can lead to habit formation. Thus, the measure of success may not be the health of the items *offered* in the school, but the health of the items *eaten* at school. If children can be presented healthy and unhealthy items and be led to willingly choose the good, they will be better prepared for the food choices they will face in an open and competitive food market.

Thus, the object of using behavioral economics in school lunch rooms is to guide choices in a way that is subtle enough that children are unaware of the mechanism. These subtle changes often have the advantage of being relatively cheap and easy to implement. This is a clear advantage given the financial climate. However, behavioral economic instruments cannot achieve 100% compliance. For example, the only way to eliminate soda consumption in a school is to eliminate the soda. If we instead approach the problem by allowing choice but place the soda at some disadvantage in the marketplace, we can reduce soda consumption substantially but not eliminate it. To preserve choice, we will necessarily have to allow some individuals to purchase items that are less nutritious. But we can make these choices less convenient or less visible, by moving the soda machines into more distant, less visited parts of the school.

### Smarter Lunchrooms: Examples from the Innovators

To illustrate how behavioral economic concepts can help increase the nutritional content of foods without harming the bottom line, a few examples from the field may be helpful. Some of the tools are extremely simple to implement and can provide a big bang for the buck. For example, simply closing the lid on the freezer that contains ice cream can reduce the number choosing ice cream from 30% to 14%. Similar results can be obtained by simply moving vending machines farther from the cafeteria (Meyers, Stunkard and Coll, 1980).

#### ***Move the Fruit***

There are unexpectedly large responses to moving food or to moving traffic flow patterns. In one Minnesota school, we found that cash registers were one of the bottlenecks in the system. While students waited to pay, they were faced with a wide array of grain-based snacks, chips, granola bars, and desserts. This appeared to generate a number of impulse purchases. While one option would have been to move these temptations, this option would have almost assuredly decreased revenue. A better option was to replace these snacks with an array of fruits. This way, when students were waiting to check out, the impulse temptations were healthier options. Fruit sales increased, snack food sales decreased, and total revenue did not significantly decrease. Part of the increase in fruit sales may have also been aided by the inclusion of a wider variety of fruits, plums and peaches, in addition to the standard trio of apples, bananas, and oranges.

In order to obtain the USDA subsidy for a school meal, the meal must contain at least three separate food

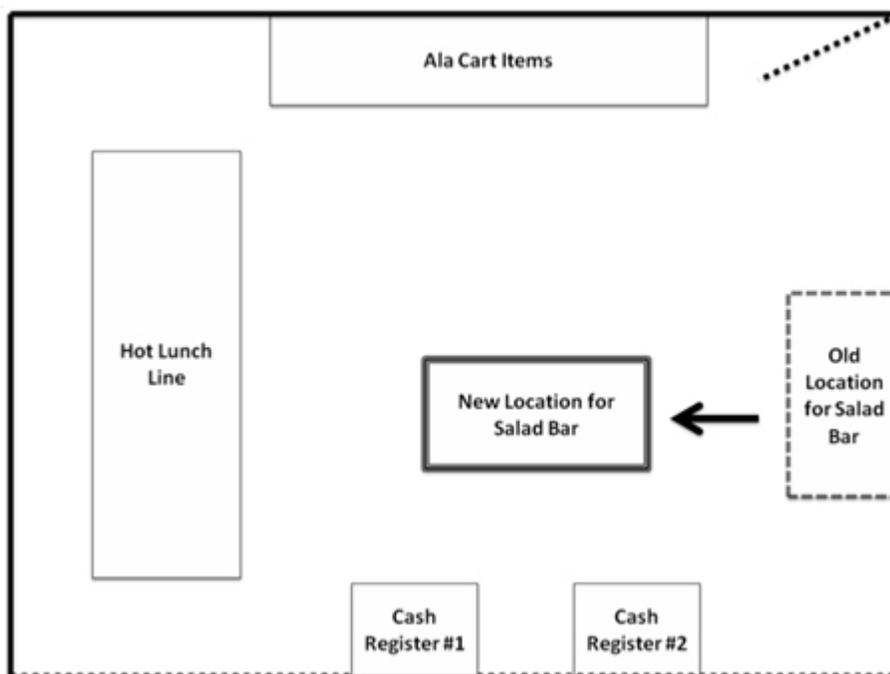
items and at least one must be from the protein food group. Being aware of this financial incentive, the food service staff person operating the cash register will often inspect a meal and if the meal has only two items, will suggest that the student take an extra item. In many schools, because milk is kept right next to the cash register, it is often suggested as a nutritious option to complete the meal. When visiting one school where this setup prevailed, we quickly noticed that a number of the students taking milk were taking it because they had been asked to do so. They did not intend to consume it. As a result, the trash bins had many unused milk cartons that had been thrown away.

Instead of milk, suppose this school placed fruit next to the cash register and milk at the front of the line. Several studies have shown that suggesting a student take fruit will increase the number of students *eating* (not just taking) the fruit by as much as 70% (Schwartz, 2007). Further, while milk can go bad or become unappetizing when warm, fruit may be easily carried out of the lunchroom and eaten later in the day. Finally, most fruit costs substantially less than a lunch-sized carton of milk. Thus, it could be that placing fruit at the end of the lunch line would maintain the level of USDA subsidy, increase the health content of the food consumed, and reduce the costs of providing the foods. Such simple solutions can make a nice addition to both health and financial goals.

### **Surprising Salad Sales**

Consider the problem of a middle school in the Corning, New York, area. Their lunchroom consists of two lunch lines feeding into two cash registers. A portable salad bar was initially introduced and situated against the wall just three feet to the east of the easternmost lunch line, and parallel to that line. Purchasing a salad would require a student to walk to the salad bar, place their salad on a plate, and then go to the end of the lunch line to wait for the cash register. Sales of salad were rather sluggish. By rotating the salad bar 90 degrees and moving it to the middle of the lunch room (see Figure 1), it became something students had to walk around, not something they could mindlessly walk by. Sales immediately increased the week after the move and continued to increase as it became a part of the lunchtime routine for students.

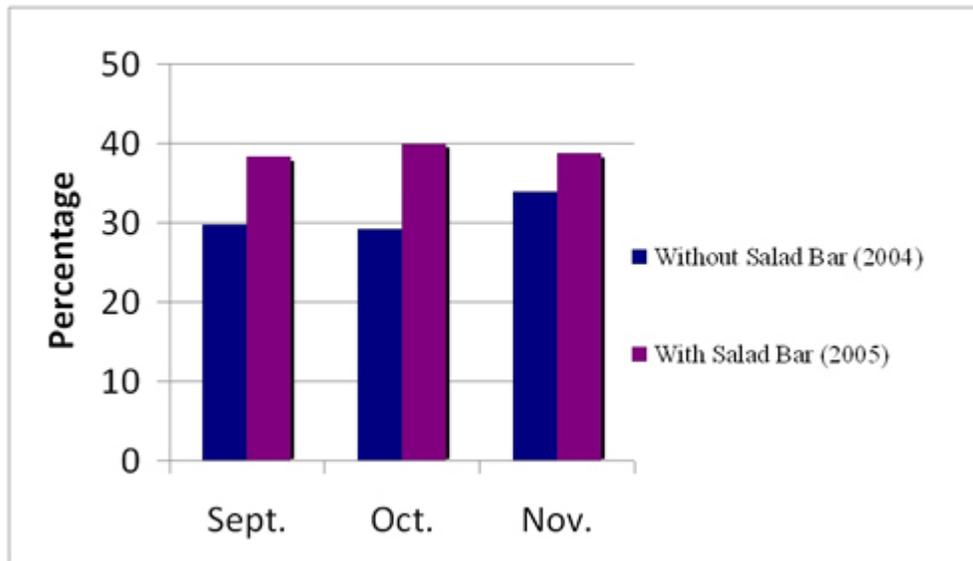
**Figure 1 Shifting the Location for a Salad Bar Dramatically Lifted Sales**



Rather than gutting sales as many measures aimed at promoting better nutrition may tend to do, this move increased overall sales and profitability. Visibility of food has been found to increase desire (Volkow et al.,

2002) and thus sales. Additionally, the level of convenience to select salad was increased as one could walk through the line while getting their salad. Most importantly children chose the salad without prodding or heavy handed measures. This move makes it much more likely that children will begin to develop a healthy habit of choosing the salad at lunch when it is available. Indeed in one high school of 1000 students, simply introducing a salad bar increased average reimbursable lunch participation by 21% from one year to the next (see Figure 2, sales data collected from the Corning School District, Corning, NY).

**Figure 2 Total School Lunch Participation Percentage Increased with the Introduction of a Salad Bar**



### ***Choose Your Own Vegetable***

In general, when schools require students to take vegetables, only about 35% of the students actually consume the vegetables, resulting in substantial waste of food and resources (see, for example, Price and Just, 2009). In fact, a recent study suggests that requiring students to take vegetables rather than allowing them to control this choice by selecting or rejecting vegetables has virtually no impact on vegetable consumption, while nearly doubling the waste from vegetables (Price and Just, 2009). Alternatively, consider what might happen if students were given the choice between carrots and celery. In a recent experiment we conducted at Cornell, 120 junior high participants in a summer 4H program were told they must take carrots with their lunch, while another 120 were given the choice of carrots or of celery (103 of 120 selected the carrots). Of those required to take the carrots, 69% (83 of 120) consumed the carrots, while 91% (94 of 103) of those choosing between carrots or celery consumed their vegetable. Such results suggest that requiring a vegetable, while offering an active choice between at least two options substantially reduces the waste from vegetables, and increases the nutritional content of the foods consumed.

### ***Keep Your Tray?***

The type of tray used for carrying the food can also play heavily into the food decisions of the individual. Relevant to some high schools, there is a recent trend in college dining halls that might be of interest. In order to reduce waste, many colleges are phasing out the use of trays—especially in all-you-can-eat buffet-style cafeterias—forcing students to carry individual plates and glasses. This move was made in the hopes that they might reduce waste. That is, people might take less and eat more of what they do take. One key question remains: if students take fewer foods, what do they leave behind—salads or desserts?

In our investigation of trayless cafeterias, we found not having a tray made students much more reluctant to take side dishes. Unfortunately, most of the fruit and vegetable content of meals are in these side dishes. Our matched-meal study of a 1200 person dining hall at Cornell, found that 26% fewer salads were taken, but only 8% fewer bowls of ice cream. Strangely, there was even more waste without the trays. Without trays,

students took larger portions of things they liked. With larger portions and less variety, we found they tended to take more than they ended up eating. Cafeterias with fixed portion-sizes may have less waste. Nevertheless, trayless serve-yourself cafeterias reduced nutrition without reducing waste.

### ***The Limitation of Changing Defaults***

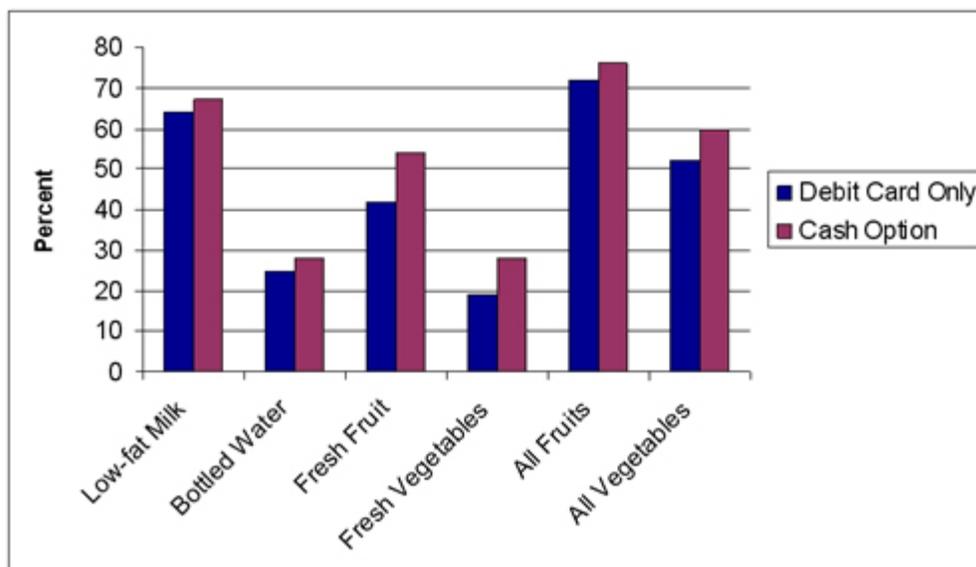
One inspiration for many of our insights and recommendations comes from watching adolescents and high school students order their meals at fast food restaurants and food courts. In these contexts, the default options offered in the meal—soft drinks and fries—tend to be what most order, even though milk, salads or apple slices are also available at no added cost. The potential power of these options leads us to question, what if restaurants—or school lunchrooms—were to change the defaults. What if instead of putting tater tots on a tray they put peas on the tray and gave students the option of substituting tater tots for peas if they wanted?

In one study of 4-H elementary school aged students in a summer 4-H program, we examined how changing food defaults would work. On one day we gave these students a lunch where they were given French Fries as the default but asked if they wanted to trade their French Fries for apple fries (prepeeled, presliced apples) with caramel dip, commonly available at fast food restaurants. Of the 21 students, 20 (95%) wanted to stay with the French Fries default. Two days later we did the reverse, we gave these students a lunch where they were given apple fries as a default but asked if they wanted to trade them for French Fries. Of the 22 students in class that day 21 (96%) wanted to switch to French Fries. What initially appeared to be a strong case for food defaults, ended up being overwhelmed by an overriding preference for French Fries. While defaults might work well in cases where preferences are ambiguous or where people don't care, they might not be the solution in the school lunch room.

### ***Cash for Desserts***

Of all of the different food psychology and behavioral economic tactics we've so far introduced into schools, the one that may have the largest success at the lowest cost is requiring high school students to pay cash for desserts and soft drinks. We don't take their desserts away, we just say, "If you want that cookie bad enough, you can pay cash for it." They can't mindlessly put it on their debit card or on their pin account, they have to take out the dollar they might otherwise spend on an iTunes and ask themselves how bad they want the cookie. In our experiments and in our analysis of the USDA's School Nutrition Dietary Assessment (SNDA) data, we find this change does not hurt revenue or participation and it leads to greater sales of more nutritious items and lower sales of the less nutritious items. Figure 3 presents some summary statistics for sales of nutritious foods from the SNDA national sample of schools offering different payment methods. Those in the schools allowing cash purchases see higher sales of nutritious foods.

**Figure 3 Students at Cash-Option Schools Buy More Nutritious Food Options**



A seemingly modest adjustment to the existing school lunch payment systems could have a sizable influence on food choice. Over the years, this could significantly impact the weight and health of children. Restricting the use of prepaid debit cards to healthier foods allows parents to reclaim some control over their child's food choice set, without unfairly restricting them or without decreasing the revenue for school cafeterias. Lunch debit accounts are prepaid by parents, who often have the option of using an online payment system and a credit card. Changing the system to accommodate wide-scale restrictions to healthier foods could be done simply and could be built into the software that codes the meal cards. Restricting the use of debit cards to healthier items is a default change that could be made with all cards at the beginning of the year. Any parent wishing to change the card to an unrestricted card could do so on-line.

Every school district that participates in the National School Lunch program is required to have a local school wellness policy—this is a tool that can be used to promote healthier eating and physical activity through changes in school environments. These nascent wellness policies are to be determined by, monitored by, and altered by a school district wellness board comprised of local citizens. Many of these boards are uncertain of the steps they can take to make a positive difference in their schools. Being able to champion a restricted debit card system would be an easy, high visibility initiative for a wellness board.

### **Designing Smarter Lunchrooms**

We shouldn't judge the quality of a school lunch by what leaves the lunch line. We should judge it in terms of what foods a child eats. Overly restricting a student's options is like forcing a child to eat their vegetables. In the end, we might win the in-school battle but lose the after-school war. We might condition them for food choices as a high school student, but leave them unprepared for the battle of the Freshman-15 or the fast food establishment near or at a worksite that awaits them afterward.

To help savvy school lunch directors and wellness boards think about how they can design smarter lunchrooms, we've developed a website [SmarterLunchrooms.org](http://SmarterLunchrooms.org). It shares recent research findings and case studies. Further, it provides a forum for practitioners to share the creative, inexpensive new ways they are helping students eat healthier—without the students even knowing. Through careful thought and simple innovations, great changes can be made—even in the school lunchroom.

### **For More Information**

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