National School Lunch Program Assessment

Children's Issues, Laws and Programs Series

Manuel P. Borges
Editor

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PREFACE

The National School Lunch Program (NSLP) is one of the largest food and nutrition assistance programs in the United States, feeding millions of children every day. During the 2006 school year, the program served 28 million lunches daily, on average, at a cost of $8 billion for the year. School meal providers face the task of serving nutritious and appealing school lunches, including free and reduced-price lunches for low-income students, and doing so under budget constraints. This book is intended as a briefing for policymakers and other stakeholders on the history and basic features of the program. It also addresses steps being taken by school food authorities and USDA's Food and Nutrition Service (FNS) in response to challenges faced by program administrators. One of the main goals on NSLP as identified by Congress is to promote the health and well-being of the Nation's children. In recent years, questions have been raised about the program's ability to meet this goal, especially as the main nutrition problem has shifted from under-nutrition to overweight and obesity. Public concern for the program has focused on whether it is contributing to the growing problem of childhood obesity and on the quality of foods available to schoolchildren. Issues at the Federal level include

Chapter 1 - The National School Lunch Program (NSLP) is the Nation's second largest food and nutrition assistance program. In 2006, it operated in over 101,000 public and nonprofit private schools and provided over 28 million low-cost or free lunches to children on a typical school day at a Federal cost of $8 billion for the year. This report provides background information on the NSLP, including historical trends and participant charac¬teristics. It also addresses steps being taken to meet challenges facing administrators of the program, including tradeoffs

between nutritional quality of foods served, costs, and participation, as well as between program access and program integrity.

Chapter 2 - Income volatility challenges the effectiveness of the safety net that USDA food assistance programs provide low-income families. This study examines income volatility among households with children and the implications of volatility for eligibility in the National School Lunch Program (NSLP). The results show that income volatility was higher for successively lower income groups and that the major determinants of changes in NSLP eligibility were changes in total household hours worked and the share of working adults. Income volatility in two-thirds of lower income households caused one or more changes in their monthly NSLP eligibility during the year. An estimated 27 percent of households that were income eligible for subsidized lunches at the beginning of the school year were no longer income eligible for the same level of subsidy by December due to monthly income changes.

Chapter 3 – This is a testimony of the School Nutrition Association Education and Labor Committee, House of Representatives.

Chapter 4 – This is a testimony of Kate J. Houston, Food, Nutrition, and Consumer Services United States Department of Agriculture before the House Committee on Education and Labor.

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Chapter 1

THE NATIONAL SCHOOL LUNCH PROGRAM: BACKGROUND, TRENDS, AND ISSUES

Katherine Ralston, Constance Newman, Annette Clauson, Joanne Guthrie, and Jean Buzby

ABSTRACT

The National School Lunch Program (NSLP) is the Nation's second largest food and nutrition assistance program. In 2006, it operated in over 101,000 public and nonprofit private schools and provided over 28 million low-cost or free lunches to children on a typical school day at a Federal cost of $8 billion for the year. This report provides background information on the NSLP, including historical trends and participant charac¬teristics. It also addresses steps being taken to meet challenges facing administrators of the program, including tradeoffs between nutritional quality of foods served, costs, and participation, as well as between program access and program integrity.

Keywords: National School Lunch Program, child nutrition, obesity, food assistance

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SUMMARY

The National School Lunch Program (NSLP) is one of the largest food and nutrition assistance programs in the United States, feeding millions of children every day. During the 2006 school year, the program served 28 million lunches daily, on average, at a cost of $8 billion for the year. School meal providers face the task of serving nutritious and appealing school lunches, including free and reduced-price lunches for low-income students, and doing so under budget constraints. This report is intended as a briefing for policymakers and other stakeholders on the history and basic features of the program. It also addresses steps being taken by school food authorities and USDA's Food and Nutrition Service (FNS) in response to challenges faced by program administrators.

What Is the Issue?

One of the main goals of NSLP as identified by Congress is to promote the health and well-being of the Nation's children. In recent years, questions have been raised about the program's ability to meet this goal, especially as the main nutrition problem has shifted from undernutrition to overweight and obesity. Public concern for the program has focused on whether it is contributing to the growing problem of childhood obesity and on the quality of foods available to schoolchildren. In response, many States and localities have imposed stricter nutritional requirements on both NSLP meals and "competitive foods" (other foods and beverages available in the school). School meal providers have wrestled with meeting these restrictions and other program requirements while covering rising costs and encouraging student participation. Meanwhile, issues at the Federal level include how to help school meal providers improve the nutritional quality of foods served as well as how to balance program access and integrity, particularly in regard to ensuring that ineligible students do not receive free or reduced-price lunches.

What Did the Study Find?

Most issues related to the NSLP touch upon, in one way or another, two, if not all three, components of a school meal "trilemma" involving the meal's nutrition, program cost, and student participation in the program. This trilemma applies to competitive foods as well because revenues from these foods can be important to the budgets of both the cafeteria and the school as a whole. A change to one component of the trilemma can have unintentional effects on either or both of the other components.

Nutritional quality of foods. Results are inconclusive from the best designed studies comparing the weight gain of NSLP participants with that of nonparticipants. One study shows no effect of program participation on children's obesity, and another study shows a small effect. The most rigorous study of nutrient intake shows similar calorie intakes for participants and nonparticipants but higher fat and sodium intakes for participants. While some studies find that participants derive important nutritional benefits from participating in the program, including higher intake of key nutrients and underconsumed foods and lower intake of sweets, other findings suggest that participants have high intakes of fat and sodium, and that a substantial share of school meal providers are not ensuring that foods meet the recommended levels of fat and sodium.

Program costs and revenues. To defray costs, many schools, and, sometimes, the school food service itself, depend on revenues from competitive foods, even though such foods have been found to contribute to overconsumption of calories, increased plate waste of nutritionally balanced NSLP lunches, and decreased intakes of nutrients by students. Rising costs also have increased pressure on school boards to use private foodservice management companies. The size of these operations provides them with greater purchasing power to procure foods. Many also reduce costs by providing lower benefit levels to their employees than those provided to employees of inhouse school meal providers.

Several studies show that schools could reduce the fat content of foods offered and increase consumption of underconsumed foods, such as milk and vegetables, while still maintaining revenue levels and NSLP participation levels. This can be done by exposing students to new foods, updating menus, changing the way food is presented, and providing nutrition education. USDA has assisted schools in this effort by providing grants for educational resources

through its Team Nutrition initiative and by including lower fat foods as part of the commodities it donates to the program.

Access and integrity. In the late 1990s, concerns arose that certification errors were enabling ineligible students to receive free or reduced-price meals from NSLP. Studies to uncover the sources of the errors found that household incomes of students often changed during the year, causing some students to move in and out of monthly eligibility. The 2004 Child Nutrition Reauthorization Act established eligibility for certified students for a full year, and this change has eliminated errors related to income volatility. Direct certification—automatic certification for children in households participating in the Food Stamp Program, Temporary Assistance for Needy Families, or the Food Distribution Program on Indian Reservations—has also reduced error rates and has been shown to increase participation by students eligible for a free school lunch. The Act required all schools to phase in direct certification and to use new methods to verify eligibility of students. The new policies are expected to reduce, but not totally eliminate, certifi cation errors; some errors, such as those stemming from household reporting, are not directly affected by the policies.

Improving the nutritional quality of school meals and competitive foods may, in principle, be a goal of many NSLP stakeholders, including schools, parents, the nutrition community, FNS, and Congress. But meeting this goal may raise program costs for parents, localities, or the Federal Government. Moreover, even if more nutritious foods are provided, that does not guarantee that students will eat them. Both participation and program costs can be affected by administrative policies and procedures, such as those used to determine program eligibility, to enroll children through application or direct certification, and to conduct eligibility verifications.

How Was the Study Conducted?

Researchers from USDA's Economic Research Service (ERS) reviewed recent economic-based and nutrition-based literature on NSLP, focusing on issues of health and administration. In summarizing findings from different studies, researchers gave more weight to the studies that were nationally representative and rigorously conducted. Several new studies have greatly aided these efforts. A large and comprehensive study sponsored by ERS assessed the last 35 years of research on health and nutritional outcomes of all

food and nutrition assistance programs. The 2005 School Nutrition and Dietary Assessment Survey (SNDA), sponsored by FNS, provided the most recent data on the program's impact on children's diets. The 2005 School Lunch and Breakfast Cost Study, sponsored by FNS, provided nationally representative data on school meal costs. Several other studies sponsored by FNS provided findings on the efficiency of NSLP administration.

ABBREVIATIONS

AMS	Agricultural Marketing Service (of U.S. Department of Agriculture)
APEC	Access, Participation, Eligibility, and Certification
CATCH	Child and Adolescent Trial for Cardiovascular Health
CFR	Code of Federal Regulations
CNA	Child Nutrition Act
CPS	Current Population Survey
DHHS	Department of Health and Human Services
DSCP	Defense Supply Center, Philadelphia
ECLS-K	Early Childhood Longitudinal Survey – Kindergarten cohort
ERS	Economic Research Service (of U.S. Department of Agriculture)
FCS	Food and Consumer Services (of U.S. Department of Agriculture)
FDA	Food and Drug Administration (of U.S. Department of Health and Human Services)
FDPIR	Food Distribution Program on Indian Reservations
FNS	Food and Nutrition Service (of U.S. Department of Agriculture)
FSA	Farm Service Agency (of U.S. Department of Agriculture)
FSP	Food Stamp Program
FVPP	Fruit and Vegetable Pilot Program
GAO	Government Accountability Office (formerly General Accounting Office)
HACCP	Hazard Analysis and Critical Control Points

IOM	Institute of Medicine (of National Academy of Sciences)
LEAF	Linking Education Activity and Fitness
NFSMI	National Food Service Management Institute
NHANES	National Health and Nutrition Examination Survey
NSLA	National School Lunch Act
NSLP	National School Lunch Program
OIG	Office of the Inspector General (of U.S. Department of Agriculture)
RCCI	Residential Child Care Institutions
SBP	School Breakfast Program
SFA	School Food Authority
SIPP	Study of Income and Program Participations
SLBCS	School Lunch and Breakfast Cost Study
SMI	School Meals Initiative
SNDA	School Nutrition and Dietary Assessment
TANF	Temporary Aid to Needy Families
USDA	U.S. Department of Agriculture
WPA	Works Progress Administration

OVERVIEW OF THE NATIONAL SCHOOL LUNCH PROGRAM

The National School Lunch Program (NSLP) was established under the National School Lunch Act (NSLA), signed by President Harry Truman in 1946, to "safeguard the health and well-being of the Nation's children and to encourage the domestic consumption of nutritious agricultural commodities and other foods." The NSLP has grown to become the second largest U.S. food and nutrition assistance program in both numbers of children served—30 million in 2006—and Federal dollars spent—8 billion in 2006. Almost 60 percent of American children age 5-18 participate in the program at least once per week. Almost half of all lunches served are provided free to students, with an additional 10 percent provided at reduced prices. Although schools are not required to offer NSLP meals, 94 percent of schools, both public and private, choose to participate in the program. NSLP accounts for 17 percent of the total Federal expenditures for all food and nutrition assistance programs.

This report presents comprehensive background information on the NSLP—how it works, its history and recent changes, program trends, partici-

pant characteristics, and current issues. Many of the broader issues faced by NSLP are similar to those facing food and nutrition assistance programs in general. The program was begun at a time when malnutrition due to poverty was a major concern. While poverty still exists in America, underweight children are now rare. Obesity among children, however, is rising, especially among the poor (Ogden et al., 2006). Policies designed to ensure adequate food consumption could contribute to rising rates of obesity if they inadvertently encourage some recipients who already are eating enough to eat more. This may be even truer of the NSLP because school meals are required to meet a calorie target; while a provision called "offer versus serve" allows children to decline certain parts of the meal, children who take the whole meal may take in more calories than they need. Critics of the program argue that recipients might be better off receiving income instead of food (Besharov, 2003). Policymakers face hard choices because the children served by NSLP have diverse nutritional needs, making a single policy for all difficult to craft. While all children benefit from a healthful meal and healthful food choices, requirements for calorie intake differ among children, depending on many factors.

Like other food and nutrition assistance programs, NSLP also was intended to increase demand for agricultural commodities. It supports commodity demand by providing free and reduced-price lunches for low-income students, subsidizing full-price lunches to a small extent, and directly donating commodities to the program. Critics of the program argue that these donations—over and above whatever increase in food consumption a free or subsidized lunch generates—could influence the content of the meal.

Other NSLP concerns accept the basic premise and structure of the program and focus on potential improvements at the margins. These include serving lower fat menu items and more fruits, vegetables, and whole grains without decreasing student participation or increasing plate waste, and without overstepping program cost boundaries.

Budgetary pressures on schools increased in the early 1980s following cuts in subsidies for full-price meals. The budget squeeze has continued as school meal reimbursement rates have gone up more slowly than the growth in costs, particularly the health benefit component of labor costs. These pressures have led many school nutrition authorities to offer a la carte items in school meals that do not meet nutritional standards but contribute to the food service program's bottom line. Concerns raised by parent groups have resulted in restrictions on "competitive foods" through individual State laws and wellness policies implemented by local school districts.

This cost pressure is such that some school nutrition authorities may be taken over by private foodservice management companies. These organizations may operate at lower costs due to greater purchasing power stemming from their size, as well as lower benefit levels provided for their employees. While managers in local school districts have an understandable desire to protect workers from a takeover, higher labor costs make it more difficult for schools to serve students more healthful meals that are both appetizing and affordable.

Like other food and nutrition assistance programs, the NSLP faces the constant challenge of encouraging eligible households to apply for participation while preventing loss of program benefits through errors in certification of eligible recipients. Increasing participation—both through encouraging application for free and reduced-price meals, and by using electronic payment to reduce the potential for stigma associated with participation— does more than just expand the benefits of the program. Higher numbers of participants increase reimbursements for free and reduced-price meals, which are often critical to covering fixed costs of meal service in a school district.

School districts vary by size, income level, student food preferences, labor costs, population density, and level of concern for nutrition, and they differ in approaches taken to balance program goals and costs. Thus, national generalizations about the NSLP can obscure issues affecting a sizable fraction of school food authorities (SFA).

Under NSLP requirements, schools must operate their lunch programs on a nonprofit basis, provide free or reduced-price meals to eligible children, and serve lunches at regular meal hours (see box, "Summary of Program Elements"). School lunches must meet the applicable recommendations of the *Dietary Guidelines for Americans*, while reflecting the differing nutrient and calorie needs of children. Schools that choose to take part in the lunch program receive cash reimbursements for each meal served. In addition to receiving cash reimbursements, schools are entitled by law to receive commodity foods, known as "entitlement" foods, for each meal served. Schools can also receive "bonus" commodities as they become available from surplus agricultural stocks.

At the Federal level, USDA's Food and Nutrition Service (FNS), Child Nutrition Division, reimburses States for NSLP meals served in schools, coordinates NSLP policy, provides technical assistance, and oversees the work of the State agencies. The State agencies, in most cases within a State department of education, in turn, administer the program through agreements with local school food authorities. The State agencies are responsible for managing fiscal elements of the program, monitoring SFA performance and

adherence to USDA nutrient standards, and providing SFAs with technical assistance.

SFAs operate the NSLP at the local level. Their jurisdiction usually corresponds to school district areas but can be confined to single schools or groups of school districts. In addition to serving meals that meet nutritional requirements, the SFAs process applications and certify students as being eligible for free or reduced-price lunches; they verify the eligibility status for a sample of free and reduced-price meal recipients; and they maintain program data for reporting and reimbursement claims.

NSLP does not require applicants to submit income documentation, and participant income requirements do not include an asset limit. The relatively low burden for certification may contribute to the program's role in meeting food assistance needs, as nearly two-thirds of children receiving free lunches come from households whose incomes appear to be low enough to qualify for the Food Stamp Program and Temporary Aid to Needy Families (TANF) but who either do not meet other requirements or choose not to participate (Newman and Ralston, 2006).

Summary of Program Elements[1]	
Eligibility and benefits	***Free lunch:*** Household income is less than or equal to 130 percent of poverty level, OR household participates in Temporary Aid to Needy Families (TANF), Food Stamp Program (FSP), or Food Distribution Program on Indian Reservations (FDPIR), OR child is homeless, runaway, or migrant. ***Reduced-price lunch:*** (students paid 40 cents in 2006): Household income is between 130 and 185 percent of poverty level.
Certification process	***Application:*** Parent or guardian must submit an application to the school food authority (SFA), any time during the school year, self-reporting households' total income for the most recent full month, the size of the household, and whether the student receives benefits from any of the three other Federal food and nutrition assistance programs. ***Direct certifi cation:*** Participants in FSP, TANF, or FDPIR are automatically certified for free lunch through administrative records. Requirement is phased in for all SFAs by 2008 under the 2004 Child Nutrition and WIC Reauthor-ization Act. See "Administrative Issues: Access and Integrity Tradeoffs" on page 34 for further details.
Verification Require-ments	***Required sample:*** SFAs must verify a sample of applications and have several options. The most common is a 3-percent sample of "error-prone" applica-tions, up to a total sample of 3,000. If there are not enough applications to fill a sample of 3,000, the SFA adds households selected at random. ***Deadline:*** November 15.

(Continued)

USDA reimbursements (as of 2006)	NSLP reimburses the following amounts to school food authorities for lunches served: ***Free lunch:*** $2.40 ***Reduced-price lunch:*** $2.00 ***Paid lunch:*** $0.23 Rates are 2 cents higher in school districts with more than 60 percent free and reduced-price meals and are also higher in Alaska and Hawaii.
Commodity donations (as of 2006)	***Entitlement commodities:*** USDA donates commodities at a rate of 16.75 cents (2006) per meal served the previous year.
Summary of Program Elements[1]	
	Bonus commodities: USDA purchases additional commodities to remove surplus from the marketplace. Amounts vary annually. See box, "USDA's Commodity Donation Program," on page 19 for further details.
Universal free meal provisions	***Provision 1:*** School may certify students as eligible for free lunches for 2 years if 80 percent of the student body is eligible for free or reduced-price lunches. ***Provision 2:*** Schools may provide free lunches to all students for 4 years as long as the school pays the difference between the Federal subsidies and the cost of providing the lunch. The school receives Federal reimbursement payment rates according to the percentage of paid, free, and reduced-price lunch shares consumed in a base year at the school. The base year for provision 2 is the first of the 4 years of operation of the agreement. ***Provision 3:*** Schools provide free lunches to all students for 4 years, and receive the same level of Federal cash and commodity assistance as they received in the last year for which the school made eligibility determinations and meal counts for each type, with annual adjustments for enrollment and inflation.
Meal requirements for reimbursement	***Nutrients*****:** Meal must provide one-third of the daily requirement for energy, protein, calcium, iron, and vitamins A and C, and no more than 30 percent of calories from fat, 10 percent from saturated fat, and moderate amounts of sodium and cholesterol. Changes in the 2005 *Dietary Guidelines* may lead to revision of meal requirements, especially for energy (see "Meal Requirements" on page 18). ***Required foods—food-based meal plan:*** Food must include 1.5 - 2 oz of meat or meat alternate, two servings of fruits or vegetables, one serving of grain product, and 8 oz of fluid milk. (Increased quantities of fruits, vegetables, grains, and breads are served with the "enhanced food-based meal plan.") ***Nutrient-based meal plan:*** Food must include any combination of entrée, side dish, and milk meeting nutrient requirements. ***Offer vs. serve:*** Student may refuse up to two items, and meal will still be counted as reimbursable.
Food safety Requirements	Commodities purchased by USDA for donation to NSLP meet strict food safety standards. As of 2004, meals produced by school cafeterias must have documentation on standard operating procedures to monitor heating, cooling, and refrigeration to ensure food safety. Cafeterias must be inspected twice annually, up from once annually.

Other NSLP funding	***Team Nutrition:*** Established as part of School Meals Initiative, this program provides schools with nutrition education grants, nutrition education materials for children and families, technical assistance materials for school foodservice employees at all levels, and materials to build school and community support for healthful eating and physical activity.
	National Food Service Management Institute: This research and training center located at the University of Mississippi provides resources
Summary of Program Elements[1]	
	for nutrition education, improved food preparation and presentation, and other areas of school foodservice management.
Related programs	***School Breakfast Program:*** Under separate legislation, this program provides free, reduced-price and full-price breakfasts to students. See discussion of interaction of school meal programs in "Issues of NSLP Outcomes: Is NSLP Making Children Overweight To Support Agriculture?" on page 16. ***Summer Feeding Program:*** This program extends the availability of free breakfasts and lunches into the summer months in low-income areas. Appr-oved sponsors of the program include school districts, local government age-ncies, camps, or private nonprofit organizations. Sponsors receive Reimbursements for type of meal provided as well as assistance with adminis-tration costs. "Seamless Summer" waivers permit school food authorities to run community-based summer feeding programs under the NSLP and to receive the NSLP reimbursement rate, which is slightly lower than the Summer Food Service Program rate. ***Special Milk Program:*** Under NSLP legislation, this program provides subsidized milk to school children for whom NSLP is not available. ***After-School Snack Program:*** Under NSLP legislation, this program reimburses schools for healthful snacks given to students in educational after-school programs.
[1] For further details, see Menu Planning in the National School Lunch Program, http://www.fns.usda.gov/cnd/menu/menu.planning.approaches.for.lunches.doc, NSLP regulations, http://www.fns.usda.gov/cnd/Governance/regulations/7CFR210.pdf, and Regulations and Policy http://www.fns.usda.gov/fns/regulations.htm.	

NSLP HISTORY AND TRENDS

The National School Lunch Program was founded by the National School Lunch Act in 1946 as a way to provide permanent Federal support to long-standing efforts in some States and localities to provide meals to school-children. The program has grown over the decades to become practically universal in its coverage: almost all schools participate in the program.

Legislative and Regulatory History

The Child Nutrition Act (CNA) of 1966 and later amendments to the NSLA and CNA consolidated the program's administration and expanded meal assistance with the addition of the School Breakfast Program, the Summer Food Service Program, and the Child and Adult Care Food Program (see box, "NSLP Timeline"). Concern over costs and targeting emerged with the Omnibus Budget Reconciliation Acts 1980-81, which reduced subsidies for paid meals but increased the income range for free-meal eligibility.

More recent changes in the 1990s through 2004 have refl ected rising concerns for children's health. The School Meals Initiative, developed in response to the Healthy Meals for Americans Act of 1994, required schools to provide meals that meet the *Dietary Guidelines for Americans*, including limiting fat to 30 percent of calories. To help schools meet these goals, the initiative instituted a new menu-planning system created by Team Nutrition to help schools develop healthful menus that appeal to children, and created the Commodity Improvement Council to modify specifications for processed commodities to lower the fat and sodium content of commodities donated to schools for NSLP.

The 2004 Child Nutrition and WIC Reauthorization Act included a requirement that schools develop wellness policies that specify nutrition guidelines for all foods in the school, including competitive foods. The act also increased the certification period for participant eligibility to 1 year, mandated direct certification of children participating in the Food Stamp Program, TANF, or the Food Distribution Program on Indian Reservations, increased food safety requirements, and expanded the Fruit and Vegetable Pilot into a permanent program.

Participation and Costs Increase Overall

Student participation in the NSLP increased over most years of the program, despite a drop in total school enrollment of 12 percent from 1971 to 1984. Participation declined by 14 percent during 1980-82 when reduced-price lunch reimbursements fell (Lutz et al., 1999), but the number of total lunches served per year grew at an average annual rate of 1.3 percent, surpassing 5 billion in 2005-06 (figure. 1). This growth matches growth in the school enrollment from 1985 to 2000: both the number of total lunches served and enrollment in elementary and high schools increased around 18 percent from

1985 to 2000. Participation by students eligible for free and reduced-price meals has increased even more rapidly. During 1983-2005, free and reduced-price meals served increased by an average annual rate of 1.9 percent per year.

NSLP Timeline[1]	
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 to schools for cooking and serving lunches.
1936	USDA becomes authorized to purchase surplus farm commodities and distribute them to local school lunch programs.
1946	National School Lunch Act (NSLA) establishes the NSLP, which includes the following requirements: • Meals must meet minimum nutritional standards • Lunches must be available to low-income students at no cost or reduced price without discrimination • Program must be nonprofit • School lunch must use surplus commodities to the extent practical • Schools must report expenditures and receipts to State educational agencies
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 percentages of low-income children.
1966	Child Nutrition Act (CNA) is signed into law. The act: • Combines school foodservice programs from other agencies into one program under USDA • Funds a 2-year pilot project of a school breakfast program • Funds a foodservice equipment assistance program • Provides additional funds for schools serving low-income students, including equipment and administrative costs
1968	Concern over hunger in America increases political support for school meal programs. CNA is amended to create the Summer Food Service Program and the Child and Adult Care Food Program, to fund State administrative expenses, and to extend program authority for the School Breakfast Program to 1971.
1970	Amendments to the NSLA and the CNA establish USDA's Food and Consumer Service as the administrating agency for NSLP and other Federal food assistance, change eligibility criteria national guidelines for providing free or reduced-price meals, and prohibit discrimination and overt identification of needy children.
1975	Amendments to the CNA make the School Breakfast Program permanent and make Residential Child Care Institutions (RCCI) eligible to participate as "schools" in the NSLP.
1977	NSLA amendment introduces provisions allowing schools with high percentages of low-income students to certify students for 2 years instead of 1, or to certify all students for free lunches and be reimbursed according to participation by meal type in the base year.
1980	First *Dietary Guidelines for Healthy Americans* is published.

(Continued)

1980-81	Omnibus Budget Reconciliation Acts of 1980 and 1981 are enacted. The acts: • Reduce reimbursement rates for reduced-price and paid lunch • Introduce verification procedures • Reduce the cash value for commodities • Provide for a revision of income-eligibility guidelines
NSLP Timeline[1]	
	• Raise income limit for free lunches from 125 to 130 percent of poverty and lower limit for reduced price from 195 to 185 percent of poverty • Terminate assistance for foodservice equipment • Reduce the appropriations for nutrition education and training grants • In response to lower reimbursement rates, SFAs raise prices for paid lunches, and participation rates fall by 14 percent (Lutz et al., 1999).
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 schoolday, throughout the school (GAO, 2005).
1991	*Healthy People 2000: National Health Promotion and Disease Prevention Objectives* calls on school meal programs to increase the proportion of meals that meet the *Dietary Guidelines for Americans* to 90 percent by the year 2000 (DHHS, 1991).
1993	Results from the 1991-92 School Nutrition Dietary Assessment (SNDA) conducted by USDA's FNS find that school meals generally meet the nutritional needs of children but that school lunches do not meet the dietary guidelines for fat and saturated fat as a percent of calories (Burghardt et al., 1993).
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 requirement regulations 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.
1996	The Healthy Meals for Children Act adds a menu-planning option that allows for more fruits, vegetables, and grains and provides schools with more flexibility in meeting nutrition standards with regard to the use of commodity provisions.
2001	Results from the 1998-99 SNDA II find that the average fat content of school lunches fell from 39 to 35 percent of calories but still did not meet the 1995 *Dietary Guidelines*
2002	Nutrition Title of 2002 Farm Act 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: • Expands certification period to 1 year, aligning law with common practice • Requires direct certification to be phased in as a required part of certification process, requires schools to develop Hazard Analysis and Critical Control Point plans for food safety in meal production, and increases food safety inspections from once to twice annually

	• Authorizes Fresh Fruit and Vegetable Pilot as a permanent program and expands to new States and Indian Tribal Organizations • Requires school food authorities to develop wellness plans specifying nutritional standards for all foods in schools and goals for physical fitness of students
NSLP Timeline[1]	
2005	Release of 2005 *Dietary Guidelines for Americans* has implications for school meal requirements. New guidelines recommend different calorie limits for diff-erent levels of activity and recommend fat intake between 25 and 35 percent of calories, rather than below 30 percent. Agriculture, Rural Development, Food and Drug Administration and Related Agencies Appropriations Act of 2006 further expands the Fresh Fruit and Vegetable Program to a total of 375 schools in 14 States and 3 Indian Tribal Organizations.
2007	Results from the 2004-05 SNDA III find that less than one-third of schools served lunches containing at most 30 percent of calories from fat and less than 10 percent of calories from saturated fat.
[1]For a comprehensive history of school meals through 1970, see Gunderson (1971).	

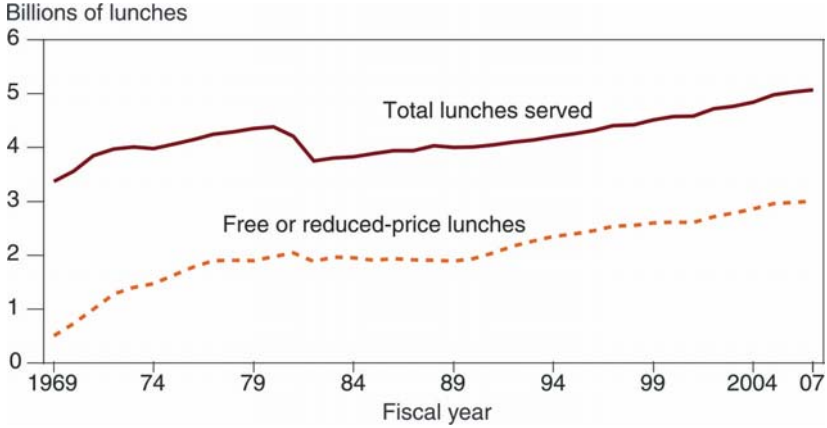
The rate of program participation has stayed fairly stable since 1989, the earliest year for which data are available. In Federal fi scal year 1989, NSLPparticipating students (who received a full price, reduced-price, or free lunch) accounted for 60 percent of all students in NSLP-participating schools. The rate declined slightly through the 1990s to nearly 58 percent in fi scal year 2000 and then increased steadily from 2003 to about 62 percent in fi scal year 2008, the last year for which data are available (figure. 2).

Federal expenditures adjusted for infl ation have increased more slowly than total NSLP participation, and substantially more slowly than the number of free and reduced-price meals served, which make up the bulk of reimbursements. While Federal expenditures in nominal (unadjusted for infl ation) dollars increased at 4.8 percent per year during 1983-2005 (figure. 3), Federal expenditures in 2005 dollars increased only 1.1 percent per year during this period. (See "Administrative Issues: Access and Integrity Tradeoffs" on page 34 for a discussion of program finances at the local level.)

CHARACTERISTICS OF NSLP PARTICIPANTS

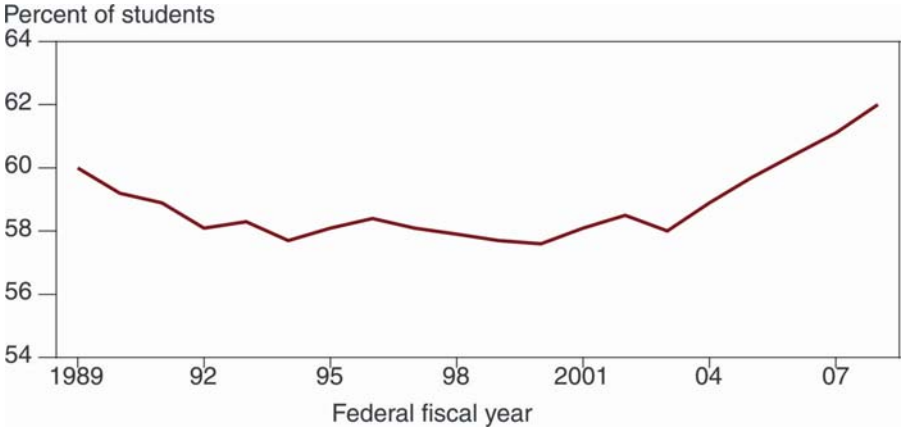
What are the characteristics of students who receive school meal benefits? Do they differ greatly from those of other students? Every year, FNS releases national and State-level statistics on NSLP participants who received free, reduced-price, and full-price lunches. The most recent data, for 2006, based on

over 5 billion lunches served, indicate that 49 percent of meals served were free, 10 percent were reduced price, and 41 percent were full price (USDA, FNS, 2007a).



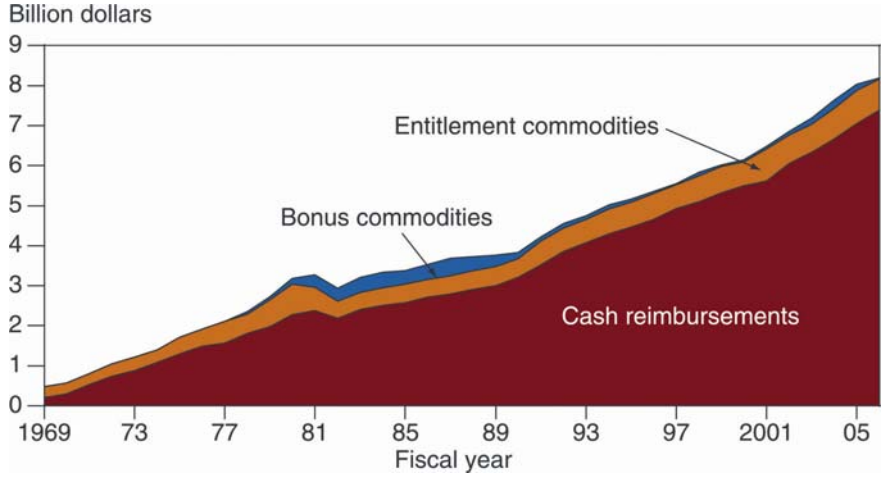
Source: USDA, FNS, 2007a.

Figure 1. Participation: Total lunches and free and reduced-price lunches served



Source: USDA, ERS using data from USDA, FNS, 1990-2008.

Figure 2. NSLP student participation rate



Source: USDA, FNS, 2007b.
Note: Costs are in nominal dollars.

Figure 3. NSLP costs, 1969-2006

Participant characteristics, such as age group, household composition, ethnicity, income, and other information, are not available in the annual statistics from FNS, which are collected as administrative data from the schools. FNS publishes such data when available from its nationally representative School Nutrition Dietary Assessments (SNDA), the most recent of which (SNDA III) was conducted in 2004-05 (see Gordon et al., 2007a, for results). Participant characteristics are included in a few more frequent national surveys, such as the Survey of Income and Program Participation (SIPP) and the National Health and Nutrition Examination Survey (NHANES).

Table 1. Share of all students in a given category who reported usually participating in NSLP, school year 2004-05

	Percent
All students	71.9
Certification status	
Free or reduced-price meals	88.7
Not certified	60.4
Ethnicity	
Non-Hispanic White	68.0
Non-Hispanic Black	78.2
Hispanic	76.3

Other	73.6
Income/Poverty ratio	
0 to 130	84.1
131 to 185	82.5
186+	64.4

Source: USDA, ERS using data from School Nutrition Dietary Assessment Study-III, school year 2004-05, Child Interview, Dietary Recalls, Parent Interview. Weighted tabulations prepared by Gordon et al. (2007a).

Note: Usual participation is defined as participation on 3 or more days per week, per child report.

Using data from SNDA III, Gordon et al. found that 7 of 10 students reported usually participating in NSLP, defined as three or more times per week (table 1). This proportion is comparable to that reported in findings from other national surveys (Newman and Ralston, 2006). Almost all (89 percent) students who are certified to receive a free or reduced-price meal participate, whereas those who are not certified for a subsidized meal still participate at a fairly high level (60 percent). Minority students participate at slightly higher levels than do non-Hispanic White students, and students from households with lower income-to-poverty ratios also participate at higher rates than those with higher income-to-poverty ratios.

According to data from SNDA III, in 2004-05, students age 8-10, the largest single age group, made up nearly a third of all NSLP participants; students age 11-13 made up about a quarter (table 2). Younger students, age 5-7, made up 16 percent of participants, and older students, age 14-18, made up 26 percent. Children age 8-13 were more likely to participate than children in other age groups, while children age 16-18 were less likely to participate.

Seven of 10 NSLP participants lived in dual-adult households, somewhat less than the percentage of all students who did so. And while White students are less likely to participate than Blacks and Hispanics, half of NSLP participants were White. Students in families receiving food stamps and/or TANF had higher representation among NSLP participants than they did among all students.

Participant Characteristics by Meal Type

An examination of participant characteristics by meal type (full price, reduced price, or free) offers further insights into the population served by the NSLP. While cross-tabulations by meal type are not yet available from SNDA III, they were reported by Newman and Ralston (2006) from the Survey of Income and Program Participation (SIPP) for fiscal year 2001.

The definition of NSLP participation in SIPP differs from the FNS definition: FNS reports participation in daily averages over 9 school months of the Federal fiscal year (October 1 to September 30), whereas SIPP reports participation by month. Nevertheless, the survey-based estimates of shares of participants in each payment category in SIPP match well with FNS shares of lunch receipt in each category, thus providing a basis for the estimates of participant characteristics. Further, data from SIPP indicate that the shares of participants and all students represented by population subgroups were roughly similar to those shown in table 2, suggesting that the more detailed cross-tabulations discussed in this section are relevant.

Table 2. Sharacteristics of students and NSLP participants on a typical day, school year 2004-05

	All students age 5 - 18	**All NSLP participants**
	Percent	
Ethnicity:		
Non-Hispanic White	54.2	50.4
Non-Hispanic Black	16.8	19.1
Hispanic	21.9	24.0
Other	7.0	6.5
Total:	100.0	100.0
Age group (years):		
6 to 7	13.3	15.6
8 to 10	28.3	32.8
11 to 13	23.7	25.5
14 to 15	16.1	12.5
16 to 18	18.8	13.5
Total:	100.0	100.0
Income/Poverty ratio		
0 to 130	35.0	28.7
131 to 185	15.3	12.6
186+	49.8	45.2
Total:	100.0	100.0
Household composition:		
Adult respondent lives with spouse or partner	74.2	70.4
Adult respondent does not live with spouse or partner	25.8	29.6
Total:	100.0	100.0
Other programs (not mutually exclusive):		
Family receives food stamps	21.0	24.1

Family receives TANF or other cash assistance	8.0	9.5
Food security status		
Food secure	82.5	77.6
Low food security	12.6	16.6
Very low food security	4.9	5.7

Source: USDA, ERS using data from School Nutrition Dietary Assessment Study-III, school year 2004-05, Child Interview, Dietary Recalls, Parent Interview. Weighted tabulations prepared by Gordon et al. (2007a).

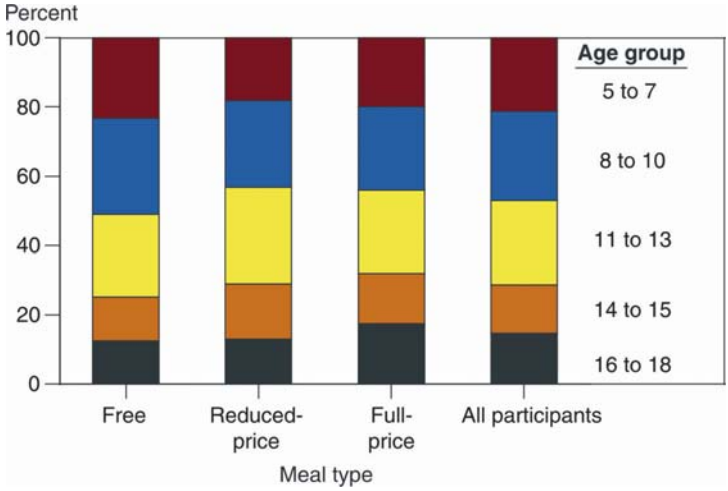
Note: Participation on a typical day is defined as participation on the day students were interviewed. TANF = Temporary Aid to Needy Families.

Preteens in All Categories Participate More than Other Age Groups

According to data from SIPP, the age distribution of NSLP participants did not differ greatly across meal types. Among free-lunch recipients, the age breakdown was similar to that of all participants (figure 4). Older students accounted for a slightly larger share of reduced-price lunch recipients, and they were more highly represented among paid-lunch students as well.

The somewhat smaller representation of older teens receiving free lunches is consistent with evidence suggesting that perceived stigma associated with free lunches, when it exists, is more prevalent in this age group (Glantz et al., 1994). The average household incomes of older students were higher (as shown later in this chapter), which also would lead to lower free-lunch participation rates among this group (Newman and Ralston, 2006).

In contrast, the difference in distribution of participating household composition types was more notable across the three payment types (figure 5). SIPP data show that free-lunch recipients were about as likely to be from a single female-headed household as from a married-couple household, while reduced-price lunch recipients were more likely to be from a married couple household than from a single female-headed household (33 percent). And, paid lunch recipients were even more likely to be from a married-couple household than from a single female-headed household (14 percent). The percentage of students from single male-headed households was similarly low across the three payment types.

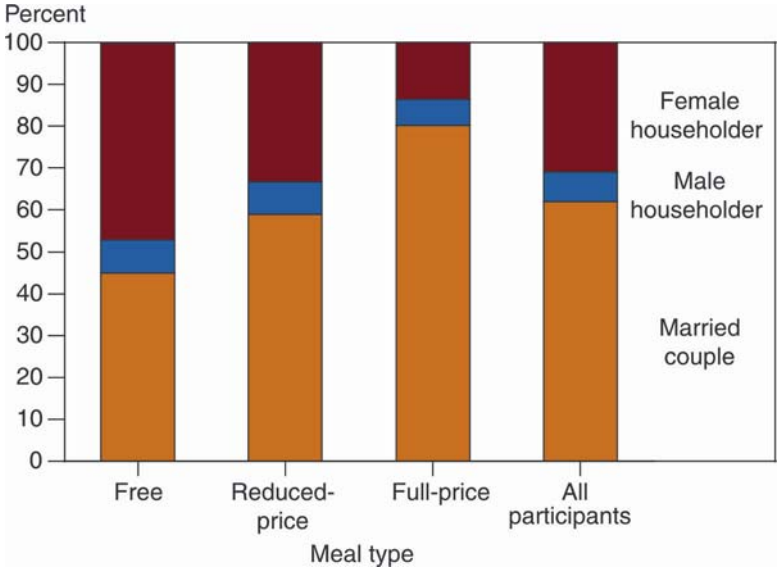


Source: USDA, ERS using SIPP, 2001.

Figure 4. NSLP participants by meal type and age group, 2001

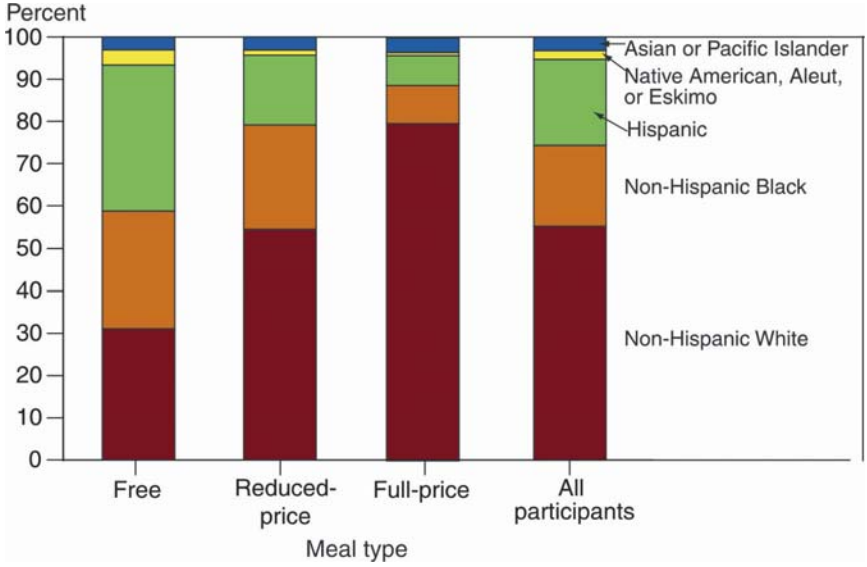
Ethnic Composition Influenced by Incomes

Racial and ethnic distribution also differed notably across the three payment types (figure. 6). Shares of free-lunch recipients were divided nearly equally among the three major ethnic groups, with Blacks, Whites, and Hispanics ranging from 28 to 35 percent of the total. Native Americans and Asians accounted for significantly smaller shares. Among reduced-price lunch recipients, the highest shares were attributed to Whites, Blacks, and Hispanics, respectively. And, among paid-lunch recipients, Whites had a significantly higher share than the other groups. The predominance of Whites in the last category of recipients reflects the greater proportion of White children in the population as well as the higher average incomes of Whites relative to the U.S. population as a whole.



Source: USDA, ERS using SIPP, 2001.

Figure 5. NSLP participants by meal type and household composition



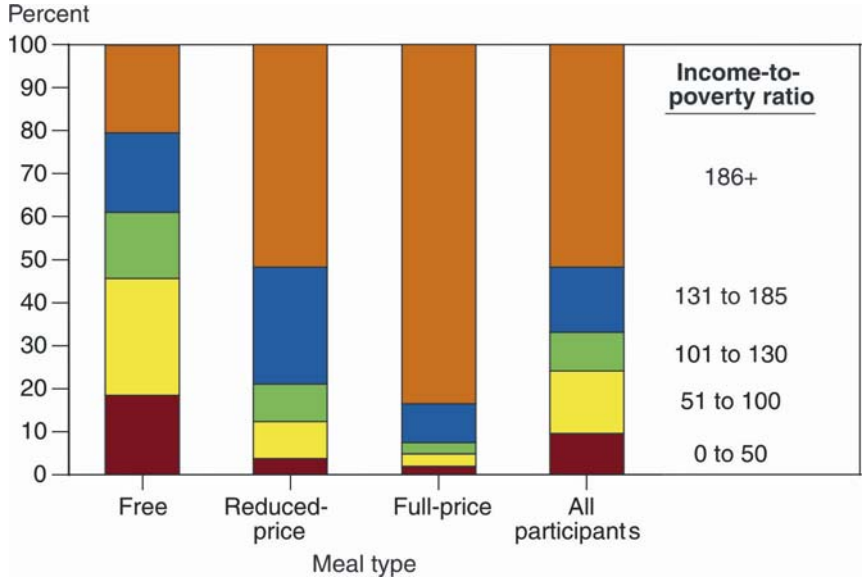
Source: USDA, ERS using SIPP, 2001.

Figure 6. NSLP participants by meal type group and ethnicity

Income as a Ratio of Poverty by Meal Type

The distribution of the income-to-poverty ratio differed across the three payment types as expected, with the proportion of low-income recipients increasing as the subsidy level increases (figure. 7). Sixty percent of free-lunch recipients live in households with an annual income below 130 percent of the poverty line, where the provision of free lunch is likely to have a significant impact. The remainder had income-to-poverty ratios above the 130-percent limit. Over half of reduced-price lunch recipients had income-to-poverty ratios above the 185-percent limit. Some of these recipients may have lived in districts providing universal free lunch under provisions 2 or 3 of NSLP regulations, or some may have benefited from State or local subsidies. Others may have had lower 1-month incomes at the time of application than the annual average income used here. The data may also reflect income reporting errors. On the other hand, almost 8 percent of NSLP participants who paid for a lunch would have been eligible for a free lunch, and 9 percent who paid would have been eligible for a reduced-price lunch. Again, however, using annual survey data to estimate a household's monthly income at the time of application provides only a rough estimate of program eligibility. See "Administrative Issues: Access and Integrity Tradeoffs" on page 34 for further discussion of the implications of eligibility and benefit receipt.

The mean income-to-poverty ratios of NSLP participants by subgroups help explain the trends shown in this chapter. White (non-Hispanic) student households had higher mean income-to-poverty ratios (4.2) than Black (3.3), Hispanic (3.4), Native American (3.4), and Asian student households (4.0). Married-couple households were better off than other types of house¬holds (4.2), while female-headed households were the least well off (3.1). Households with older students had consistently higher income-to-poverty ratios than households with younger students, although the differences were not great. Households with students age 16-18 had an average income-to¬poverty ratio of 4.0, whereas households with the youngest students had an average income-to-poverty ratio of 3.7.



Source: USDA, ERS using SIPP, 2001.

Figure 7. NSLP participants by meal type and percent of poverty

ISSUES OF NSLP OUTCOMES: IS NSLP MAKING CHILDREN OVERWEIGHT TO SUPPORT AGRICULTURE?

Many of the broader issues faced by NSLP are similar to those of food and nutrition assistance programs in general. When the program began in 1946, it was seen as a way to reduce undernutrition among low-income children while supporting the demand for U.S. agriculture. Now, critics of the program charge, the poor are no longer undernourished and providing assistance in the form of food instead of income contributes to obesity, either by encouraging overconsumption of some foods that are high in fat and calories or by increasing overall food consumption beyond what is necessary for growth and health (Besharov, 2003; Yeoman, 2003).

How NSLP Can Influence Children's Diets

NSLP has the potential to influence children's food consumption in several ways. First, the program subsidizes lunch for low-income families by giving cash reimbursements to schools for meals provided free or at a reduced price, thus lowering the cost and potentially increasing food consumption for low-income children—either in total or for some categories of foods. By subsidizing the cost of providing lunches to children, the program also provides participating families, especially low-income families, with additional income. This could affect children's diets further if this additional income changes food purchases. Economists refer to these two effects as a "price effect" and an "income effect." The overall effect of this subsidy depends on the income level of recipients and the cost (including time) of providing a lunch from home. Subsidized meals have a greater impact on diets of recipients who have difficulty meeting basic food needs.

Second, USDA directly donates commodities to States for use in school lunches. Commodity donations could influence meals if the donated foods were different from what children would otherwise eat, and if they were donated in sufficient quantities. Note that the program requires that commodity donations for school lunches be produced domestically. The program could increase demand for U.S. agricultural products even without increasing amounts of food consumed because domestically produced food could substitute for imported food.

Third, the program originally required specific quantities of individual food groups as part of a food-based meal pattern in order to meet nutritional objectives. While the program now allows a nutrient-based meal pattern with no specific food requirements, nearly four of five school food authorities still follow a food-based plan (either "traditional" or "enhanced") (Logan and Kling, 2005), and the program still requires schools to offer milk with every meal. Under the food-based and nutrient-based patterns, requirements for calories and nutrients influence the content and size of meals offered.

Donated Commodities

Critics of NSLP charge specifically that the program forces schools to accept higher fat foods, such as high-fat meats and cheeses, in order to support these products as demand in the open market declines. It is important to recognize that commodities purchased must be used for meals that meet the

Dietary Guidelines for fat and saturated fat. In fact, as part of the 1995 School Meals Initiative for Healthy Children (SMI), USDA began offering more low-fat meat and cheese products as part of commodity donations as well as greatly expanding fresh produce donations. Further, schools consider distribution, storage costs, and other logistical factors in accepting donated commodities.

Are the commodity donations big enough to make a difference in the foods that schools offer and children eat? While the USDA commodity purchases represent 17 percent or less of the total food budgets of school food authorities on average, USDA is often able to purchase the commodities at lower prices than those available on the open market (MacDonald et al., 1998), so those dollars purchase a larger volume of commodities than the schools would be able to purchase with the same amount of money. This amount could be enough to at least have a small effect on meals offered if the range of commodities offered were sufficiently different from that otherwise offered, or the prices were sufficiently different from prices on the open market.

Program regulations specifically require participating school food authorities to "accept and use, in as large quantities as may be efficiently utilized in their nonprofit school food service," commodities that USDA purchases for distribution (CFR 7 chapter II, 210.9b). USDA develops dollar guides within commodity groups for each State—divided into fruits and vegetables, poultry and eggs, meat and fish, cheese, and grain products.

The initial plan is based on an estimate of the dollars available for the upcoming school year, based on forecasting and market analysis, and traditional levels of support. The plan is adjusted throughout the year as supply and demand changes. The total target dollars are estimated entitlement dollars (meals served times the commodity rate). The dollars by commodity group are based on the national average percentages of prior purchases and current budget, with each State offered its fair share of dollars available.

Program documents stress that States and school districts "are not precisely restricted to the dollar amounts in the guide" and that ordering is fl exible (USDA, FNS, 2006). This flexibility is apparent from changes in commodities purchased by school foodservice programs from 1996 to 2005. Over that period, poultry as a fraction of meat and poultry together increased from 41 to 46 percent, perhaps reflecting efforts to lower fat content of meals. Meat and poultry together as a share of total commodity donations fell from 47 to 39 percent, while cheese increased from 14 percent of total dollars to 16 percent (USDA, OBPA, 1998-2007), perhaps reflecting changes in preferences.

USDA has made efforts to support goals for improved nutrition within the context of supporting agriculture. During the 1990s, as part of the School Meals Initiative, USDA began offering lower fat meat, poultry, and cheese products and worked with food manufacturers to develop and market test low-fat cheese with acceptable melting properties. USDA had already increased the volume of fruits and vegetables purchased through the program in the 1980s but increased them further in the 1990s. USDA began working with the Department of Defense procurement system to offer more fresh fruits and vegetables through the commodity donation program.

The 2002 farm bill allocated $50 million in commodity entitlement funds (section 32) to be used annually for direct purchases of fresh fruits and vegetables from the Defense Supply Center, Philadelphia (DSCP) for school years 2003-06. School lunch programs were also given the authority in school year 2005 to make additional purchases of fresh fruits and vegetables directly from DSCP out of cash reimbursement funds (section 4 and 11 funds).

For further details, see box, "USDA's Commodity Donation Program."

Meal Requirements

NSLP meal requirements are another aspect of the program that affects children's lunchtime choices. These requirements have become more fl exible, thus reducing somewhat the influence of the meals on consumption of some individual food groups, as well as total calories.

School meals are required to meet nutritional targets for calories, protein, calcium, iron, and vitamin A and, since the 1995 SMI, must meet the *Dietary Guidelines for Americans* for the percent of calories from fat and saturated fat. They also have some requirements for amounts of particular food groups, at least if they follow food-based menu planning.

The original food-based meal pattern requirement, still followed by the majority of schools, specifies amounts of meat or meat alternates, breads or grains, fruits, and vegetables required for a reimbursable meal. This requirement encourages consumption from all of these food groups, potentially more of any individual group than would be consumed otherwise.

As part of the SMI, USDA introduced new options for meal planning, including the nutrient-based meal plan. This plan requires only that the meal meet nutrient targets and contain an entrée, a side dish, and milk. This meal plan would allow, for example, protein-enriched pasta to count toward the

protein target, without requiring a separate meat alternate (defined to include cheese, yogurt, eggs, beans, or nuts/nut butter) to be included.

This plan offers more flexibility and less potential impact on any commodity group, since meals may end up looking more like what students would otherwise be eating. Several State agencies have begun encouraging this approach, but more than two-thirds of school foodservice programs still follow the food-based method (Gordon et al., 2007b).

The calorie requirement for NSLP meals could lead to overconsumption for students whose calorie needs are less than the lunch provides. The "offer versus serve" provision, required for high schools and adopted by most middle and elementary schools, allows a lunch chosen by students to be counted as reimbursable if it contains three of five required meal components under the food-based plan (or two of three under the nutrient-based meal plan), and includes fluid milk. This added flexibility may reduce the problem of mismatch between calorie needs and calories provided by the meal.

USDA'S COMMODITY DONATION PROGRAM

School districts and independent schools choosing to participate in the NSLP receive two forms of Federal support from USDA: cash subsidies and donated agricultural "entitlement" commodities. USDA procures and distributes commodities to schools that participate in the NSLP and also provides cash reimbursements for each free, reduced-price, and paid meal served. Schools receive approximately 17 percent of the total dollar value of the food served in the NSLP from USDA-donated commodities. USDA's goal of commodity assistance is to provide students with nutritious food while removing surplus production from the marketplace to improve and maintain farm income.

In fiscal year (FY) 2005, USDA spent $975.1 million on commodity purchases for the NSLP program. USDA's Food and Nutrition Service (FNS) administers the domestic food distribution program, with direct procurement assistance from USDA's Agricultural Marketing Service (AMS) and USDA's Farm Service Agency (FSA).

Generally, purchases are made bi-weekly or monthly in support of both the export and domestic food and nutrition assistance programs. The purchasing program is a coordinated effort in USDA. The AMS and FSA specialists knowledgeable in food processing work with potential vendors,

FNS, and food safety specialists to develop product specifications. Each specification provides details on product formulations (i.e., manufacturing, packaging, sampling, and testing requirements) and quality assurance provisions. USDA then assesses market conditions and determines the availability and anticipated prices of commodities.

During this time, AMS and FSA work closely with FNS to determine recipient preferences. Then, after notifying specific industries through press releases, AMS and FSA gather competitive bids or negotiate contracts with vendors and award contracts. FNS matches the quantity, quality, and variety of purchased commodities to specific needs of food recipients. AMS, FSA, and FNS work together to monitor vendors' compliance with contract requirements and applicable Federal food safety laws and regulations. And fi nally, FSA issues delivery orders and makes payments to vendors to whom contracts have been awarded.

The bulk of commodity donations to schools are called "entitlement" commodities. School food authorities receive a per meal allotment toward entitlement commodities (16.75 cents in FY 2006), which is funded from annual customs receipts. The list of commodity products and foods offered to schools are based on requests and include minimally processed meats, cheeses, grains, and produce, as well as a wide range of items, such as frozen hamburger patties, chicken fajita strips and nuggets, turkey sausage and taco meat, canned and frozen fruits and vegetables, salsa, macaroni and cheese, and other pasta.

In addition to the entitlement amounts, USDA offers bonus commodity donations when they are available from surplus agricultural stocks. Bonus commodities are purchased by USDA specifically to help producers when there is an oversupply in the retail market. Bonus commodities offered to schools in 2006 included frozen cherries, sweet potatoes, canned crushed pineapple, and dry beans.

Milk is the only individual commodity that the program specifically requires schools to include in all reimbursable lunches, directly under school lunch legislation.[1] Schools are permitted to provide calcium-fortified soymilk as an alternative for students who are allergic to milk. As part of the SMI, USDA made efforts to support reduction in fat consumption by encouraging schools to offer reduced-fat, low-fat, and skim milk. In 2004, USDA removed the requirement to offer whole milk as an option if it was consumed by at least 1 percent of students in the previous year.

The targets for individual nutrients also influence the composition of the meal in different ways under the nutrient-based and food-based meal plans.

The limits on fat and saturated fat as a percent of calories encourages schools to use lower fat meats and cheeses and discourages use of butter in cooking. But the need to meet the calorie requirement under the fat limit encourages the use of breaded items. Further, the calorie limit requires schools to offer enough food to meet the target, even if it is more than the student would otherwise eat. This can increase the amount of commodities consumed.

While the restrictions on fat and saturated fat are designed to improve children's diets, the effect of these requirements is limited. First, under the "offer versus serve" provision, schools are required to allow students to choose a subset of the full reimbursable meal, so actual fat content of meals consumed by students could be higher than the average for the full meal. Second, if schools offer higher fat choices on the menu for reimbursable meals, the average meal chosen by students may have a higher fat content than the average meal offered by the cafeteria. Finally, school food authorities are checked for compliance only once every 5 years, and even then, some school food authorities are found to be out of compliance.

The gradual implementation of fat-content restrictions is apparent from results of the 2005 SNDA III, (Gordon et al., 2007b), which surveyed school meal providers outside of the periodic review cycle. While the study showed some improvement in saturated fat content over that shown in the 1998-99 SNDA II, it found that only one in four elementary schools served lunches that met the standard for fat and one in three met the standard for saturated fat. For high schools, the numbers were even lower: 1 in 10 for fat and 1 in 5 for saturated fat.

The 2005 *Dietary Guidelines for Americans* allow a new range for fat as a percent of calories—25-35 percent for children, which is a more relaxed standard than the previous limit of 30 percent of calories from fat. This relaxation may result in menu flexibility that leads to greater program participation, since participation was found to be negatively associated with lower fat content of school lunches (Gleason, 1996).

The new *Guidelines* also provide calorie recommendations based on activity level, but as of early 2008, it has not yet been determined which activity level should be used to establish calorie standards for the NSLP (USDA, FNS, 2005a). That decision could influence the size and composition of meals.

Other changes that could influence meals are the new list of nutrients of concern for children (calcium, potassium, fiber, magnesium, and vitamin E), and the recommendation that nutrients should come primarily from foods as opposed to fortification, which may influence how fortified foods are counted toward nutrient standards (USDA, FNS, 2005a). For example, milk served

with NSLP lunches is required to be fortified with vitamin A and vitamin D, and this contributes to the meal requirement for Vitamin A. If meal planners decide to count only Vitamin A from food sources such as vegetables toward the Vitamin A requirement, meals may have to include more of these foods to meet the standard.

Limited Effect on Agriculture Observed

School lunch legislation was framed as a way to help improve the diets of children while helping support U.S. agriculture. In practice, the total impact of the program on agriculture is small relative to the size of the market, though it could be larger for certain commodities. A study by ERS estimated that the NSLP plus the School Breakfast Program contributed about $870 million in additional farm production in 2001, or about 0.3 percent of U.S. farm cash receipts (Hanson, 2003). The effect of school meals on farm cash receipts differed across commodities—it was about four times as high for dairy and meat producers (combined) as for fruit and vegetable producers. This is partly because dairy and meat products have relatively high farm cost shares, whereas the cost of farm commodities accounts for a relatively small share of the cost for processed fruits and vegetables, which make up a large share of all fruits and vegetables served in the school lunch program.

Two factors account for the relatively small impact of this program on agriculture. First, the program does not increase food consumption by the total amount of benefits. Households would have purchased some amount of food even without the subsidy. Study findings from the early 1980s—the most recent years for which data are available—suggest that the program increased the value of household expenditures on food by about 39 cents per dollar of benefits (Long, 1991). Because farm receipts are only a fraction of each dollar spent on food, a given level of increase in food expenditure per dollar of benefit translates to an even smaller contribution to farm income. Second, the amount of food consumed through NSLP is small relative to total U.S. food production.

It is important to note, however, that because the program could influence children's preferences for particular foods—healthful or unhealthful—the program could have a long-term impact on agriculture that is larger than the current impact on farm production.

Effects on Diets: Some Good News…

What can be observed about the actual effects of the program on children's diets? Several national studies have examined children's intakes of food groups, as well as intakes of calories, vitamins, minerals, fat, and saturated fat. The results, consistent with recent data on the content of NSLP meals offered and served, reveal some benefits of NSLP participation as well as areas of concern.

Note first, though, that available study results must be interpreted carefully because the interaction between program participation and diet is complex. Some analyses controlled for potential selection bias while others did not. Selection bias arises from survey studies because participants are not randomly assigned to each category; they choose whether or not to participate in a program based on factors (some of which are unobservable) that may also influence dietary choices independent of the program's effects. For example, children with large appetites may be more likely to participate and more likely to eat more even if they brought lunch from home.

While available studies of participants' consumption by food group did not adjust for selection bias, the findings consistently suggest that NSLP participants consume more milk and vegetables at lunch and fewer sweets, sweetened beverages, and snack foods than nonparticipants (Gordon et al., 2007a; Gleason and Suitor, 2001). Results from SNDA III suggest that much of the difference in vegetable consumption may be due to higher consumption of french fries and other potato-based items (Gordon et al., 2007b).

The analysis of SNDA III also found a higher share of participants consuming fruit and 100-percent fruit juice at lunch than nonparticipants, but these results do not correct for selection bias or other factors infl uencing consumption. Earlier results from more detailed analysis of data from 1994 to 1998 found no statistically significant difference in fruit consumption between NSLP participants and nonparticipants (Gleason and Suitor, 2001).

Gleason and Suitor (2001) found that, on average, NSLP participants consumed fewer servings of grains at lunch than nonparticipants, possibly due to a high prevalence of sandwiches in lunches from home. More recent results from SNDA III were consistent with this finding. Further research correcting for selection bias would be required to strengthen findings on differences in foods consumed.

Results from national studies of vitamin and mineral intake also point to some positive effects of participation, and these are more rigorous, with at least some adjustment for selection bias. Analysis of the 2005 SNDA III found

that among middle schoolers, NSLP participants were more likely to have adequate usual daily intakes of vitamin A and magnesium than nonparticipants (Gordon et al., 2007a). Differences were even more pronounced among high school students, who are generally at higher risk for poor diets. High school NSLP participants were more likely than nonparticipants to have adequate usual daily intakes of vitamin A, vitamin C, vitamin B_6, folate, thiamin, iron, and phosphorus. These results are adjusted for observable factors that could lead to selection bias but not unobservable factors.

The SNDA III report also found that mean usual intakes of calcium and fiber, which are underconsumed by middle and high schoolers, were higher for NSLP participants than for nonparticipants (Gordon et al., 2007a). While these results did not account for selection bias, they are consistent with an earlier national study that did correct for selection bias. That study showed that participants had higher intakes of calcium, magnesium, zinc, and fi ber (Gleason and Suitor, 2003). The difference in intake between participants and nonparticipants was largest for calcium—an amount equal to 16 percent of the Recommended Daily Allowance—and was probably due to higher milk consumption for participants (Fox et al., 2004a)—about half a serving on average. These differences were maintained over 24 hours, indicating improvement in the overall daily diet, as opposed to impacts only at the lunch meal and counteracted at other meals.

…And Some Challenges

Reducing sodium intake continues to be a challenge for all children and, in particular, for NSLP participants. In 2005, 88 percent of nonparticipants exceeded the upper limit of recommended intake level for sodium, whereas 95 percent of NSLP participants exceeded the limit (Gordon et al., 2007a).

Reducing intake of fat and saturated fat also continues to be a challenge, although the apparent magnitude of the problem will decrease if regulations are changed to follow the 2005 *Dietary Guidelines for Americans*, rather than the current requirement to follow the 2000 *Guidelines*. The new *Guidelines* recommended fat intake between 25 and 35 percent of calories, a more relaxed standard than the recommendation to keep fat intake below 30 percent of calories. SNDA III found that only one-third of schools offered and served lunches that met the current regulations based on the 2000 *Dietary Guidelines* for fat (<= 30 percent of calories) and saturated fat (< 10 percent of calories).

When Gordon and her colleagues looked at usual daily fat intakes of participating and nonparticipating students, however, they applied the more relaxed 2005 *Guidelines* and found no difference in the proportion of students that met the standard—about 70 percent of both groups. Further, they found that mean intake of fat, saturated fat, or calories at lunch was not significantly different among participants and nonparticipants, although lunch-time intake of calories was higher for high school participants as a subgroup, compared with nonparticipants.

Intake of calories over 24 hours was not significantly different between participants and nonparticipants. The SNDA III results for fat, saturated fat, and calories are consistent with results in Gleason and Suitor (2003), which controlled more completely for selection bias.

Higher intake of underconsumed nutrients by NSLP participants suggests that the program does contribute positively to some aspects of diet quality for low-income children, as it does for higher income children paying full price. Further research looking at effects separately for low-income children may examine this issue more closely. However, the continued higher-than-recommended intakes of sodium, fat, and saturated fat by participants will continue to challenge NSLP meal planners.

Effects on Childhood Overweight Uncertain

While the most rigorous available calorie study of NSLP participants and nonparticipants showed no difference in energy intake during lunch or over 24 hours, the evidence for weight gain is more complicated. Several studies that did not correct for selection bias found NSLP participants more likely than nonparticipants to be overweight (Fox et al., 2004b). These analyses did not account for the role of unobserved factors related to poverty that could be the cause of observed higher obesity among participants, particularly since low-income children are more likely to participate in the program. These studies also used data collected before full implementation of the 1995 SMI, which required lunches to meet the *Dietary Guidelines*.

Two studies corrected for selection bias and used data after SMI but produced confl icting results.[2] One study used 1997 data for children age 5-18 and found no effect of NSLP participation on obesity (Hofferth and Curtin, 2005). The other used 2001 data from a longitudinal survey of young children and found that participation was linked to increases in weight and the probability of overweight. Schanzenbach (2005) found that nonpoor first

graders participating in NSLP since kindergarten were 2 percentage points more likely to be overweight than nonparticipants of the same category, on a base prevalence of 9 percent for the group. The estimated average difference in BMI between participants and nonparticipants, about 0.5 pounds, was too small to be consistent with the difference in obesity, or masked a larger change in the upper tail of the distribution. The increase in BMI occurring among participants from the beginning of kindergarten to the end of first grade, a timespan of about 21 months, is large enough to raise concern.

Schanzenbach's results appear to contradict the finding by Gleason and Suitor that energy intakes were similar between participants and nonparticipants, after correcting for selection bias. One reason for this difference between the study results may be that Schanzenbach used more recent data; updated results for energy intakes could reveal a link to NSLP participation not seen in earlier data. A second reason is that Gleason and Suitor studied all school-age children, whereas Schanzenbach studied only nonpoor first graders.

More important, differences in energy intake that are too small to detect statistically may add up over time to differences in weight gain that are large enough to detect statistically. For example, Schanzenbach estimates that the observed increase in BMI could be accounted for by a calorie imbalance of roughly 40 extra kilocalories per day, a level that is difficult to separate from the variation in measured food intakes.

While Schanzenbach's study is limited to nonpoor first graders, it suggests that a contribution to overweight from participation in NSLP should not be ruled out. Further analysis will be required to determine why the available study results differ. For example, the program could have different results for different age and income groups that are masked by the result for all school-age children as reported from Hofferth and Curtin's study.

Further, the two surveys used different questions to determine whether students participate regularly in NSLP, and these questions may have differed in how well they captured participation. If students who buy items from the a la carte line are counted as if they ate an NSLP lunch, differences in their weight status may be attributed to the NSLP lunch rather than the a la carte items.

Schanzenbach used a much larger data set than Hofferth and Curtin (5,473 vs. 1,268), which makes it easier to detect a difference if one exists. Finally, the statistical techniques used by the two studies differed, and further analysis of diagnostic statistics from the two studies (not included in the publications) would be required to determine whether one should be given more credibility in this case than the other.

The Bottom Line: Stay Tuned

Is NSLP making children overweight as a result of its support of U.S. agriculture? Study results differ, but the worst-case verdict would appear to be that the program is making children a little overweight while contributing a little support for agriculture. If Schanzenbach's results were extrapolated to all children from the study sample of nonpoor first graders, the 2-percentage-point difference in the probability of obesity for participants represents 25 percent of the base.

Further, the program does appear to contribute to demand for some commodity groups, both through the small overall increase in total food expenditure related to the program and, possibly, through higher consumption of meat, dairy, and vegetables that research suggests may be consumed more by NSLP participants.

At the same time, some nutritional benefits appear to be associated with these effects on food demand, as higher milk and vegetable consumption are linked with increased intake of underconsumed nutrients and fiber. Higher milk consumption likely accounts for much of the lower sugar consumption by participants because it substitutes for juice drinks and soda. Increased food demand, however, may also have nutritional drawbacks if some of these foods are major sources of the excessive fat and saturated fat consumed by NSLP participants. Policy changes to support moves to lower fat forms of these commodities have been initiated, but according to SNDA III, implementation of these changes in lowering fat and saturated fat appear to be slow. Future research will provide some insight into what factors infl uence the effectiveness of efforts to reduce fat content of school meals, and the program's ability to influence intake and weight gain.

It should be noted that results from even the most rigorous studies refl ect a national average, while individual school districts may serve meals that meet nutritional objectives to a greater or lesser extent than the average. These variations are influenced by financial pressures as well as by student preferences for particular foods. In school districts where meals do not meet nutritional ideals, the problem may have more to do with what children will accept than with meeting the program's objective of supporting U.S. agriculture. Further, much of the concern over children's diets is focused on competitive foods, which in some cases are sold by the school foodservice itself to ease budgetary pressures.

ISSUES OF NSLP OUTCOMES: JUGGLING NUTRITION, PARTICIPATION, AND THE BUDGET

The success of NSLP in providing nutritious meals to children depends on how well school foodservice directors manage a difficult balancing act among three objectives: serving a nutritious meal, getting children to purchase *and* eat the meal, and doing it all on a limited budget. Meals that meet the standards for fat and saturated fat may require salesmanship on the part of SFAs in some schools. Getting children to actually consume the nutritious food being served may require some creativity as well, since part of the school lunch often becomes "plate waste," especially foods that were already underconsumed, such as milk and vegetables. Stretching revenues to cover foodservice costs often requires schools to offer a la carte items that are not held to the same nutritional standards as the reimbursable meal, which affects the school meal environment as a whole. Because Federal and State policies can make this balancing act easier or more difficult, it is important to understand the constraints schools face.

While research has shown that combinations of menu changes and marketing can increase the likelihood of student acceptance of healthful meals, increasing cost pressures on operators of school cafeterias have made it more difficult to implement these changes. In some cafeterias, a la carte sales are expected to provide extra funds to support either the school meals program or nonmeal items and activities, such as school band uniforms. These food sales, however, have come under scrutiny because they are not a component of NSLP and are thus not required to meet nutritional standards. School districts are now required to develop local wellness policies, and while the policies are meant to be flexible to reflect local priorities, they may create more pressure to raise nutritional standards in the cafeteria and the school as a whole in at least some localities.

Schools that have successfully improved meals and imposed higher standards on a la carte items and vending machines found that other changes in the overall foodservice program were also important. Increasing breakfast purchases and changing staff positions to part-time to save on benefits have helped some schools increase revenues and decrease labor costs to cover decreased revenues from lower a la carte sales and increased costs of some more healthful menu items. Increasing certification for free and reduced-price meals and increased marketing efforts have helped maintain or increase revenues from reimbursable meals, even when popular items like french fries

are eliminated or cut back from menu offerings. In some cases, successful changes have depended on political support to help fill revenue gaps from other sources.

Researchers have studied the factors affecting student acceptance of more healthful menu items and levels of plate waste. Some strategies designed to address these issues are becoming more difficult to implement as cost pressures on school districts increase. Concern over the role of competitive foods in children's diets has led to new restrictions on sales of such foods in some districts, sometimes cutting into revenue for school foodservice authorities or the school as a whole.

Efforts to Increase Acceptance of More Healthful Lunches

Several studies have found that schools could maintain sales of lower fat meals and increase consumption of underconsumed foods, such as milk and vegetables, through marketing changes, food presentation changes, nutrition education, and combinations of all of these elements.

The Lunchpower program, tested in 34 schools in Minnesota in 1991, and the Child and Adolescent Trial for Cardiovascular Health (CATCH) program, tested in 96 schools in 4 States in 1992, both demonstrated that students would accept menus modified to reduce fat and sodium content if they were combined with nutrition education and improvements in presentation. Both studies found that total daily fat intake fell among student participants (Luepker et al., 1996; Snyder et al., 1992).

Smaller studies illustrate the effectiveness of some individual intervention components. Some students in Washington State selected lower fat menu selections when they were offered in school meals, even when higher fat selections were still available. As a result, the average fat content of meals served in the schools decreased. More students chose low-fat options when schools sent educational materials home to increase awareness of the health benefits of the new options (Whitaker et al., 1993; 1994). Students in Texas were more likely to choose low- and moderate-fat selections of meal items when the number of competing higher fat selections was reduced (Bartholomew and Jowers, 2006).

Research by the Dairy Board found that improved milk marketing—improved packaging, additional flavor options, use of chilled cases and vending machines—increased milk sales by 18 percent across 146 pilot

schools (Prentice, 2002). The study also found lower waste of milk after it was purchased.

In a review of intervention studies that combined classroom activities, involvement by parents, and modification of school menus, children were found to consume up to 1.8 more servings of fruits and vegetables (from 2.3 servings, a 74-percent increase) (Reynolds et al., 2001). Pilot tests of salad bar programs in schools in Los Angeles and Florida found increases in fruit and vegetable consumption of 37 percent and 10 percent, respectively (Slusser et al., 2007; Produce for Better Health Foundation, 2003).

Other studies of policy interventions found that education activities that emphasize student participation and exposure to new foods were effective (Liquori et al., 1998, Demas, 1998). Cultural sensitivity in nutrition is also important in many settings, as found by the Pathways intervention study aimed at reducing obesity among Native American children (Gittlesohn et al., 2000)

The Lunchpower, CATCH, and fruit and vegetable interventions relied on multiple channels for reaching children. The pilot study for FNS's Team Nutrition program, which assists schools using many of the lessons of Lunchpower and CATCH, explicitly examined whether multiple channels were effective. The study found that use of multiple approaches was helpful, and that students reporting participation in greater numbers of pilot-related activities reported better scores (USDA, FNS, 1999). A detailed analysis comparing efforts would be helpful, but rigorous research to determine the cost effectiveness of the components requires careful controls to isolate each component and adequate sample size for each combination of components (Reynolds et al., 2001).

Many of the insights gained from these studies have been incorporated into technical assistance and training provided by USDA through Team Nutrition and the National Food Service Management Institute at the University of Mississippi. In addition to providing materials for nutrition education, Team Nutrition provides school nutrition and foodservice personnel with training and technical assistance for improved food preparation and presentation, through training standards and materials, grants to States to develop self-sustaining training projects, and an e-mail listserv group to foster communication among interested professionals (USDA, FNS, 1999). The School Nutrition Association, a private trade organization of foodservice employees, also provides training and certification.

Because fruits and vegetables are among the foods most likely to be wasted by students, efforts to decrease plate waste have included combinations of nutrition education as well as improved food presentation, such as those

described earlier in this chapter. In addition, USDA has worked to increase the availability of fresh fruits and vegetables it donates, to allow schools to purchase produce through the Department of Defense procurement system, and to encourage schools to obtain fresh produce locally (Buzby and Guthrie, 2002). The USDA Fruit and Vegetable Pilot (now the Fruit and Vegetable Program) was also intended to increase fruit and vegetable consumption in schools by making free fruits and vegetables available for snacks.

Other Factors That Affect Participation and Plate Waste

In addition to changes in menu and presentation, other factors affect levels of school meal participation and plate waste. First, because over half of school lunch participants are receiving free or reduced-price meals, efforts to certify eligible children to receive these meals are key to increasing participation. This link was confirmed in a study of participation using the 1992 School Nutrition and Dietary Assessment (Gleason, 1996).

Additional efforts by schools to make sure parents receive necessary announcements and forms can often increase certification. But stigma may be a barrier in some communities, both for certification and participation (Glantz et al., 1994a). California's Linking Education, Activity, and Fitness pilot found that investment in expanding electronic payment technology helped increase participation overall, especially among free and reduced-price meal recipients (Woodward-Lopez et al., 2005), perhaps by removing the distinction between students paying full price and those receiving free and reduced-price meals and, thus, reducing stigma. Automatic certification of children eligible through their participation in the Food Stamp Program (referred to as "direct certification") also increases certification rates (Gleason et al., 2003). The 2004 Child Nutrition and WIC Reauthorization Act phased in a requirement for all school districts to use direct certification.

Plate waste has been estimated at 12 percent of total calories served in the reimbursable meal. Girls waste more food than boys, younger children waste more than older children, and salad, vegetables, and fruit account for more waste than other foods (Buzby and Guthrie, 2002). Plate waste appears to be influenced not only by the food's lack of appeal but also by the timing of the lunch period. Lunch periods that are relatively short result in higher plate waste, as do lunch periods scheduled too early or too late (Buzby and Guthrie, 2002). Younger children are found to waste less food when lunches are scheduled after recess, perhaps because children are hungrier after

activity or because they are not rushing through the meal to get outside sooner (Bergman et al., 2003). Remedies to these situations may be difficult for schools to implement, however. Crowded schools may be forced to give shorter, earlier, and later lunch periods to accommodate all the students in the available cafeteria space. Many elementary schools cite the difficulties of getting students to put away winter coats and wash their hands quickly after recess when lunch is scheduled to follow. Further, some teachers and administrators are concerned that recess before lunch would take away more morning classroom time, which teachers find more productive for students than classes during the afternoon (Rainville et al., 2005).

USDA school meal regulations allowing flexibility may also be helpful in reducing the amount of food that ends up in the trash. The "offer vs. serve" provision for meal service allows schools to be reimbursed for a meal that includes some but not all the required components (three of five required meal components under food-based planning—milk, meat or alternate, two servings of fruits or vegetables, dairy, and bread or alternate). Under nutrient-based planning, students may take the entrée and one other item plus milk for a reimbursable meal. USDA also allows children to serve themselves and schools to tailor portion sizes to appetites and needs more closely, which may help reduce plate waste. A downside to this flexibility is that it is unlikely to increase intake of underconsumed foods.

Meal Production Costs Increasing Faster than Revenues

Cost pressures may be a barrier to improving school menus in some cases. The nationally representative School Lunch and Breakfast Cost Study (SLBCS) II found that while the mean reported cost of producing lunch during 2005-06 was below the reimbursement rate, about one in four school districts reported costs above the reimbursement rate (Bartlett et al., 2008). Further, the mean full cost of producing a lunch was higher than the reimbursement rate. Reported costs refer to costs actually paid by SFAs, whereas full costs include support from the school district general fund that is not charged to the school food service budget.

The study also found that reported costs increased over 1992-2005 while full costs decreased, probably reflecting an increasing number of school food authorities being charged by school districts for indirect costs in response to their own budget pressures (School Nutrition Association, 2006). Other sources of increasing cost pressure include increases in health care costs for

employees (GAO, 2003; Woodward-Lopez et al., 2005) and, more recently, rising food costs (FRAC, 2008).

SFAs are responding in a variety of ways to reduce expenses and increase revenue, including switching to part-time labor to save on health care costs, buying more food in bulk, buying more ready-to-eat foods to reduce labor use, reducing purchases of fresh produce, and expanding revenues through a la carte food sales and catering services (GAO, 2003). Increasing indi¬rect costs may make it especially difficult for schools to save up for larger purchases that could improve nutritional quality, such as salad bar stations (Wagner et al., 2007).

These adjustments are not always sufficient to prevent a small but growing deficit, which rose from an average of 3 percent of expenses to an average of 4.5 percent of expenses in a six-State study by GAO (2003). In the SFAs studied, the gap between revenues and costs was covered by the school districts, but SFA directors expressed concern that education budget pressures may constrain districts from absorbing the shortfall in the future.

In some cases, cost pressure is such that school nutrition authorities may be taken over by private foodservice management companies. These operations typically have lower costs due to purchasing power enabled by their size, as well as lower benefit levels provided for their employees. While local school foodservice managers have an understandable desire to protect workers from a takeover, higher labor costs make it more difficult to serve students more healthful meals that are both appetizing and affordable.

Reimbursement rates are determined under the National School Lunch Act, which specifies adjustments to be made based on the Consumer Price Index for Food Away from Home for Urban Consumers. This price index may not reflect increases in costs for SFAs if the costs of benefits for school foodservice workers, often under county employee contracts, are rising faster than those for workers in urban food-away-from-home outlets, who are less likely to receive benefits. Further, costs may vary by region, but the reimbursement rate is applied nationally, except for adjustments for Hawaii, Alaska, and districts with a high percentage of free and reduced-price meal recipients. Addressing the issue of whether reimbursements should be raised or regionalized will require further analysis of data on the costs of meal production.

Proposals have been introduced to phase out the reduced-price lunch category, so that free lunches would be offered to students in households with incomes under 185 percent of the poverty level (School Nutrition Association, 2007). This change would extend the benefits of NSLP lunches to students

who may not be participating because they cannot afford to pay 40 cents for lunch. The increase in participation also could help some school food authorities increase revenues. The proposals, however, have been considered cost prohibitive.

Revenue-Generating Competitive Foods under Scrutiny

Foods sold in schools that are not part of the NSLP meal are commonly referred to as "competitive foods" because they are seen as competing with the NSLP meals as food choices for students. Competitive foods available to schoolchildren can include food purchased off campus; a la carte items; food purchased through vending machines, school stores, canteens and snack bars, and fundraising sales; food served at school parties; and treats given by teachers to students. Revenues from a la carte sales and, in some cases, vending machines, usually go to the school food authority itself and supplement revenues from sales and reimbursements of lunches. Vending machine revenues more often belong to the overall school or school district budget and generate discretionary revenue used for field trips, assemblies, athletic and music equipment, and other needs (GAO, 2005).

Because competitive foods are not part of the reimbursable meal, they are not required to meet USDA nutrient standards, except that "foods of minimal nutritional value"[3] cannot be sold in foodservice areas during mealtimes. Competitive foods are generally lower in key nutrients and recommended food groups and higher in fat than the NSLP reimbursable meal (Cullen et al., 2000; Story et al., 1996; Harnack et al., 2000; Wechsler et al., 2001; Zive et al., 2002; French et al., 2003; Wildey et al., 2000). The availability of competitive foods in a school may reduce participation in NSLP (Gleason, 1996), increase plate waste, and decrease nutrient intake (Templeton et al., 2005). Even when these foods do not directly reduce purchases of the NSLP meal, they are of concern to SFAs because they may contribute to overconsumption of calories at school.

The 2005 SNDA III found the presence of competitive foods to be widespread in schools, particularly in high schools. Competitive foods were available from vending machines in 98 percent of senior high schools, 97 percent of middle/junior high schools, and 27 percent of elementary schools in 2004-05 (Gordon et al., 2007). A la carte items were available for sale in 75 percent of elementary schools and over 90 percent of middle and high schools.

The Institute of Medicine recommended that nutrition standards be applied to all food served or sold in schools (IOM, 2005) because the impacts on student diets from restricting competitive foods may be limited if all sources are not addressed together (see Cullen et al., 2006, for more information). The GAO recommended that USDA's authority to regulate "foods of minimal nutritional value" be extended to a wider class of foods (GAO, 2005).

SFAs and State agencies are already permitted to impose additional restrictions on competitive foods in schools, and food vendors themselves have made changes. As of April 2005, 28 States had made efforts to restrict foods beyond USDA restrictions (GAO, 2005). These efforts appear to be infl uencing the school food environment; the 2006 School Health Policies and Programs Study found that between 2000 and 2006, availability of low-fat a la carte foods increased (O'Toole et al., 2007).

Some school districts have made changes in cooperation with competitive beverage vendors that include switching from selling sodas to selling water; sports drinks, which have less sugar than sodas; and higher juice-content beverages. Industry-sponsored analysis found that soda consumption in schools declined 24 percent from 2002 to 2004 (Wescott, 2005). In 2006, the American Beverage Association announced that it would encourage bottlers to remove full-calorie soft drinks from schools and to limit beverages sold in schools to milk, juice, light juice, water, and no-calorie or low-calorie soda (American Beverage Association, 2006).

Both school administrators and foodservice authorities have expressed concern that efforts to restrict competitive foods to more healthful options could reduce revenue (GAO, 2005). Whereas the FNS-sponsored School Lunch and Breakfast Cost Study II suggested that revenues from reimbursable meals subsidized nonprogram food service (Bartlett et al., 2008), GAO's survey of competitive food revenues and their uses suggest that these concerns are not groundless.

Efforts to maintain revenues of both the SFAs and other entities that draw revenue from competitive foods while improving nutritional quality can be successful, but not always. *Making It Happen* (USDA, FNS, 2005), a collection of school nutrition success stories, provides several descriptions of school districts that made healthful changes to school meals while maintaining or increasing revenue. The keys to success in those cases were energetic leadership from one champion, such as a parent, a foodservice manager, or a school principal, and a team with diverse skills to implement and market changes. While size and income level influenced the strategies leading to

success, SFAs in a wide range of sizes and income levels were represented among the success stories.

Most school food authorities in the Linking Education, Activity, and Food (LEAF) pilot project in California also maintained or increased revenue after piloting changes in the school nutrition environment mandated by California State law (Woodward-Lopez et al., 2005). Further, most directors reported that increases in costs associated with the pilot were largely offset by increases in revenue, although coping with increasing costs while meeting stricter standards for competitive foods was challenging.

Revenues going to entities outside the school foodservice authority, however, such as vending machines controlled by the school principal, decreased in all but 2 of 16 pilot sites, consistent with concerns reported by school administrators in other studies. Schools reported difficulty finding vending machine snacks that met the California nutritional requirements and were sufficiently appealing to students to maintain sales volume.

The reported net gains in revenues by SFAs appeared to be the result of improvements in meals and serving areas, reduced appeal of a la carte and other competitive foods and beverages, and reduced access to competitive foods in some schools. Elimination of a la carte food sales was associated with the greatest increases in reimbursable meal sales. Many of the schools increased meal participation, especially in the free meal category, reflecting both increased enrollment for the free and reduced-price lunches and increased participation among enrollees as well. Some schools with high eligibility for free and reduced meals elected to provide universal free meals under Provision 2 or 3 of school lunch regulations (see “Overview of the National School Lunch Program” on page 1 for an explanation of these provisions).

Schools had greater difficulty in maintaining net income if they had one or more of the following characteristics: large districts; shorter meal periods; open campuses that allowed students to leave for lunch; insufficient technology for processing sales (resulting in long cafeteria lines and a higher likelihood of stigma associated with subsidized meals); inadequate technology for menu planning, nutrient analysis, and accounting/inventory; difficulty monitoring compliance with nutrition standards; greater competition with nonfoodservice entities for sales; or greater emphasis on standardized testing (Woodward-Lopez et al., 2005).

In some districts, school nutrition directors advocating for stricter competitive food standards have a stronger voice as a result of the new requirement for local wellness policies by school year 2006-07. These policies, which must include school nutrition directors in their development, are

mandated for each local educational agency participating in USDA's school meals programs by the 2004 Child Nutrition and WIC Reauthorization Act.

Under the law, schools are expected to set goals for nutrition education, physical activity, and other school-based activities designed to promote student wellness. Schools must also establish nutrition standards for all foods that are available on each school campus during the schoolday. Nutrition guidelines for school meals may not be less restrictive than Federal policy. Schools are required to measure the implementation of the wellness policy and to involve in its development a broad group of stakeholders, including parents, school foodservice professionals, and school board members. The law allows individual districts to address these issues according to local priorities. Because the law provides no additional funding for this requirement, however, the administrative cost of developing guidelines and monitoring them could increase the difficulty of balancing the school food authority's budget, even before any changes in costs and revenues resulting from implementing the policy itself.

ADMINISTRATIVE ISSUES: ACCESS AND INTEGRITY TRADEOFFS

In recent years, focus on the administration of the NSLP has revolved around questions of program access and integrity and issues of local-level management. USDA strives to balance the goals of ensuring program access to eligible households while making sure that only eligible households receive benefits and that operating costs are reasonable. For any program, achieving these goals is challenging. If the application procedure is too simple, ineligible families may be certified. But if the required application procedure is difficult to complete, eligible families may choose not to apply. And, if the application procedure is complicated and rigorously administered, operating costs increase.

The NSLP serves millions of children each day, and because the administrators of the program at the local level are primarily educational institutions, the amount of administrative resources that can be assigned to program integrity concerns is limited. The application requirements that have evolved are more simplified than those of other major food and nutrition assistance programs, reflecting the NSLP's large size, the need for a low-cost administrative component, and the perception of the program's target

population— children—as being a more vulnerable population. This has led to debates about how best to improve the integrity dimensions of the program while not compromising the other goals.

Access to NSLP may be especially important for households that have low incomes but do not participate in other food and nutrition assistance programs. Newman and Ralston (2006) found that two-thirds of students receiving free lunches resided in households that did not participate in the Food Stamp Program or in TANF, even though the students' household income levels were probably low enough to qualify for benefits. Interpreting these findings requires caution, since participation in food assistance programs is generally under-reported on surveys. Further, many of these households may not have been eligible for either program, even though they have low incomes; they may have had assets above the asset limit, for example. On the other hand, some households may have been truly eligible for other assistance but felt more of a stigma associated with the Food Stamp Program or TANF participation than with NSLP participation. Some may have chosen to participate in the NSLP precisely because it has fewer eligibility requirements. Policies in the Food Stamp Program and TANF that may discourage participation include asset limits, proof of income, and in-person interviews.

In 2004, Congress passed the Child Nutrition and WIC Reauthorization Act, which addressed many concerns about NSLP access and integrity. One important change was to extend NSLP eligibility from 1 month to the full school year. Other changes to the program included mandatory use of direct certification (which previously had been an option) and the refinement of procedures for verifying the eligibility of students, once they are approved. Verification procedures now take place earlier in the year, SFAs with high rates of nonresponse to verification requests must draw larger samples for verification among more error-prone applications, and SFAs may use administrative data from other public assistance programs to verify certification status. Many of these changes were made in response to specific concerns about program integrity that arose in the late 1990s and early 2000s.

Erroneous Payments Closely Studied

Over the last decade, USDA's FNS has sought to address the issue of erroneous payments and, in particular, seemingly high rates of ineligibility among participating students, a problem that was initially referred to as "overcertification." More recently, the broader notion of erroneous payments

has become the focus, encompassing overcertification and undercertification (when eligible applicants are denied) as well as errors made in the reimbursement process. Concerns over erroneous payments arose from early studies commissioned by FNS that found rates of overcertification ranging from 19 to 27 percent (USDA, OIG, 1997; USDA, FNS, 1999). The estimate of 27 percent came from a study using data from the U.S. Census Bureau's Current Population Survey (CPS), which allows for measures of annual income eligibility. However, another study using data from a different Census Bureau survey, SIPP, found no evidence of overcertification (see Neuberger and Greenstein, 2003). SIPP data allow for monthly measures of eligibility, which matches better with NSLP eligibility determination.

To further address the issue, FNS commissioned studies that used school-level data and limited household surveys (Hulsey et al., 2004; Burghardt et al., 2004a; Burghardt et al., 2004b; Gleason et al., 2003; USDA, FNS, 2007c; USDA, FNS, 2005b; and USDA, FNS, 2003). Over all of these studies, total overcertification error was estimated to be around 25 percent, though the estimates differed greatly by type of school and type of application process, and none of the estimates was nationally representative.

The studies focused on measuring three possible sources of error as causes for overcertification:

- *Household reporting errors:* Inaccurate provision of information by the household regarding household size or total income (intentional or not).
- *Administrative errors:* Mistakes in calculation or data transfer that could be made in the determination of household income and student eligibility.
- *Income volatility:* Changes in household income or household size during the school year that affect household eligibility status.

The studies showed that all three types of error contributed to total certification error, though no one study directly compared the effects of each of the three. Income volatility, which is discussed further in this section, was found to be important in the past policy regime, though it is no longer a possible source of error as students are now considered eligible for the full school year based on 1 month of eligible income.

More recently, FNS published the results of a comprehensive, nationally representative study of erroneous payments made in the 2005-06 school year called "National School Lunch Program/School Breakfast Program Access,

Participation, Eligibility, and Certification (APEC) Study" (Ponza et al., 2007). The study measured various sources of erroneous payments by using surveys of households and SFA directors, administrative data, and observational data. Unlike the previous studies, APEC accounted for errors made in the accounting process, such as cashiers' errors and summation errors made in the reporting process. These estimates provide baseline measures of errors for the new policy regime where certification covers the full year, verification procedures are more focused, and direct certification is required of all schools.

The APEC study provides estimates of erroneous payments as measured by the sum of overpayments and underpayments. The total net cost to the government is also provided, and this measure shows that the amount of erroneous payments was positive on balance, given that overpayments were found to be higher than underpayments. Erroneous payments—including overpayments and underpayments—that were due to certification error in the NSLP were about $759 million, and those due to noncertification error (aggregation errors and the like) were about $555 million. The net cost to the government of certification errors was $387 million, and the cost of noncertification errors was $292 million. To put the net figures in context, they represent 5 and 4 percent of total NSLP spending in that year, which was $8.06 billion.

Household error was found to be about three times higher than administrative error in total certification error: 23 percent of applicants were found to have misreported either their household income or their household size, whereas 8 percent of applicants were affected by administrative error. Administrative errors were more likely to be errors of overcertification, at 6 percent, than undercertification, at 2 percent. This was also the case for household errors, though it was less pronounced, with overcertified errors at 13.5 percent and undercertified errors at 9.7 percent.

The certification process was more accurate in the determination of free meal eligibility than it was in the determination of reduced-price eligibility. One-fourth of reduced-price meal recipients were found to be ineligible for either reduced-price or free meals, while 14 percent of free-meal recipients were found to be ineligible for free meals. But even larger was the rate of undercertification among reduced-price recipients: one-third of reduced-price eligible students were eligible for free meals.

Longer Eligibility Period Reduces Overcertification

One of the most important legislative changes affecting NSLP is the new definition of the eligibility period: after being initially certified, households are now eligible for the whole school year. Before the law changed in 2004, households were required to report income changes in excess of $50 per month. If a household's income increased over the eligibility limit for either free or reduced-price lunch in any month after it had been certified, it was ineligible. Households seldom reported such changes, and only a small percentage of households were ever checked. Under the old rules for verification, a sample of households was asked to report then-current income in mid-December of each year. If a household's income did not match the eligibility criteria for which it had qualified at the start of the school year, its benefits were adjusted. Under the new rules for verification, households are permitted to present their income from the month of initial certification (or any intervening month) for verification of their status.

Income volatility could have had a significant effect before the law was changed. Using data from SIPP, Newman (2006) found that under the prior rules, many households could become ineligible for the program during the year due to monthly income changes. Two-thirds of lower income households experienced enough income volatility to cause one or more changes in their monthly eligibility status for either a reduced-price or free lunch during the year. Of the households that were income-eligible for subsidized lunches at the beginning of the school year, an estimated 27 percent were no longer eligible for benefits by December due to income changes. This estimate of error due to income volatility may account for a large share of previous estimates of overcertification rates (though it does not take into account whether or not eligible households applied in August). Studies in the early 1990s similarly showed that short-term income volatility was an important determinant of NSLP eligibility dynamics (St. Pierre and Puma, 1992). And, another recent study examining the application and certification processes with school-level data (Burghardt et al., 2004a) also found that income volatility led to ineligibility.

Documentation Requirements May Deter Applicants

Another policy proposal that was studied, but not adopted, was that of requiring households to provide upfront income documentation when they

apply for the program. This proposal was put forth as a way to reduce inaccuracies that stem from household misreporting. In 2002, FNS sponsored a pilot project and an evaluation of this proposed policy and several other policies. Burghardt et al. (2004b) evaluated the policies by matching pilot school districts with 12 school districts that volunteered to participate as comparison sites. The study estimated the effects of the pilot practices on three targeting goals: deterrence of ineligible families, reduction of barriers to eligible families, and accuracy among all certified students. The results revealed that upfront documentation did not significantly affect overall certification accuracy; ineligible families were as unlikely to apply as they would in comparison sites, but the requirement raised application barriers and did deter eligible families.

In another volume of the same study, analysts found that upfront documentation and other policies designed to reduce certification errors significantly increased administrative error rates (Hulsey et al., 2004). Overall, upfront documentation was found to be ineffective because reporting errors were more likely to be due to a family not reporting all income sources, rather than incorrectly citing the sources that were reported. The APEC study also found that household misreporting was often the result of not counting the incomes of nonprimary household members, such as a student's uncle or aunt.

Direct Certification Removes a Barrier for Applicants

In addition to the change in the eligibility period, another important policy change in the 2004 legislation was the mandated use of direct certification. The new law required all schools to phase in the use of direct certification over the next 3 to 4 years depending on school size. In a study of the prevalence and effects of direct certification, Gleason et al. (2003) found that direct certification improved both program access and integrity. Direct certification was found to lead to an increase in NSLP participation among all enrolled students by about 400,000 students, and, more importantly, an increase in the percentage of students certified for free meals. They found that direct certification could lead to a decrease in the rate of ineligibility among certified students.

In summary, research has shown that mandatory direct certification and the extension of eligibility to the school year are two policies that effectively reduce error and attract eligible students. Other detailed changes to verification procedures, which partially target families with earnings close to the eligibility

limit, will help improve program integrity (though perhaps contribute to higher error rates since more error-prone applications may be targeted).

The APEC study provided a detailed look at the sources of erroneous payments and, by extension, specific ways to reduce them. The study found that household misreporting is often due to incomplete reports of all income sources, and that administrative reporting error often comes from processing incomplete applications. More thorough emphasis on the need to report all incomes and to process complete applications should reduce these errors. The study also found that noncertification errors were exacerbated by high rates of cashier errors from some, mostly large, schools. Identifying the source of these types of errors—whether through cashier training improvements or better guidance to SFA directors—should help reduce future errors. The APEC study provided the most thorough analysis of certification errors to date. It also broadened the notion of errors by examining noncertification errors, and thus, suggested ways to reduce erroneous payments throughout the program.

CONCLUSIONS

The National School Lunch Program is the second largest food and nutrition assistance program in the United States, serving millions of children every day. From its creation, it grew to become an important component of most schoolchildren's diets, offering meals that aim to meet up-to-date dietary guidelines at varying levels of financial subsidy, based on student need.

Access to free and reduced-price meals in the NSLP has been and continues to be a priority of the program. Unlike other major food and nutrition assistance programs, the NSLP is more decentralized, with most of the program's administration carried out at the local level. The application requirements for eligibility are relatively simple, which enhances participation and imposes a low level of administrative burden for schools. Recent changes to eligibility rules and improvements in the application and verification processes are expected to enhance program integrity and efficiency.

Over time, schools have faced many different kinds of challenges in operating the program. In earlier years, schools struggled to equip full-service cafeterias and ensure that children had enough to eat. More recently, concern over childhood obesity has placed schools on the front lines of efforts to improve children's diets. While NSLP participants have higher intakes of

calcium and fiber—nutrients underconsumed by children—they also have higher fat intakes.

Some critics of NSLP argue that USDA's donation of commodities, such as cheese and meat, to the program and the requirement that milk be served with every lunch contribute to these higher fat intakes (Yeoman, 2003). While intakes of milk and meat by participants were higher than those of nonparticipants, data from the most rigorous studies available to date show that calorie intake of participants was not significantly higher. Studies of the program's effects on obesity are contradictory.

Fat intakes of participants do remain a nutritional concern, and many States and localities have adopted more stringent restrictions on both meals and "competitive foods"—a la carte or vending machine items sold to generate extra revenue for the school food authority or the school as a whole. Yet, schools already face a "trilemma" involving the meal's nutrition, student participation, and program cost. Improving the nutritional content of school meals may raise program costs, especially if it includes the necessary changes in food purchases, preparation, and marketing to prevent lower participation or higher plate waste. Similarly, both school administrators and school food authorities have struggled to keep budgets balanced as they implement restrictions on competitive foods. Other cost pressures, such as increases in health care costs and charges of indirect costs by school districts, make this balancing even more difficult.

As new policies emerge to address these concerns, whether at the local or Federal levels, research will continue to be required to evaluate their effectiveness. USDA's ERS and FNS are conducting research on many of these issues. These analyses will help stakeholders understand the impacts of the program and policy issues that the NSLP will continue to face in the future.

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End Notes

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[2] A third study did not correct for selection bias but controlled for food insecurity, which has been found to increase the risk of overweight in children (Casey et al., 2006; Rose and Broder, 2006). Jones et al. (2003) found that girls from food-insecure households actually were less likely to be obese if they participated in the NSLP. In that study, boys from both participation and food security groups had the same probability of obesity.

[3] Foods of minimal nutritional value are those that provide less than 5 percent of the RDI for each of eight specified nutrients per serving. The specified nutrients are protein, vitamin A, vitamin C, niacin, riboflavin, thiamine, calcium, and iron.

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Chapter 2

THE INCOME VOLATILITY SEE-SAW: IMPLICATIONS FOR SCHOOL LUNCH

United States Department of Agriculture

ABSTRACT

Income volatility challenges the effectiveness of the safety net that USDA food assistance programs provide low-income families. This study examines income volatility among households with children and the implications of volatility for eligibility in the National School Lunch Program (NSLP). The results show that income volatility was higher for successively lower income groups and that the major determinants of changes in NSLP eligibility were changes in total household hours worked and the share of working adults. Income volatility in two-thirds of lower income households caused one or more changes in their monthly NSLP eligibility during the year. An estimated 27 percent of households that were income eligible for subsidized lunches at the beginning of the school year were no longer income eligible for the same level of subsidy by December due to monthly income changes.

Keywords: National School Lunch Program, income volatility, program access, and program integrity

SUMMARY

USDA food assistance programs aim to provide a safety net for low-income families in times of need. Income volatility challenges the functioning

of that safety net. Low-income families are often on a see-saw of income changes that make it difficult for program administrators to accurately target benefits and to define sensible eligibility periods. Which families are low-income and for how long are important issues for program policy, and income volatility directly affects those policy decisions. Also, flexible food assistance that smoothes household food consumption over the ups and downs of labor force participation is important in providing assistance to the working poor.

What Is the Issue?

Understanding the implications of income volatility for food assistance program eligibility is particularly important if the programs are to effectively serve the needy. Questions that must be answered include how often does program eligibility for low-income families change within a year? How does income volatility compare across income groups? What are the labor force participation and household changes most associated with short-term income changes? We answer these questions using nationally representative household survey data.

We also looked at how income volatility affected eligibility for free and reduced-price lunches in the National School Lunch Program (NSLP). USDA had been concerned about "overcertification"—where local school food authorities erroneously certify that children are eligible to receive free or reduced-price lunches. New rules in the Child Nutrition and WIC Reauthorization Act of 2004 redefined eligibility so that income volatility has become less relevant as a source of the erroneous certification. However, understanding the past role of income volatility in the NSLP is important because income volatility can affect policy changes for other food assistance programs that aim to support working families in times of need.

What Did the Project Find?

Our study found that the lower a household's income, the more likely it is to face volatile swings in monthly income. Such income volatility meant that, before the recent rule changes, the children in these households moved back and forth across the eligibility threshold for the NSLP. Changes in total household hours worked and in the share of adults working were the primary causes of the changes in monthly income.

Income Volatility Dynamics

We measured monthly income changes across the threshold that marks income eligibility for a reduced-price school lunch. That threshold is found by first comparing income to the poverty line that applies to the household's size. When income is at or below 185 "percent of poverty," a student is eligible for a reduced-price lunch. We found that, for households with income below 185 percent of poverty in at least 1 month of the year, two-thirds (65 percent) had income above that threshold in at least 1 other month in the same year. Households with average monthly income between 130 and 240 percent of poverty were particularly affected by volatility, crossing the eligibility line five times per year on average.

The most important factors associated with exit from or entry into program eligibility (an increase or decrease in income relative to 185 percent of poverty) were similar. In both cases, changes in total household hours worked and in the share of adults working were the most likely to lead to exit or entry. The results point to the importance of the labor market participation of all household members as a source of short-term income volatility.

Households were grouped into six income-to-poverty categories. Income volatility was found to be successively higher for each lower income-topoverty group. The monthly income variation for households below 75 percent of annual poverty was double that of households above 300 percent of annual poverty.

Effects of Income Volatility on NSLP Error Rates

Month-to-month income changes could feasibly explain a large portion of estimated overcertification rates. In the 3 school years examined, an average of 27 percent of households that were income eligible for either a free or reduced-price lunch in August were no longer income eligible for the same lunch benefit by December of each year. This estimate accounts for much, or all, of previous overcertification estimates, which range from 12 percent to 33 percent. But, because we do not also estimate the extent of the other sources of error, this estimate must be qualified. Other studies have found that misreporting and administrative error also contribute to overcertification. Furthermore, this estimate does not take into account participation behavior of eligible households.

How Was the Project Conducted?

We used 1996 panel data from the Survey of Income and Program Participation on households with children and several other methodological approaches to understand income volatility and how it affects eligibility dynamics. We used three complete school years from the panel: 1996-97, 1997-98, and 1998-99. We compared coefficients of variation of monthly income across income groups. We examined changes in income eligibility for NSLP within the school year for different subpopulations.

We used a hazard model to estimate the causes of income changes in eligibility. Our analysis was conducted twice to analyze separately the factors that could lead to decreases or increases in income across the threshold of 185 percent of poverty. A rich set of events that might trigger an increase or decrease in income-to-poverty status was tested while also controlling for unchanging demographic and labor market participation characteristics.

Under the old NSLP rules, by December, a sample of families was asked to provide documentation of their current income to verify their continued eligibility. In the survey data, we traced monthly income changes from the beginning of the school year to December. This exercise provides an estimate of the effect of income volatility on overcertification errors. We also examined the effects of using annual income as a hypothetical eligibility criterion versus the criterion of 1 month of income.

INTRODUCTION

Federal food assistance programs are means tested: A household is eligible to receive program benefits if household income falls below a certain threshold and, in some programs, household income affects the amount of program benefits. Income volatility—month-to-month changes in a household's income—creates policy challenges for targeting and administration. Because income fluctuates, a household that is poor today may become ineligible in subsequent months due to an increase in income. Program integrity is reduced when a household continues to receive program benefits after it has lost eligibility.

Program integrity is enhanced by selecting a reporting policy or mechanism by which to identify households that are eligible or no longer eligible. One such policy is to require households to submit detailed income

information to the program at regular intervals. This policy provides the opportunity for program staff to more accurately assess eligibility, but it creates greater administrative burden in terms of staff time and resources. And, it can be a burden on households themselves if the detail required is hard to compile or if the households are required to report income frequently. Such a burden can be a disincentive to participate even for eligible households. Thus, the phenomenon of income volatility creates fundamental policy tradeoffs between access and integrity.

In this study, we examine the dynamic effects of monthly income volatility to better understand how it affects low-income populations. We also examine the implications of income volatility for household eligibility and program integrity in the National School Lunch Program (NSLP). The analysis contributes to our understanding of the potential impacts of volatility on other U.S. Department of Agriculture (USDA) food assistance programs and on the changing economic conditions of low-income households.

Because of the importance of income volatility and the lack of empirical analysis on the topic, we explore the issue in some depth. The analysis starts by addressing these questions:

- *Is income volatility relatively larger or smaller for lower income households than for higher income households?* In this section, we compare the distributions of income volatility across six income groups using the coefficient of variation, a scale-independent measure of volatility.

- *How often during a typical school year do households experience monthly income changes that cross the income-to-poverty ratio threshold of 185 percent?* We examine the income distribution of households with children and the frequency of income changes over this threshold, which is used in the NSLP and other food assistance programs.

- *What types of changes in household circumstances explain transitions above and below the 185 percent threshold for different types of households?* We examine descriptive statistics and estimates from hazard models to understand which short-term trigger events for which household types are most likely to explain eligibility changes.

Second, we examine the implications of income volatility for targeting efficiency in the NSLP. As this report shows, an understanding of the interaction between income volatility and eligibility policy sheds light on recent concerns about NSLP integrity. A series of studies in the late 1990s raised concerns about the accuracy of the NSLP application and eligibility certification procedures. Estimates of "overcertification" rates—the share of students receiving benefits for which they were not entitled—ranged from 12 percent to 33 percent. Undersecretary Bost, the USDA official who administers the domestic food assistance programs, stated at a Senate committee hearing that "we have a problem with the accuracy of certification in the National School Lunch Program. While we do not know the exact scope of the problem, we do know that we have a problem and that the problem appears to be getting worse."[1]

The U.S. Congress recently amended the National School Lunch Act through the Child Nutrition and WIC Reauthorization Act of 2004. One of the most important changes to eligibility was to extend the eligibility period from 1 month to the school year. Before that, the rules stipulated that households report income changes in excess of $50 per month and household composition changes to school authorities. If these reported changes led to a change in a household's eligibility, school authorities were supposed to increase, reduce, or terminate benefits accordingly. Households seldom reported such changes, and the administrative burden would have been significant if they had.

This study estimates how income volatility contributed to overcertification as defined under the pre-2004 act regulations. Understanding the concerns about overcertification requires a brief description of the program eligibility certification process. The NSLP contains three categories of meals—full-price, reduced-price, and free—which correspond to the three different prices charged to students for a lunch. A student's income eligibility for a particular meal category is based on the household's income relative to poverty—which in turn depends on income and the number of people in the household.[2] If a student's household income relative to poverty is equal to or below 130 percent, the student is eligible for a free lunch. If a student's household income relative to poverty is between 131 percent and 185 percent, the student is eligible for a reduced-price lunch.

By law, the school food authorities (SFAs) must verify the eligibility status of a small sample of students who were certified as eligible at the time of application, which is usually in August or September. Once a household is selected and contacted by the SFA, it must produce proof of income. Under the old rules, this "verification" procedure had to be conducted before mid-

December. If their current income did not match the eligibility criteria for which the children had qualified at the start of the school year, the benefitswere changed, as applicable.

Three factors have been identified as possible sources of overcertification. First, the household could provide inaccurate information—knowingly or unknowingly—about its income or household size. Second, the school staff could incorrectly assess the household's eligibility. And third, changes in monthly household income (or size) could affect the household's eligibility status—under the old rules. This source of error can be examined with existing national data, unlike the two other sources of error which require special data collection efforts.

The extent to which each potential source of error actually contributed to total overcertification is unknown. Several recent investigations have looked into the roles of other sources of error. This report focuses on the income volatility explanation and addresses these two questions:

- *How many households that were eligible in August were still eligible in subsequent months?* We trace how changes in income by month affect eligibility changes of initially eligible households. This process allows us to estimate the likely effects of income volatility on verification results in December as well as by the end of the school year.

- *Is one month of income a good predictor of eligibility in the coming year?* We estimate how the use of one month of income to determine eligibility (in August) compares with the use of 1 year of income, which better matches the eligibility period under the new law. This process allows us to understand the importance of another eligibility policy, the ability of households to apply throughout the year.

We use the 1996 panel of the Survey of Income and Program Participation (SIPP) for the analysis. SIPP is a nationally representative longitudinal panel that allows us to track changing household income over time for the same set of households. SIPP contains monthly income data, which allow us to measure income dynamics over a shorter timeframe than most datasets permit. For the problem of overcertification in the NSLP, annual data lack the needed detail for identifying which eligible households at the start of the school year subsequently exit eligibility later in the year.

The report reviews the major findings from studies on income volatility as well as recent studies on overcertification. Previous economic research that relates to income volatility includes studies on poverty dynamics and on Food Stamp Program participation dynamics. The report also discusses a data transformation that was done to correct for "seam bias," an issue in longitudinal surveys that could confound our measure of monthly income volatility.

The analysis suggests overall that households eligible for free or reduced-price NSLP meals experience substantial income fluctuations, largely from labor market events, and that those fluctuations may explain a large amount of overcertification error. The report does not estimate the size of other types of error that could also be important, such as errors made by households or administrators. But the evidence on income volatility alone contributes an important piece to the puzzle of what caused high overcertification error rates in the past. The example of how income volatility has affected NSLP eligibility also illustrates how income volatility can affect eligibility in all USDA food assistance programs.

DATA AND ELIGIBILITY CRITERIA

SIPP: Description and Issue of Seam Bias

We use the 1996 panel of the Survey of Income and Program Participation (SIPP). SIPP was designed to measure government program participation and income from a full list of possible sources, including labor force participation, public assistance, business income, and assets. SIPP is a series of panel surveys that cover 2½-4 years, collecting detailed information for each household member for each month during the course of the panel.

Besides the benefits of the longitudinal design mentioned in the introduction, SIPP also has the advantage of supplying monthly rather than annual income, which provides the opportunity to analyze income dynamics over a shorter time frame than has been common. The 1996 panel is a 4-year panel that started in December 1995 and ended in February 2000. It had an initial sample size of 40,188 households. Households from areas of high poverty concentration were oversampled in order to provide sufficient data for evaluating program effects. The 1996 panel differed from earlier panels in that it followed households over a longer period, it started with a larger sample

size, and no other SIPP panels were fielded at the same time. The 1996 panel was the first to use Computer-Assisted Interviewing (CAI) techniques that generally improve the accuracy of data collection.

SIPP is structured in "waves," which are the number of times each household is interviewed; the 1996 panel encompassed 12 waves. Within each wave, the household reports on the previous 4 months of activity, which are referred to as "reference months 1 through 4," with the interview taking place effectively in the fifth month. Data for the month in which the interview is conducted is collected in the subsequent wave, making the first month of each wave the month in which respondents report on the previous 4 months.

SIPP has two important disadvantages: attrition and seam bias. The first problem, attrition, is a problem inherent to all longitudinal surveys. Over the course of the survey, some participants will choose to drop out, changing the composition of the sample. The Census Bureau provides household weights for each month in order to match the initial sample design. We use those weights in our analysis.

The other problem is seam bias, which occurs in surveys that ask for information from differentiated periods in the past. As described, the SIPP interviewer contacts the interviewees every 4 months (every "wave") and asks them to report information for each month over the past 4 months, the "reference period." If the interviewee does not remember exactly the different circumstances of each month, he or she is likely to use some kind of inference strategy to fill in the details. A respondent may blur differences in the past for many reasons, ranging from having a poor memory to deliberately attempting to speed up the interview. Whatever the cause, the effects are evident in the data: When data are plotted across months, differences in the values of the data tend to be greater between months in different reference periods than between months in the same reference period.

Earnings and total income data are susceptible to seam bias error (U.S. Department of Commerce, U.S. Census Bureau, 1998). However, no research is known that examines the extent of seam bias for earnings or income data.[3] Most studies of poverty dynamics using SIPP have not attempted to address the problem, while many others have addressed it by combining the reference period months into one period, thus aggregating monthly data into data covering 4 months. This technique is unavailable for this report because month-to-month changes in income are central to the analysis. We want to understand the differences that occur in very short time intervals in order to understand NSLP eligibility changes between September and December.

In the 1996 SIPP panel, we find seam bias in the income data. Table 1 shows the median percentage change in income in absolute terms by reference month, where the first month of the reference period is the month following the seam (Month 1). If there were no seam bias, there would be no noticeable differences in the percentage income changes across months. However, in the 1996 SIPP panel, the magnitude of the percentage income change in Month 1 was much greater than the income changes in the other months: In Month 1 for each of the 3 school years examined, the percentage income change was 17-19 percent; for the other three reference months, the percentage income change was 2-6 percent.

Seam bias creates a type of artificial volatility in some months but not others. Reported income may jump from one month to the next due to some combination of an actual income change—which we want to identify as much as possible—or to misreporting at the seam. Thus, using the raw, unadjusted data on reported income would result in overestimating the true extent of volatility. In order to differentiate between true but unobserved income volatility and volatility from misreporting, we need to smooth the data in some way. We perform two kinds of adjustments to the data that depend on different assumptions about the cognitive causes of the seam problem.[4]

Table 1. Median of the Absolute Percentage Income Change by Reference Month Reveal Seam Bias in Unadjusted Data

	Reference month			
School year	**1**	**2**	**3**	**4**
	Percent			
1996-97	19	3	4	6
1997-98	18	3	4	5
1998-99	17	2	3	4

Source: U.S. Department of Commerce, U.S. Census Bureau, 1996 panel of the Survey of Income and Program Participation.

Based on two fundamental explanations for seam bias error, memory failure and inference strategy, we test two ways of adjusting the data to smooth the differences across the seams.[5] In our first adjustment, we assume that the income change that was misreported at the seam would have been evenly distributed over the first 3 months in the interview period if accurately reported and that the most recent month was accurately recalled. This inference strategy is a common one used by interviewees and is referred to as a

"constant wave response" (Rips et al., 2003). In the second adjustment, we assume a decreasing distribution around the seam with a small amount spilling back into the last month of the previous period and the rest being distributed in decreasing order from the first month of the current reference period through the next 2 months. The cognitive basis for this adjustment is pure memory failure. It assumes that the respondent knows the general period of the change and that the change was likely to have occurred close to the date reported but truly occurred slightly before or sometime afterward.

The effect of the two data adjustments on the measurement of data changes at the seams is shown in table 2. The first adjustment does not fully remove the apparent seam bias as measured by absolute percentage income differences at the seams. The second adjustment, which was one of a decreasing function around the seam, does remove the apparent seam bias; the absolute percentage income change across periods is fairly equal at the seam and within the reference period. This suggests that the second is the better of the two adjustments as an alternative to the unadjusted data. In the following analysis, we report results from the unadjusted data and the adjusted data using the second adjustment.

Table 2. Median of the Absolute Percentage Income Change by Reference Month Reveal Seam Bias in Adjusted Data 1 but no Seam Bias in Adjusted Data 2

	Reference month			
School year	**1**	**2**	**3**	**4**
	Adjusted data 1, percent (even distribution)			
1996-97	13	3	4	12
1997-98	12	3	4	11
1998-99	11	2	3	10
	Adjusted data 2, percent (decreasing distribution)			
1996-97	7	9	9	9
1997-98	7	9	8	8
1998-99	7	9	8	8

Source: U.S. Department of Commerce, U.S. Census Bureau, 1996 panel of the Survey of Income and Program Participation.

Eligibility and Sampling Criteria

In this study, "eligibility" is determined strictly by NSLP income limits even though households are also eligible directly as a result of participating in Temporary Assistance for Needy Families (TANF), the Food Stamp Program, or the Food Distribution Program on Indian Reservations (FDPIR). We use a pure income definition of eligibility in order to directly relate eligibility to income volatility. The restriction has little effect: In the SIPP data, only 1 percent of the households that would have been eligible by program participation were ineligible by income.

We sometimes combine eligibility for either a free lunch or a reduced-price lunch into one "eligible" category. One reason for combining is that it simplifies the discussion. Another is that the savings to USDA of catching errors related to changes in free to reduced-price status are much smaller than the savings related to finding errors related to eligibility for either benefit. In 2004-05, the amount reimbursed to schools by USDA was $1.84 for a reduced-price lunch and $2.24 for a free lunch; both are much larger than the $0.21 reimbursement for a paid lunch.

We use the same household definition as that defined in the SIPP. When someone moves from one of the original households interviewed, the person who moved and his or her household members are classified as a new household. Also, when someone new moves into the original household, he or she is considered part of the original household. This definition ends up being a rather strict test for total household eligibility because it counts all household members' incomes toward the total, whereas, in practice, all household members may not share income as assumed.

INCOME VOLATILITY ANALYSIS

Recent studies of poverty dynamics highlight the importance of income volatility. In a recent Census report using the 1996 SIPP panel, John Iceland (2003) found that the average monthly poverty rates for each year in the panel were higher than the corresponding annual poverty rates (1996-99). Other studies found that annual poverty rates are lower than the average share of people in poverty during at least 1 month of the year (Coder et al., 1987; Ruggles and Williams, 1986; Doyle and Trippe, 1991).

Huff Stevens (1999) found that half of all individuals exiting poverty reentered poverty within 4 years. She used annual data from the Panel Study of Income Dynamics for years 1967-88, allowing her to focus on changes across several years (but not across months). She concluded that the amount of time spent in poverty has been underestimated by previous work that counted only single spells of poverty. She cited the following conclusion from a review of poverty studies, all of which focused on single spells: "…most low-income people, including most blacks, will be poor for less than two years" (Gottschalk et al., 1994). But the chances of them falling back into poverty are high, according to Huff Stevens. She writes, "[M]ore than half of all blacks and around one third of whites falling into poverty will spend five or more of the next ten years in poverty." Monthly fluctuations, as opposed to the annual fluctuations which Huff Stevens looked at, should show even greater effects of cycling in and out of poverty.

Analyses of the dynamics of participation in USDA's Food Stamp Program (FSP) have highlighted the importance of multiple spells of participation. To be eligible for food stamps, an individual must have a monthly income of 130 percent of the poverty level or below. Burstein (1993) used SIPP data from the late 1980s and found that 38 percent of people who exited the program reentered within a year. The median spell length was 6 months. Gleason et al. (1998) similarly found high FSP reentry levels in the early 1990s using SIPP. They write: "More than half of those who stop receiving food stamps reenter the program within two years… Among all individuals who exit food stamps, one-fourth starts receiving food stamps again within four months and 42 percent within one year." A literature review by Gleason et al. (1998) has more examples of frequent exit from and entry into the FSP.

Income Volatility by Income Group

Research on month-to-month variation of household income is scarce, so this section begins by examining the magnitude of monthly income volatility. We use the coefficient of variation (CV), which is the standard deviation divided by the mean, as the main statistic to compare volatility across income groups because it measures relative volatility. One can expect that the standard deviation of a household's monthly income increases in size with income, but the CV does not necessarily do so. Scaling the standard deviation by its mean produces a statistic of dispersion that is more easily compared across income

groups. Each household was assigned to one of the six income groups according to the household's average monthly income status relative to the monthly poverty line, averaged over the number of months the household was in the survey.[6] The groupings were roughly defined in light of the 55-percentage-point difference between the NSLP eligibility cutoffs at 130 percent and 185 percent of poverty for free and reduced-price lunches. The groups are defined as 0-75 percent, 76-130 percent, 131-185 percent, 186-240 percent, 241-300 percent, and 301 percent and over.

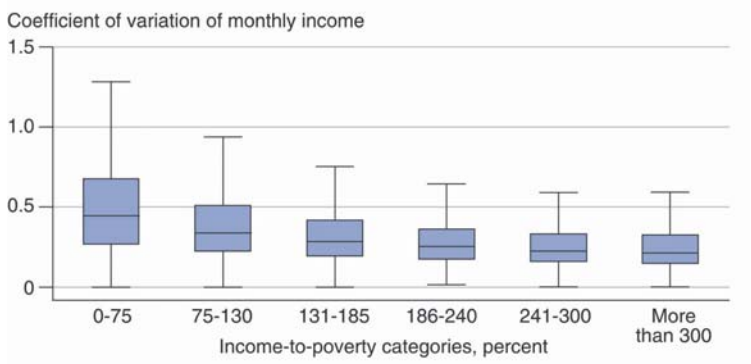
Each household in the sample can be thought of as having a mean long-term income, measured for the given household as the average of its monthly income, where the average is taken across all months that a household participated in the survey (for households participating 12 months or longer). For the income group in the range of 0-75 percent of poverty, long-term income was $699 per month on average across households in the group. For the highest income group in the range of 300 percent of poverty and over, longterm income was $6,907 per month, averaged across households in the group. For the sample as a whole, long-term income averaged $4,428 per month.

In any given month, a household's current (monthly) income is typically different from its long-term income due to income fluctuations around the household's mean income. The household's standard deviation of monthly income is a measure of how dispersed its current income is from its long-term income in a typical month. The standard deviations were $342 for the lowest income group and $1,974 for the highest income group (on average across households within each respective group). On average across all households in the sample, the standard deviation was $1,303. The CV expresses the standard deviation of income relative to the size of the household's long-term income. For example, one of the households in the sample had a long-term income of $3,956 and a standard deviation of $866, making its CV equal to 0.22, or 22 percent dispersion relative to the mean ($866/$3,956). This 22 percent figure can be compared with the CV of either a lower or higher income household.

Figure 1 shows the CVs in monthly income across six income groups (adjusted for seam bias).[7] The line that crosses through the middle of each box represents the median of the CV distribution for the particular income group. The bottom endpoint of the box represents the points below which 25 percent of households have that level of variation, and the top endpoint of the box represents the points below which 75 percent have that level of variation.

The diagram shows a continuous decline, from the poorest group to the richest, in the medians of the groups' CV distributions. This decline means

that a typical lower income household (at the median of the group's distribution) has higher percentage variation in income than a typical higher income household. In addition, decreases across income groups can be seen at the 25th and 75th percentiles, as well as at the upper limits of the CV distributions. So, a lower income household with high volatility for its group has greater volatility than a household with high volatility in any of the successively higher income groups. And even a lower income household with low volatility has greater volatility than households with low volatility in the successively higher income groups. In conclusion, the entire CV distribution for an income group shifts downward as income increases (see app. table 1).[8]

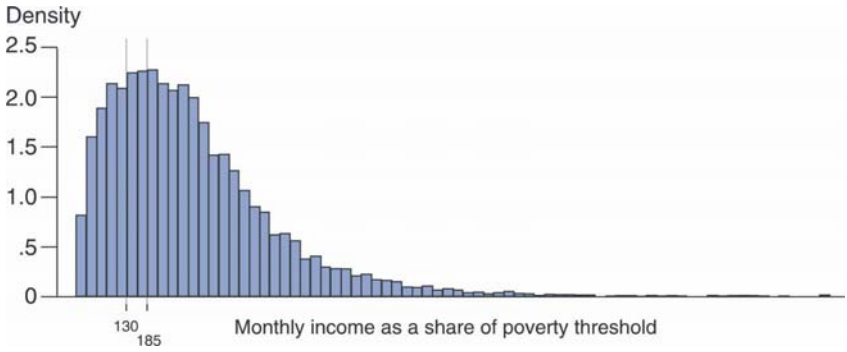


Source: U.S. Department of Commerce, U.S. Census Bureau, 1996 panel of the Survey of Income and Program Participation.
Note: Number of observations = 11,135.

Figure 1. Distribution of income volatility over 12 months by average share of poverty status
Monthly income variation is higher among lower income groups

A significance test was performed to examine whether the measured differences in mean CVs across groups are statistically significant. The mean CV in each income-to-poverty status group was compared with the mean CV of all the other groups combined. In each case, a group's CV was significantly different at the 0.001 level from the combined mean of all other groups. An additional test was performed, and each mean CV was significantly different at the 0.001 level from the mean CV in the following and preceding income-to-poverty groups. Thus, the declines in CVs across income groups in figure 1 are unlikely to be due to chance. Lower income groups exhibit greater volatility,

in percentage terms, in their monthly household income than do higher income households.



Source: U.S. Department of Commerce, U.S. Census Bureau, 1996 panel of the Survey of Income and Program Participation.
Note: Number of observations = 10,456.

Figure 2. Distribution of income to poverty, June 1996
Households are concentrated around 185 percent of poverty

What are the implications for NSLP eligibility of income volatility being higher at lower income levels? To answer that, we need to have some understanding of how many families would be likely to change eligibility status as a result of income volatility. How many families are close to the income eligibility limits for subsidized meals? If family incomes are unlikely to fall close to the limits, then income volatility would be less likely to change the eligibility status of many households. Figure 2 shows a histogram of the distribution of monthly income-to-poverty ratios in July 1996, the month that would have been typically used to determine eligibility (in August) for the 1996-97 school year. For each household, the monthly income-to-poverty ratio is calculated by dividing the seam-adjusted income to the monthly poverty line. The graph is labeled with "130" and "185" to denote 130 percent and 185 percent of poverty, and each bar has a width of about 0.27 percent. In July 1996, the mode of the distribution was at 185 percent of poverty—more families were clustered around 185 percent of poverty than around any other income-to-poverty ratio. Thus, the distribution suggests that a relatively large number of households might experience eligibility changes in the event of an income change.

Eligibility Status Changes

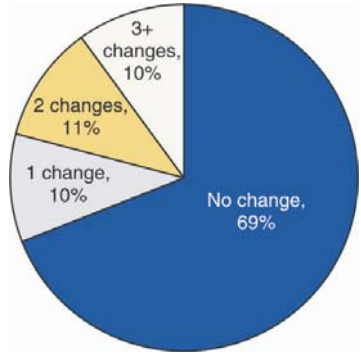
How would income volatility have affected eligibility status over the course of time under the old rules for NSLP? In this section, we calculate the numbers of changes in monthly eligibility status within 1 year and, separately, within 3 years. The frequency of changes in eligibility provides a measure of the implications of income volatility for administrative burden when SFAs had to reexamine a household's eligibility status for every $50 change in income. Even though the rule was not generally enforced, it is an indicator of how the yearlong eligibility rule reduces the SFAs' statutory responsibility and the amount of work that would have been required to fully enforce the previous law.

For the analysis in this section, households eligible for either the free or reduced-price categories are combined. We, therefore, examine the frequency of income changes around the 185 percent income-to-poverty threshold. Our definition of a change in status is one of either exiting or entering eligibility; we do not distinguish between the directions of change in order to get a simple directionless measure. The reasons for change in one direction or the other may be different—and they have been shown to be (for example, see the next chapter "Income Volatility Trigger Events" and McKernan and Ratcliffe, 2002)—but the frequency of eligibility change itself gives a distilled picture of the effects of volatility. We start the year in July because the monthly income for July is the first that may be used to determine eligibility if the household applies in August.

Figure 3 depicts the distribution of eligibility status changes across households with children during the 12-month period from July 1996 to June 1997. Of those, more than two-thirds (69 percent) never changed status. Of the households that changed status, it was just as common to change one time (10 percent of households) as it was to change two (11 percent) or three times or more (10 percent).

To translate the numbers of status change into an upper bound estimate of the administrative burden associated with the former law, we first must assume that all of the income changes are reported by households. Then, because many households change status more than once, we should count each change as a separate incident that would have required action on the part of the SFA. On this basis, the 11 percent of households that required two status changes are equivalent to 22 percent of households that required one change. The 10 percent of households that required three or more changes constitutes over 30 percent of households that needed to be changed once. Altogether, the changes

in status of roughly 30 percent of all households with children imply a potential administrative burden on the SFAs that is roughly equivalent to more than 60 percent of the households each changing status once. Although the assumption of most households faithfully reporting income changes is unrealistic, the SFAs were responsible for any errors that existed. These numbers measure the maximum extent to which the SFAs would have had to take action to fulfill their statutory responsibility.



Source: U.S. Department of Commerce, U.S. Census Bureau, 1996 panel of the Survey of Income and Program Participation.
Note: Number of observations = 8,753.

Figure 3. Number of changes in NSLP eligibility status among all households, 1996-97
Eligibility status changed in one-third of all housholds within a year

Figure 4 shows the status changes of the households that had at least 1 month of eligibility. This condition omits households that were never below 185 percent in any month of the period, narrowing the sample to a low-income population. Among them, a little more than one-third had no change in status (in contrast to the 69 percent who never changed status in figure 3). Almost one-half (44 percent) had two status changes or more, while onefifth (21 percent) had three or more status changes.

Appendix table 2 shows the data used for figures 3 and 4. It also shows that the patterns in the figures were not unique to 1996-97; it was almost the same in the following years (1997-98 and 1998-99).

One could expect that frequent changes in eligibility status would be even more pronounced when looking at the households over 3 school years. This outcome is a simple result of the time extension: Households have more time in which changes may occur. Over the 3 years from July 1996 to June 1999,

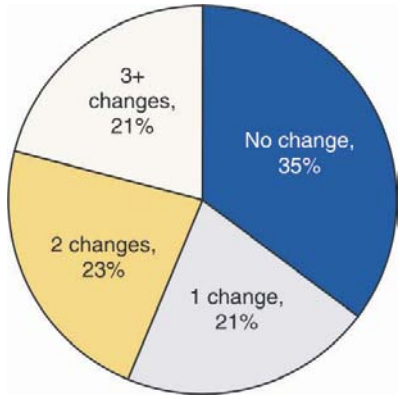
50 percent of all households with school-aged children had no change in status in contrast to 69 percent in 1996-97, while 14 of the households with 1 or more months of eligibility had no change in status in contrast to 35 percent in 1996-97 (app. table 2).

We also examine the number of eligibility changes within each of the income groups to examine the CV differences. As expected, most changes in eligibility status occur in the income groups closest to the eligibility limit. In the first income group, where average income was 0-75 percent of the poverty line, the average number of changes in status was 0.2. For the next income group, between 76 percent and 130 percent of poverty, the average number of status changes was 1.2. The two groups closest to the eligibility cutoff of 185 percent of poverty had the most changes. For the 131-185 percent group, the average number of status changes was 4.9, and for the 186-240 percent group, it was 5.0. The next two higher categories (241-300 percent and 301 percent and up) had an average number of changes of 2.2 and 0.6. Households close to the eligibility income cutoff point of 185 percent of poverty had more eligibility changes per year, but the average number of five changes per year for the income groups above and below the line reveals how important income volatility can be.

These results are consistent with the findings previously discussed of high ates of reentry into the FSP after exiting (Burstein; Gleason et al., 1998) and high rates of reentry into poverty after exit (Huff Stevens, 1999). Those studies are not fully comparable because we do not account for the program participation decision and we are analyzing a slightly larger low-income population. Despite these differences, our results, like those cited, point to the importance of income volatility in understanding low-income population issues.

Income Volatility Trigger Events

While the previous section examined the magnitude of income volatility and its connection to overcertification, this section investigates the sources of monthly income changes. For any one household, NSLP eligibility changes when the household's income relative to poverty crosses the 185 percent threshold.



Source: U.S. Department of Commerce, U.S. Census Bureau, 1996 panel of the Survey of Income and Program Participation.
Note: Number of observations = 4,376.

Figure 4. Number of changes in NSLP eligibility status among households that were eligible at least once, 1996-97
Eligibility status changed in two-thirds of NSLP housholds within a year

Many household characteristics or experiences could be factors that lead to exit from or entry into eligibility. Household members could obtain more or less employment in the form of extra jobs or fewer jobs or through changes in the amount of time spent on the same job. Employed workers could get a raise or a cut in pay. The composition of the household could hange: Children could join or leave the household; people could marry or separate; and extended family members or unrelated individuals could join or leave the household. Many of these events could occur in the same month, and they could have opposite effects on the household's total income. A household member could lose one job but receive a raise in another job. One household member could lose a job while another chooses to work longer hours, perhaps in response to the other's job loss.

These simultaneous events could trigger an increase or a decrease in household income, depending on the relative magnitudes of the wage and hours changes. The statistical tool used here to analyze these diverse sources of income volatility is a hazard model. The model statistically associates the types of household conditions and behaviors with the timing of an income change.

This section investigates which factors are associated with entry into and exit from NSLP eligibility. Entry is analyzed separately from exit because the role played by any one determinant could differ between the types of transitions. The analysis also considers how the roles played by eligibility determinants could vary depending on the length of the time horizon. A factor that may be relevant over a short-term time horizon of 1-4 months may become less important if the horizon is extended to 48 months, and vice versa.

We approach the analysis in two steps. First, we estimate the odds of different trigger events associated with households entering and exiting NSLP eligibility. Second, we assess the degree to which those odds differ over different lengths of time. The first step is a common approach that many researchers have used in analyses of poverty dynamics (Bane and Ellwood, 1986; Ruggles and Williams, 1987; McKernan and Ratcliffe, 2002; among others). The second step is similar to one used in a study of poverty dynamics by McKernan and Ratcliffe (2002) using the Panel Survey of Income Dynamics. They compared the effects of trigger events on poverty spells of 4 years or more (longer term poverty) and poverty spells of 3 years or less (shorter term).

We extend the analysis of McKernan and Ratcliffe by comparing trigger effects in a series of different short-term periods of 4, 8, 12, and 48 months, the maximum length of time that occurs in our data. We use a traditional hazard model to estimate the effects of a large set of household characteristics and trigger events on monthly entry into and exit from NSLP eligibility. We estimate these effects over the different time lengths as a way of changing the focus from one of looking at the effects from a very short-term to longer term perspective.

Some analysts looking at program participation dynamics have formed mutually exclusive categories when presenting descriptive statistics of trigger events. For example, they categorize changes into whether someone loses a job *or* whether someone left the household. But that would not work well in our case because we can measure many different simultaneous combinations. In a given household, we can see if a household member lost a job, if someone left the household, and if both events occurred in the same month. In fact, we could track many simultaneous trigger events. Rather than try to decompose all changes into mutually exclusive events, we present the frequency of different trigger events and the probability of exit or entry if the event occurs.[9]

The Multivariate Discrete-Time Hazard Model

For the multivariate analysis, we estimate hazard models to assess the relative importance of different triggers as well as different household characteristics associated with entries and exits from eligibility spells. We use a discrete-time hazard model, which can be estimated well with the traditional logit specification (Allison, 1984; Jenkins, 1995). A hazard model estimates the probability of an event happening at a certain point in time given that it has not occurred before that point in time. The probability can depend on many explanatory variables, which in our context includes the characteristics and trigger events occurring over time to households.

A discrete formulation of the probability is used to account for our data, which is in discrete monthly periods; the alternative continuous formulation assumes that events are measured in continuous time. While monthly data represents finer detail than annual data, it is still a relatively large block of time over which many changes are summed. Most studies of poverty and program participation dynamics use the discrete-time logit hazard model (Huff Stevens, 1999; McKernan and Ratcliffe, 2002; and many others), which is written as:

$$P(t) = \frac{1}{1 + e^{-Z(t)}} \tag{1}$$

Where

$$z(t) = c(t) + X\beta \tag{2}$$

The model of eligibility or ineligibility, *z(t)*, is a function of *c(t)*, the baseline hazard function (or the hazard function in the absence of other explanatory factors). $X\beta$ represents the matrix of explanatory factors and their respective parameters. The hazard model in (1) is estimated by the method of maximum likelihood, and we report on the odds ratios that are computed from the estimated coefficients. In a logit regression, the dependent variable is transformed into the natural log of the odds of the event occurring. The odds ratios are computed from the estimated coefficients by using the exponential function (raising the natural log e to the b_1 power).

An odds ratio compares the odds of a certain event occurring over two groups. In a regression, the odds ratio for each independent variable compares

the odds of the event occurring when there is a one-unit change in the independent variable with the odds when there is no change. If the ratio is equal to one, the event is equally likely to occur in both groups with or without the change in the independent variable.

The trigger events and static characteristics that we use in the analysis include variables that describe household composition, labor force participation, State unemployment rates, public assistance receipt, the race or ethnicity of the household head, education, job experience, disability status, and other characteristics. The full list, shown in tables 3 and 4, includes both time-invariant characteristics, such as race, and time-varying ones, such as the number of years of job experience held by different members. The trigger events are depicted by dummy variables, which equal one when a characteristic has changed.

We use five different household wages and their changes as trigger dummy variables: wages for primary and secondary jobs of the household reference person (the person who owns or rents the home) and the spouse each and a summed pay rate for all other adults in the house in all of their jobs. Wages are measured in one of two ways. The first is a wage reported as the "regular hourly pay rate," which is separately provided for the primary and secondary jobs. The second, which is used only if the first is not available, is the sum of monthly gross earnings from the job divided by the product of the "usual hours worked per week at this job" and the "number of weeks with a job in the month."

For most trigger variables, we allow the effects of a change in a given characteristic to be captured by the trigger dummy variables over 1 month. For example, we calculate as one of the trigger variables a change in the number of jobs worked by the household reference person. If this individual experienced a change in the number of jobs worked in the current month, the trigger dummy for the number of jobs worked is one for the current month. It is common in the literature to allow for delayed effects, such as in the case where a job change takes a few months to induce an income change. But we wanted to test the effects of short-term events as much as possible.

We made an exception for changes in marital status, public assistance receipt, disability status, presence or not of a subfamily in the household, and changes in the number of children. We thought that the effects of these institutional and family-related variables, especially those that occur very infrequently, would be too hard to capture in 1 month. For marital status changes, the dummy variable for a change was equal to one if the change occurred 1 or 2 months prior to the current observation or if it occurred 1

month ahead. For the other types of changes for which we made an exception, the dummy variable was equal to one if the event occurred in the last 1 or 2 months.

The data used for the analysis is from all years and months in the 1996 panel, starting in December 1995 and ending in February 2000. Before any data are excluded, the sample has 436,479 household-month observations and 20,016 unique households. The households are in the sample for up to 48 months. Slightly more than one-half are in the sample for 3 years, and 40 percent are in the sample for 4 years.

When a data set does not contain an entire spell, it is called a "censored spell," meaning that either the end or the beginning of the spell fell outside the period surveyed. Most analysts exclude "left-censored" spells, the spells cut off at the beginning, but they keep "right-censored" spells, spells cut off at the end, because of the nature of hazard analysis.

Table 3. Summary Statistics for NSLP Eligibility Exit Model Variables

Variables	Mean	Standard deviation	Minimum	Maximum
Characteristics (weighted):				
Dependent variable:end of eligibility spell	0.163	0.369	0	1
Log of time	1.416	1.018	0	4
State unemployment rate	4.881	1.294	2	10
Number of working adults per household member	.278	.173	0	1
Number of school-age children	1.758	.940	1	9
Number of jobs held by household reference person	.725	.615	0	4
Number of jobs held by spouse of reference person	.371	.564	0	5
Number of jobs held by other adults	.317	.675	0	8
Tenure of household reference person	.618	17.265	-1	480
Tenure of spouse or partner	.840	12.012	0	372
Tenure of other adults	.264	6.549	0	576
Education of reference person	2.677	1.052	1	5
Education of spouse	1.634	1.537	0	6
Black/non-Hispanic reference person	.198	.399	0	1
Hispanic reference person	.174	.379	0	1
Native American reference person	.026	.158	0	1
Asian reference person	.030	.171	0	1
Disabled reference person	.123	.328	0	1
Disabled spouse or partner	.062	.242	0	1

Disabled other adults	.062	.272	0	4
Subfamily shares household	.098	.298	0	1
Household receives public assistance	.171	.377	0	1
Single female-headed household	.344	.475	0	1
Single male-headed household	.077	.267	0	1
Group home household	.002	.044	0	1
Triggers:				
Public assistance gained	.019	.136	0	1
Reference person leaves disability	.027	.162	0	1
Female household head marries	.003	.057	0	1
Child leaves household	.013	.114	0	1
Subfamily joins household	.006	.079	0	1
Household's total hours worked increase	.273	.446	0	1
Reference person gains one job or more	.019	.136	0	1
Spouse/partner gains one job or more	.012	.108	0	1
Other adults gain one job or more	.020	.140	0	1
Reference person's wage from primary job increases	.100	.300	0	1
Reference person's wage from secondary job increases	.023	.150	0	1
Spouse's/partner's wage from primary job increases	.082	.274	0	1
Spouse/partner's wage from secondary job increases	.011	.103	0	1
Other adults'wages increase	.066	.249	0	1
Share of working adults in household increases	.046	.210	0	1
Number of observations	65,084	NA	NA	NA

Source: U.S. Department of Commerce, U.S. Census Bureau, 1996 panel of the Survey of Income and Program Participation.

NA = Not applicable.

In hazard analysis, the method estimates the factors that contribute to the length of a given spell, given that the spell has lasted to that point. If a spell does not end in the data, the fact that it did not end within the period examined is useful information. But for this type of analysis, it is crucial to know when the spell started, which is why most analysts exclude left-censored spells. One study by Iceland (1997) found that excluding left-censored observations leads to some bias in estimating the lengths of spells (of poverty) because the left-censored spells are more likely to include households in the middle of long spells. Because our focus is on understanding the determinants of short-term spells rather than in estimating the median spell length per se, we chose to exclude the left-censored spell observations. This exclusion reduces the sample size considerably and means we examine only households that underwent at least one change in eligibility.[10]

The full sample is divided into two parts: households that are in spells of ineligibility—the "entry" sample—and households that are in spells of

eligibility—the "exit" sample. Before excluding left-censored observations, the entry sample has 287,674 household-month observations and 58,313 continuous spells of NSLP ineligibility. The full exit sample is much smaller at 148,805 household-month observations and 46,358 continuous spells of NSLP eligibility. The exit sample is smaller because fewer households have incomes below 130 percent of the poverty line than above it. Once we exclude the left-censored spells of eligibility in the exit sample, we reduce the sample to 65,084 household-month observations and 13,774 spells. And once we exclude the left-censored spells of ineligibility from the entry sample, we have 82,419 household-month observations and 13,253 spells.

Table 4. Summary Statistics for NSLP Eligibility Entry Model Variables

Variables	Mean	Standard deviation	Minimum	Maximum
Characteristics (weighted):				
Dependent variable:end of ineligibility spell	0.111	0.314	0	1
Log of time	1.703	1.071	0	3.9
State unemployment rate	4.739	1.285	2.3	9.8
Number of working adults per household member	.414	.161	0	.9
Number of school-age children	1.750	.881	1	9
Number of jobs held by household reference person	.869	.591	0	5
Number of jobs held by spouse of reference person	.577	.627	0	6
Number of jobs held by other adults	.589	.956	0	9
Tenure of household reference person	.660	17.729	-1	480
Tenure of spouse or partner	.919	12.429	0	372
Tenure of other adults	.212	5.372	0	492
Education of reference person	2.993	1.008	1	5
Education of spouse	2.196	1.553	0	5
Black/non-Hispanic reference person	.126	.332	0	1
Hispanic reference person	.120	.325	0	1
Native American reference person	.014	.118	0	1
Asian reference person	.032	.177	0	1
Disabled reference person	.077	.267	0	1
Disabled spouse or partner	.051	.221	0	1
Disabled other adults	.055	.251	0	4
Subfamily shares household	.085	.279	0	1

Household receives public assistance	.053	.225	0	1
Single female-headed household	.225	.417	0	1
Single male-headed household	.075	.263	0	1
Group home household	.002	.046	0	1
Triggers:				
Public assistance lost	.010	.098	0	1
Reference person becomes disabled	.021	.143	0	1
Married female becomes single household head	.003	.054	0	1
Child added to household	.018	.132	0	1
Subfamily leaves household	.003	.057	0	1
Household's total hours worked decrease	.334	.472	0	1
Reference person loses one job or more	.014	.119	0	1
Spouse/partner loses one job or more	.012	.107	0	1
Other adults lose one job or more	.023	.149	0	1
Reference person's wage from primary job decreases	.148	.355	0	1
Reference person's wage from secondary job decreases	.029	.167	0	1
Spouse's/partner's wage from primary job decreases	.098	.298	0	1
Spouse's/partner's wage from secondary job decreases	.019	.137	0	1
Other adults'wages decrease	.074	.262	0	1
Share of working adults in household decreases	.031	.174	0	1
Number of observations	82,419	NA	NA	NA

Source: U.S. Department of Commerce, U.S. Census Bureau, 1996 panel of the Survey of Income and Program Participation.
NA = Not applicable.

Descriptive Statistics

The summary statistics for all variables are shown in tables 3 and 4. Table 5 shows the frequency of trigger events that occur in the separate exit and entry samples, the frequency of entries and exits that occur when a given trigger event has taken place, and the frequency of the corresponding trigger events if an entry or exit occurs.

The tables show that most of the trigger events did not occur very often, except for changes in time worked by the household. This outcome is not surprising given that we think these events are important determinants of income change, but some of the triggers occur so infrequently that it may be

hard to fully capture their effects when they do occur. For example, a change in family structure from a single female-headed household to a married household occurs in less than 1 percent of the months in both the exit and entry samples. Other studies have found this trigger to be among the most important events leading into and out of poverty. We note that the information provided in table 5 is limited because it captures only the effect of one event at a time and that a fuller picture will be provided by the multivariate analysis.

The most frequent trigger events in the exit and entry samples were changes in hours worked, weeks worked, wages of all members, and the share of working adults in households. Total household hours and weeks worked in the month changed more frequently than did the other triggers. In the exit sample, total hours worked increased in 27 percent of all household-months. In the entry sample, total hours worked decreased in 33 percent of all household-months.[11] Changes in the reference person's primary wages were also relatively frequent in both samples: The reference person's wages increased in 10 percent of the household-months observed in the exit sample and decreased in 15 percent of the household-months in the entry sample. Changes in the primary wages of the reference person's spouse or partner were frequent in both samples. Primary wages of the spouse increased at a rate of 8 percent in the exit sample and decreased at a rate of 10 percent in the entry sample. Changes in the wages of all other working adults were relatively frequent in both samples, with wage increases in the exit sample at a rate of 6 percent and decreases in the entry sample at a rate of 7 percent.

In the exit sample, most of the trigger events that we thought could lead to exit were indeed statistically more likely to result in exit than not. Additional jobs, more total hours and weeks of work, increases in wages, and increasesin the share of working adults were all more likely to lead to exit from NSLP eligibility than if they did not occur. A single mother marrying, however, did not lead to a significantly greater probability of exit. A change in female marital status in the other direction, where the household changed from having a married reference person to having a single female reference person, did lead significantly to entry into eligibility. Of all entry trigger events, this event triggered the highest entry rate, 29 percent, suggesting that marriage is not necessarily a route out of NSLP eligibility. Other triggers that were significantly likely to lead to entry into eligibility include changes in total hours and weeks worked, changes in a spouse's or partner's wages, the loss of public assistance (TANF or FSP), the addition of a child to the household, and a decrease in the share of working adults in the household.

Table 5. Frequency of Trigger Events in the NSLP Eligibility Exit and Entry Samples

Trigger events for exit	Frequency	occurs	Frequency	Trigger events for entry	Frequency	Occurs	Frequency
Trigger events for exit	**Event frequency Rate (1)**	**Exit rate if Event occurs (2)**	**Event frequency rate if exit occurs (3)**	**Trigger events for entry**	**Event frequency Rate (4)**	**Entry rate if event Occurs (5)**	**Event frequency rate if entry occurs (6)**
	Percent				***Percent***		
Job gains:				Job losses:			
Household reference person gains a job	1.9	22.0[1]	2.6[1]	Household reference person loses a job	1.4	13.8[2]	1.8[2]
Spouse gains a job	1.2	24.0[1]	1.7[1]	Spouse loses a job	1.2	12.9	1.4
Other adult gains a job	1.8	23.2[1]	1.6[1]	Other adult loses a job	2.2	10.1	2.0
Total household hours worked increase	27.3	21.0[1]	35.2[1]	Total household hours worked decrease	33.4	13.0[1]	40.3[1]
Total household weeks worked increase	28.5	20.3[1]	35.6[1]	Total household weeks worked decrease	33.4	13.1[1]	40.7[1]
Wage or salary gains:				Wage or salary losses:			
Household reference person's pay increases for job 1	10.2	18.1[1]	11.4[1]	Household reference person's pay decreases for job 1	15.0	10.1	14.2
Household reference persons'pay increases for job 2	2.3	20.9[1]	3.0[1]	Household reference persons'pay decreases for job 2	2.9	11.4	3.1
Spouse's/partner's pay increases for job 1	8.3	22.5[1]	11.5[1]	Spouse's/partner's pay decreases for job 1	10.2	8.9[1]	8.4[3]

Table 5. (Continued)

Trigger events for exit	Event frequency Rate (1)	Exit rate if Event occurs (2)	Event frequency rate if exit occurs (3)	Trigger events for entry	Event frequency Rate (4)	Entry rate if event Occurs (5)	Event frequency rate if entry occurs (6)
Spouse's/partner's pay increases for job 2	1.1	25.0[1]	1.6[1]	Spouse's/partner's pay decreases for job 2	1.9	11.9	2.1
Other household adults' pay increases	6.0	22.0[1]	8.1[1]	Other household adults' pay decreases	7.0	10.5	6.9
Public assistance gains:				Public assistance losses:			
Household gains assistance	1.7	10.0[3]	1.1[3]	Household loses assistance	0.9	16.8[1]	1.3[1]
Disability changes:				Disability changes:			
Household member leaves disability	2.5	16.0	2.5	Household member becomes disabled	2.0	12.5	2.4
Household composition changes:				Household composition changes:			
Child leaves household	1.2	16.6	1.3	Child joins household	1.7	14.0[1]	2.2[1]
Subfamily joins household	.4	19.3	.5	Subfamily leaves household	.3	10.6	.3
Female household head marries or partners	.3	21.8	.4	Married female becomes female ousehold head	.3	29.3[1]	.8[1]
Share of working adults increases	4.49	23.8[1]	6.5[1]	Share of working adults decreases	3.0	15.1[1]	4.3[1]
Number of observations	65,084	NA	NA	Number of observations	82,419	NA	NA

Source: U.S. Department of Commerce, U.S. Census Bureau, 1996 panel of the Survey of Income and Program Participation.
NA = Not applicable.
[1] Significant at the 0.001 level. (The test is whether the occurrence of exit or entry is significantly different when the trigger event occurs compared with when the trigger event does not occur.)
[2] Significant at the 0.005 level. (The test is the same as above.)
[3] Significant at the 0.001 level in the opposite direction expected. (The test is the same as above.)

When we compare the rate of exit and entry with a particular trigger, the exit triggers are generally more likely to be associated with exit than the entry triggers are associated with entry (table 5, columns 2 and 5). The job-related exit triggers—changes in the number of jobs a household member has, the total household hours worked, wages, etc.—are associated with exit almost one-quarter of the time for most of these variables. The more family-related variables are not significantly linked to exit. In the entry sample, the jobrelated entry triggers are important, but they are not much larger than the two family-related variables, the addition of a child to the household and becoming a female-headed household. All of the triggers with a significant association with entry are smaller in size than those in the exit sample; they are closer to 13 percent, and the highest is the trigger of becoming a femaleheaded household at 29 percent. The other relatively large and significant trigger associated with entry is the loss of public assistance (17 percent).

These results suggest that family and institutional changes are more important in determining entry into poverty (roughly defined) and that economic variables are relatively more important for exiting poverty.

In table 5, columns 3 and 6, we show the frequency rate of trigger events with exit or entry, depending on the sample. In both samples, we see that changes in hours worked and weeks worked were the most likely triggers. In the exit sample, wage changes for the reference person, spouse, and other adults were the next most likely triggers, but they were not significant in the entry sample. The next largest frequency rate was for working adults, which was significant in both samples. These results underline the conclusion that job-related variables are the main drivers of change in eligibility status. They are, by far, more likely to have occurred if a household changes eligibility status, either exiting or entering.

As previously noted above, many changes can occur simultaneously, so the way to understand the relative importance of different trigger events is by using a multivariate framework. We now turn to the results of the discretetime hazard models of NSLP eligibility entry and exit.

Results from the Hazard Models of NSLP Eligibility Entry and Exit

In the models of eligibility entry and exit, we include as determinants a measure of time in logarithmic form to capture the baseline changes over time, the State unemployment rate, static characteristics of households measured in

levels, and dummy variables to measure specific trigger events. We have opted for a very inclusive set of independent variables, and there is some correlation among them, though we avoid it as much as possible by excluding the most correlated among them that represent similar phenomena.

As an obvious example, we use increases in total household hours worked, but we do not use weeks worked. We also use number of jobs held by different members of the household: the reference person, their spouse or partner, and other adults (as a composite). We include changes in jobs held by different members. The number of jobs held is a lumpier measure of employment than hours worked, and it is used here chiefly to identify job changes by household member type rather than to identify impacts of employment per se, which is what the change in total-hours-worked variable captures. The change-inhours trigger provides an aggregate view of household work changes, and the number of jobs held by household member provides a more detailed view of the relative importance of jobs held by different members. Because employment changes can occur in so many ways in a household, we want to include as many aspects as possible. As other authors in the literature have also noted, the results should not be interpreted as definitive causal effects because some of the independent variables may be considered endogenous.

We show the results from two models of NSLP eligibility exit and from two similar models of NSLP entry in tables 6-9. The first of each set of two models shows the results of the model using all periods in the 1996 SIPP panel where the maximum period a household may be in the survey sample was 48 months. Left-censored spells are excluded from all of the analysis. The second table for each model shows the results of the model using 4 months.

We tested each model using 12- and 8-month intervals, but the longest and shortest periods of 48 and 4 months display the important results. We discuss the results from all four models in the following discussion. By running the same model on the different periods, we tested whether and how determinants differ depending on the scope of time examined.

Exit Results

In the whole sample, many of the hypothesized effects were significant (table 6). The measure of changes over time was highly significant and indicates that the likelihood of exit decreased over time, essentially with longer spells of eligibility. This finding is common in the poverty literature. Among the other significant determinants, the share of working adults in the household had a positive effect on the odds of exit, and it had the largest effect relative to the other factors. The odds ratio of 2.2 can be interpreted to mean

that moving from no working adults to all working adults would more than double the odds of exit. The sizes of the estimated odds ratios for the other variables ranged from 0.61 to 1.37, though each of the units of observation must be considered in deriving an impact. We discuss only the general direction of impacts here.

Table 6. Logit Estimates of the Determinants of NSLP Eligibility Exit, Periods 1-48

Variables	Odds ratio	Standard error	*z*	*P>z*
Characteristics:				
Log of time	**0.66**	0.01	-33.00	0
State unemployment rate	.99	.01	-1.25	.212
Number of working adults per household member	**2.20**	.18	9.42	0
Number of school-age children	**.92**	.01	-6.24	0
Number of jobs held by household reference person	**1.20**	.03	8.24	0
Number of jobs held by spouse of reference person	**1.23**	.03	8.14	0
Number of jobs held by other adults	**1.27**	.02	12.31	0
Tenure of household reference person	**1.00**	.00	3.76	0
Tenure of spouse or partner	**1.00**	.00	2.88	.004
Tenure of other adults	1.00	.00	.25	.801
Education of reference person	**1.09**	.01	6.26	0
Education of spouse	**1.06**	.01	4.20	0
Black/non-Hispanic reference person	**.82**	.03	-5.90	0
Hispanic reference person	**.81**	.03	-5.72	0
Native American reference person	.86	.07	-1.79	.073
Asian reference person	**.73**	.05	-4.35	0
Disabled reference person	.92	.04	-2.08	.038
Disabled spouse or partner	.91	.05	-1.83	.067
Disabled other adults	1.00	.05	.02	.987
Subfamily shares household	1.07	.05	1.48	.138
Household receives public assistance	**.61**	.03	-1.04	0
Single female-headed household	1.00	.05	.01	.995
Single male-headed household	1.13	.06	2.35	.019
Group home household	1.18	.37	.52	.605
Triggers:				
Public assistance gained	.98	.11	-.18	.859
Reference person leaves disability	1.00	.07	-.02	.983
Female household head marries	1.44	.29	1.83	.068
Child leaves household	.82	.09	-1.81	.071
Subfamily joins household	.93	.14	-.50	.619
Household's total hours worked increase	**1.37**	.04	12.08	0
Reference person gains one job or more	1.12	.10	1.28	.202

Table 6. (Continued)

Variables	Odds ratio	Standard error	*z*	*P>z*
Spouse/partner gains one job or more	1.03	.11	.28	.777
Other adults gain one job or more	1.00	.09	-.03	.974
Reference person's wage from primary job increases	1.04	.04	.88	.377
Reference person's wage from secondary job increases	.91	.07	-1.19	.236
Spouse's/partner's wage from primary job increases	**1.14**	.05	3.18	.001
Spouse's/partner's wage from secondary job increases	.92	.10	-.78	.438
Other adults'wages increase	1.12	.06	2.09	.037
Share of working adults in household increases	**1.23**	.07	3.91	0
Number of observations	65,084	NA	NA	NA

Source: U.S. Department of Commerce, U.S. Census Bureau, 1996 panel of the Survey of Income and Program Participation.

Numbers in red bold = Significant at the 0.001 level. Numbers in black bold = Significant at the 0.010 level. NA = Not applicable.

More school-aged children per household led to lower odds of exit; and more jobs for the reference person, spouse/partner, or other adults led to higher odds of exit, with additional jobs for other adults having a slightly larger effect than the other two. The working tenure of the reference person and the spouse had significant, but almost negligible, effects on exit. A higher education level of the reference person and the spouse led to greater odds of exit. Households with a Black/non-Hispanic, Hispanic, or Asian reference person had lower odds of exit compared with households with a White reference person. Anyone in the household receiving public assistance decreased the odds of exit. The result for single female-headed households was negligible but not significant, not surprisingly given its weak effect in the descriptive analysis.

We find three trigger events to be significant determinants of exit in the 48-month sample: increases in total household hours worked, increases in the spouse's primary job wage, and increases in the share of working adults in the household. The odds ratios are directly comparable because they are all dummy variables. The highest was the increase in total household hours worked (1.37), the second highest was the increase in the share of working adults in the household (1.23), and the third was the increase in the spouse's primary wage (1.14).

What happens when we use samples of different time lengths? We compare the general results to a restricted sample of less than or equal to 12 months (not shown). The characteristics that have a positive and significant effect include the share of working adults in the household, the number of jobs held by each member, the tenure of the reference person and spouse, and the

education level of the reference person and spouse. The characteristics that have a negative and significant effect include the log of time; the number of children; the reference person being Black non-Hispanic, Hispanic, or Asian; the reference person being disabled; and the household receiving public assistance. All of these characteristics show the same effects as those in the unrestricted 48-month sample. The trigger events that are significant are the same as those in the 48-month exit sample, and they are very similar estimates.

Table 7. Logit Estimates of the Determinants of NSLP Eligibility Exit, Periods 1-4

Variables	Odds ratio	Standa-rd error	*z*	*P>z*
Characteristics:				
Log of time	**0.70**	0.02	-12.91	0
State unemployment rate	.99	.01	-.92	.359
Number of working adults per household member	**2.18**	.22	7.85	0
Number of school-age children	**.93**	.02	-4.09	0
Number of jobs held by household reference person	**1.22**	.03	7.65	0
Number of jobs held by spouse of reference person	**1.22**	.04	6.74	0
Number of jobs held by other adults	**1.24**	.03	9.88	0
Tenure of household reference person	**1.00**	.00	3.72	0
Tenure of spouse or partner	**1.00**	.00	2.87	.004
Tenure of other adults	1.00	.00	.45	.655
Education of reference person	**1.09**	.02	5.53	0
Education of spouse	**1.05**	.02	2.82	.005
Black/non-Hispanic reference person	**.80**	.03	-5.16	0
Hispanic reference person	**.79**	.04	-5.11	0
Native American reference person	.85	.09	-1.52	.127
Asian reference person	**.67**	.06	-4.38	0
Disabled reference person	**.86**	.04	-2.93	.003
Disabled spouse or partner	.89	.06	-1.85	.065
Disabled other adults	1.00	.06	-.08	.935
Subfamily shares household	1.11	.06	1.86	.063
Household receives public assistance	**.59**	.04	-8.60	0
Single female-headed household	.93	.05	-1.34	.179
Single male-headed household	1.09	.07	1.37	.170
Group home household	1.32	.51	.73	.467
Triggers:				
Public assistance gained	.96	.14	-.29	.775
Reference person leaves disability	.99	.09	-.11	.910
Female household head marries	1.59	.42	1.77	.077
Child leaves household	.82	.10	-1.55	.121
Subfamily joins household	.95	.16	-.29	.772

Household's total hours worked increase	**1.34**	.04	9.15	0
Reference person gains one job or more	1.01	.12	.11	.912
Spouse/partner gains one job or more	1.03	.14	.23	.819
Other adults gain one job or more	.92	.10	-.78	.437
Reference person's wage from primary job increases	1.03	.05	.69	.492
Reference person's wage from secondary job increases	.93	.09	-.80	.426
Spouse's/partner's wage from primary job increases	**1.16**	.06	2.87	.004
Spouse's/partner's wage from secondary job increases	.98	.12	-.15	.878
Other adults'wages increase	1.06	.07	.97	.334
Share of working adults in household increases	1.16	.08	2.09	.036
Number of observations	34,814	NA	NA	NA

Numbers in red bold = Significant at the 0.001 level. Numbers in black bold = Significant at the 0.010 level. NA = Not applicable.

Source: U.S. Department of Commerce, U.S. Census Bureau, 1996 panel of the Survey of Income and Program Participation.

Examining the results from the regressions for shorter periods of 8 months (not shown) and 4 months (table 7) reveals that the results are almost the same as those for the two longer periods. In the shortest period of 4 months, the trigger event of a change in the share of working household members was not significant, but that was the only major difference. The trigger event of the marriage of a female household head was not significant in any of the regressions. This outcome is likely due to this trigger occurring infrequently in the data, but it again suggests that marriage is not necessarily a route out of poverty for single females with children.

The events found to trigger exit from very short-term spells of NSLP eligibility are increases in total household hours worked in a month and in the wages of the spouse or partner. This outcome is understandable given that these are the work-related variables that can change easily, but it is somewhat surprising that changes in the reference person's wages are not significant. It suggests that a second major income source, in addition to that of the reference person (assuming they work), is a critical component to exiting eligibility.

Entry Results

The results from the hazard models of entry into NSLP eligibility are fairly consistent with the results from the exit model, but more trigger events are significant in the entry model. In the model covering the 48-month period, the one significant household characteristic that was positively associated with entry was the race of the reference person being other than White or Asian

(table 8). The significant factors that were negatively associated with entry were the log of time, the share of working adults in the household, the number of jobs held by the reference person and other adults, the education level of the reference person and spouse, and the household being single male-headed. All of these effects were significant in sensible directions.

Table 8. Logit Estimates of the Determinants of NSLP Eligibility Entry, Periods 1-48

Variables	Odds ratio	Standa-rd error	*z*	*P>z*
Characteristics:				
Log of time	**0.45**	0.01	-58.43	0
State unemployment rate	.98	.01	-1.69	.092
Number of working adults per household member	**.27**	.03	-12.91	0
Number of school-age children	1.01	.02	.62	.536
Number of jobs held by household reference person	**.91**	.02	-4.10	0
Number of jobs held by spouse of reference person	.94	.03	-2.16	.031
Number of jobs held by other adults	**.79**	.01	-12.84	0
Tenure of household reference person	1.00	.00	.81	.420
Tenure of spouse or partner	1.00	.00	1.86	.062
Tenure of other adults	1.00	.00	.61	.544
Education of reference person	**.87**	.01	-10.65	0
Education of spouse	**.89**	.01	-8.21	0
Black/non-Hispanic reference person	**1.18**	.04	4.50	0
Hispanic reference person	**1.18**	.05	4.16	0
Native American reference person	**1.33**	.12	3.21	.001
Asian reference person	.95	.07	-.68	.494
Disabled reference person	1.00	.05	.00	.999
Disabled spouse or partner	.94	.06	-1.01	.313
Disabled other adults	.89	.05	-2.27	.023
Subfamily shares household	.98	.05	-.47	.640
Household receives public assistance	1.12	.06	2.15	.031
Single female-headed household	.95	.05	-1.12	.262
Single male-headed household	**.85**	.05	-2.64	.008
Group home household	.79	.24	-.78	.438
Triggers:				
Public assistance lost	1.05	.11	.42	.672
Reference person becomes disabled	1.03	.09	.31	.759
Married female becomes single household head	**3.09**	.58	6.00	0
Child joins household	1.09	.09	.97	.333

Table 8. (Continued)

Variables	Odds ratio	Standa-rd error	z	P>z
Subfamily leaves household	**.55**	.12	-2.64	.008
Household's total hours worked decrease	**1.54**	.04	16.58	0
Reference person loses one job or more	.92	.10	-.77	.441
Spouse/partner loses one job or more	.78	.10	-1.99	.047
Other adults lose one job or more	**.74**	.07	-2.99	.003
Reference person's wage from primary job decreases	**1.21**	.04	5.16	0
Reference person's wage from secondary job decreases	1.11	.09	1.30	.195
Spouse's/partner's wage from primary job decreases	1.11	.05	2.19	.029
Spouse's/partner's wage from secondary job decreases	**1.45**	.14	3.84	0
Other adults'wages decrease	**1.27**	.07	4.23	0
Share of working adults in household decreases	**1.48**	.11	5.48	0
Number of observations	82,419	NA	NA	NA

Numbers in red bold = Significant at the 0.001 level. Numbers in black bold = Significant at the 0.010 level. NA = Not applicable.

Source: U.S. Department of Commerce, U.S. Census Bureau, 1996 panel of the Survey of Income and Program Participation.

Many more trigger events were significant in the entry model than in the exit model (eight versus three). The trigger events that significantly and positively affected the odds of entry into eligibility were a change from a married household to single female-headed household; a reduction in total household hours worked; a reduction in the wages of the reference person, the spouse, and other adults; and a reduction in the share of working adults in the household. A negative, significant trigger was the departure of a subfamily, suggesting that subfamilies represented more of a financial burden than a support. The other negative, significant trigger was an increase in the number of jobs held by other adults in the household, again showing the importance of multiple income sources. The trigger with the largest odds ratio was the change from a married household to one headed by a single female (3.09), which was much higher than in any other in the model. The next highest two ratios were the reduction in total household hours worked (1.54) and the decrease in the share of working adults in the household (1.48).

How do the results differ over shorter periods? The model results had very few differences across the different periods: 12 months, 8 months, and 4 months (table 9). The two trigger events in the 48-month sample that were negative and significant—the departure of a subfamily and the loss of jobs by

other adults—were no longer significant in the shorter term models. The change was small in the ranking of trigger event effects over time. As the sample period got shorter, the odds ratio for the change from a single female-headed household to a married household decreased. The odds ratio for the change in total household hours worked increased. The odds ratios for the other three trigger events changed slightly, but not as markedly in one direction or the other.

Table 9. Logit Estimates of the Determinants of NSLP eligibility Entry, periods 1-4

Variables	Odds ratio	Standa-rd error	*z*	*P>z*
Characteristics:				
Log of time	**0.33**	0.01	-35.65	0
State unemployment rate	1.00	.01	-.03	.979
Number of working adults per household member	**.36**	.04	-8.47	0
Number of school-age children	**1.06**	.02	3.07	.002
Number of jobs held by household reference person	**.93**	.03	-2.74	.006
Number of jobs held by spouse of reference person	.93	.03	-2.34	.020
Number of jobs held by other adults	**.78**	.02	-10.42	0
Tenure of household reference person	1.00	.00	.24	.807
Tenure of spouse or partner	1.00	.00	1.62	.104
Tenure of other adults	1.00	.00	.49	.621
Education of reference person	**.88**	.01	-7.99	0
Education of spouse	**.87**	.02	-7.47	0
Black/non-Hispanic reference person	**1.23**	.05	4.59	0
Hispanic reference person	1.11	.05	2.24	.025
Native American reference person	1.29	.14	2.40	.016
Asian reference person	1.04	.09	.43	.667
Disabled reference person	1.07	.06	1.23	.217
Disabled spouse or partner	.93	.07	-1.08	.279
Disabled other adults	.88	.06	-1.98	.048
Subfamily shares household	.95	.06	-.89	.374
Household receives public assistance	1.13	.07	2.02	.043
Single female-headed household	.93	.06	-1.23	.217
Single male-headed household	**.79**	.06	-3.20	.001
Group home household	.76	.31	-.67	.503
Triggers:				
Public assistance lost	1.07	.12	.55	.582
Reference person becomes disabled	.93	.10	-.64	.522
Married female becomes single household head	**2.47**	.64	3.47	.001
Child joins household	.98	.10	-.22	.827
Subfamily leaves household	.52	.14	-2.47	.014

Household's total hours worked decrease	**1.74**	.06	17.41	0
Reference person loses one job or more	.84	.12	-1.20	.232
Spouse/partner loses one job or more	.79	.13	-1.49	.136
Other adults lose one job or more	.72	.10	-2.47	.013
Reference person's wage from primary job decreases	**1.16**	.06	3.02	.003
Reference person's wage from secondary job decreases	1.10	.11	.94	.349
Spouse's/partner's wage from primary job decreases	1.06	.07	.86	.391
Spouse's/partner's wage from secondary job decreases	**1.41**	.18	2.74	.006
Other adults'wages decrease	**1.30**	.10	3.58	0
Share of working adults in household decreases	1.08	.12	.75	.452
Number of observations	34,405	NA	NA	NA

Numbers in red bold = Significant at the 0.001 level. Numbers in black bold = Significant at the 0.010 level. NA = Not applicable.

Source: U.S. Department of Commerce, U.S. Census Bureau, 1996 panel of the Survey of Income and Program Participation.

Overall, according to results from the exit and entry models, the most important short-term catalyst is a change in total household hours worked. Changes in hours worked is consistently significant in all of the models, increasing in value in the entry model as the period gets shorter and being the larger of only two triggers that are significant in the shortest exit model. The other trigger event significant in both models is a change in the share of working household members (as well as the static share). The robust significance of these two events in both models points to the relative importance of changes in total labor market participation at the household level as opposed to changes in labor market participation by a particular household member or changes in household composition in determining household income volatility. The one exception is the household composition change of moving from married to single status for mothers, which was an important determinant of entering eligibility, more so when looking at the question over a longer period.

In the entry models, the change from being a married household to being a single female-headed household had a much larger odds ratio than the change in hours, making it arguably more important even though its value declines in each shorter period model. But it had no parallel effect in the exit model. Could it be that changing marital status has an asymmetric effect on economic well-being? Getting married does not appear to help single mothers exit NSLP eligibility, but becoming single appears to contribute to entry. One explanation for this asymmetry could be that marriage does not necessarily imply that both

married partners work in the labor force. One member may choose to stay home to care for the children, which may cause the household to remain in a low-income status. Another explanation could be that the pools of women in the two categories are different enough that we should not necessarily expect the same results. The women who have been single also may be less educated and poorer than those who have been married. They also may have fewer potential marriage partners who could sufficiently raise their standard of living. As just noted, the infrequency of both of these events in the data makes it difficult to accurately estimate their effects, but it is interesting that one estimate would be stronger than the other.

In the entry models, decreases in the wages of all household members also were important triggers. The effects declined somewhat in shorter periods but not by much. In the exit models, only the spouse's wage increases were significant. These results point to the greater importance of wages overall and somewhat to "who" gets the pay increase. The exit results suggest that, for the household to exit eligibility, the wage of the second earner and changes to it are critical. This outcome is consistent with the explanation about the asymmetric results for marital status changes for women; whether the spouse works or not in a married family may make or break the family's eligibility status. We do not see the mirror effects in the exit models, but in general, wage changes matter in both models.

NSLP Eligibility and Income Volatility

In this section, we examine the effects of income volatility on eligibility under the pre-2004 rules for eligibility in the NSLP. We describe the basic features of the program, review the literature on the overcertification issue, and present the analysis, using SIPP, of income volatility effects on eligibility.

NSLP Administrative Procedures

We briefly describe NSLP administration, procedures for application, certification, verification, and recent changes made in the Child Nutrition and WIC Reauthorization Act of 2004.

Administration

The program is administered at the Federal level by USDA's Food and Nutrition Service (FNS) and at the local level by School Food Authorities (SFAs), which roughly cover school district areas. FNS is responsible for coordinating policy at the Federal level, providing technical assistance, and managing the work of the State agencies. USDA provides cash subsidies, as well as agricultural commodities. The State agencies are operated by either State departments of education or agriculture. In some cases, the program is administered locally by FNS regional offices. The State agencies operate the program through agreements with local SFAs and are responsible for managing fiscal elements of the program, monitoring SFA performance, and providing SFAs with technical assistance. SFAs administer NSLP at the local level. They process applications, certify students as eligible, verify eligibility, and maintain program data.

The program rules and regulations that are not stipulated by Congress in the National School Lunch Program Act (NSLA) are determined by USDA. For good stewardship of public funds, USDA strives to balance its goals of ensuring access to intended beneficiaries and maintaining program integrity. Access is compromised if the application requirements deter eligible students from participation, and integrity is compromised if students obtain benefits for which they are not eligible. With limited budget resources, USDA needs to meet these goals with reasonable and efficient administration.

Application and Certification

All children in participating schools can purchase an NSLP lunch at full price, and some qualify for reduced-price or free lunches. A student is certified as eligible for a free meal if his or her household income is at or below 130 percent of the Federal poverty guideline. The student is eligible for a reducedprice meal if household income is between 130 percent and 185 percent of the poverty guideline. If a student's household receives assistance from FSP, TANF, or FDPIR, the student is "categorically eligible" for free lunch benefits. Alternatively, a student may be certified for a free meal through "direct certification," by which the SFAs work with their State's FSP, TANF, and FDPIR agencies to directly identify beneficiaries of these programs. Homeless, migrant, and runaway students are also categorically eligible. They may be directly certified for free meal eligibility once an appropriate local authority has identified them as meeting the relevant criteria.

Households are not required to provide documentation of their income with their applications, though an adult must sign a statement affirming that

the information provided is correct. This self-reporting feature of the NSLP application has advantages and disadvantages. One advantage is that it lowers the burden on households of preparing an application. Another advantage is that it reduces the administrative burden to the SFAs of collecting and reviewing documentation that accompany an application. Self-reporting has the disadvantage of allowing for inaccuracies on the application, whether deliberate or unintentional.

Verification

In an early effort to detect and discourage reporting errors, Congress passed a law in 1981 requiring SFAs to verify the NSLP eligibility status of a sample of their beneficiaries. SFAs were required to reevaluate the eligibility status of a small sample of their approved applicants by December 15 each year. Sampled households were asked to provide documentation for the income they originally reported. Under the new law, SFAs must verify eligibility by November 15, and they can accept proof of income at any time between when the application was submitted and when the verification is conducted.

The new law combines methods formerly used for verification in a way that increases the administrative duties of the SFA but that should make verifications more effective. Previously, SFAs were able to choose between two verification methods: random sample or focused sample. Using the random sample, SFAs verified 3 percent of all approved applications or 3,000 applications, whichever was less. Those applications were selected at random from all approved applications on file. Using the focused sample, they verified fewer applications but focused on more error-prone ones. Specifically, they verified 1 percent (or up to 1,000 applications) selected from applications in which income was within $100 of the eligibility limit. In addition they verified 500 applications (or 0.5 percent if smaller) of those who received food stamps, TANF, or FDPIR.

Under the new law, the methods are combined: The SFA must verify the incomes of 3,000 applications (or 3 percent if smaller) from those with income within $100 of the eligibility limit. If there are not enough of these families to meet the sample size requirement, the SFA can add households randomly selected from all approved applications. These changes increase the administrative burden for SFAs because either they have to conduct more verification reviews if they were using the focused sample or they have to institute procedures for identifying the error-prone households if they were using the random sample. An SFA can qualify to continue following the prior

rules if it receives responses from 80 percent or more of the households selected for verification or if a large SFA increases its response rate by more than 10 percent (see Neuberger, 2004, for more detail).

The households sampled in the verification process are asked to provide documentation of their total household income to the SFA. Based on the documentation provided, SFAs reassess the household's eligibility and may increase, reduce, or eliminate benefits. Benefits are also eliminated for families that do not provide documentation. Under the new rules, the SFA must conduct one followup attempt if they do not receive a reply to their first request for information in the verification process. Families that lose benefits may reapply if they provide the documentation or if they become eligible at a later date.

Studies on NSLP Overcertification Errors

Studies of NSLP error rates and potential sources of error have played an important role in the issue of overcertification rates. A few influential studies in the late 1990s were the first to suggest that there was a problem. In the early 2000s, more in-depth studies focused on the problem. An "error" as typically defined and measured in most of these studies refers to "overcertification" error, or the misclassification of students who receive benefits for which they were not eligible. This misclassification includes children who may have been certified for a free lunch but were found to be eligible for reducedprice lunches. It does not include children who should have been certified for free or reduced-price meals but were mistakenly denied certification.

FNS has sponsored several studies on NSLP program integrity. One of the earlier studies covered the 1986-87 school year and estimated that 15 percent of certified households were ineligible (St. Pierre et al., 1990).[12] The report compiled and summarized findings from a nationally representative sample of SFA verifications. In 1997, USDA's Office of Inspector General audited Illinois schools for 1994-95 and 1995-96 and found that 19 percent of students had their benefits reduced or terminated at the time of verification (USDA, OIG, 1997). This percentage included households that had not responded to the verification request.

Another FNS study used Current Population Survey (CPS) data to compare NSLP eligibility and participation during 1993-97 (USDA, FNS, 1999). The study estimated the number of NSLP-eligible households from CPS survey data and compared the estimate with administrative data on the

number of households actually certified for free or reduced-price meals. FNS found that more households were certified for benefits than the CPS data showed to be eligible. It also found that the number of NSLP-certified households rose over the period while the estimates of eligible households fell. This divergence was greater for free lunch beneficiaries than for reduced-price beneficiaries. The number of households certified for free lunches went from 99 percent of households estimated to be eligible for free lunches in 1993 to 127 percent in 1999. For free and reduced-price lunch benefits combined, the differences went from 82 percent to 102 percent. CPS, however, collects only annual income data, whereas the NSLP uses monthly income, and the CPS covers a calendar year rather than a school year.

Neuberger and Greenstein (2003) used more detailed data and found different results than the 1999 FNS study did. They used SIPP monthly income data rather than annual income data to estimate program eligibility and compared certification and eligibility data from the same periods. They reported that, for the 1998 school year, using August or September 1998 income, 2.7 million more children were eligible for free meals than were eligible using annual income data for the following year. Only 2 percent more families received free lunches than were estimated to be eligible. For combined reduced-price and free lunches, however, 15 percent fewer families were certified compared with those estimated to be eligible.[13]

Short-term income volatility was predicted to be an important determinant of NSLP eligibility dynamics in a 1992 study of household NSLP eligibility by Robert St. Pierre and Michael Puma. Their study was addressed to policymaker concerns from the early 1980s that misreporting in applications was a significant problem (akin to the recent concern). They found that misreporting was lower than expected, estimated to be about 4.8 percent per year and that the incidence of misreporting was smaller than changes resulting from income and household composition changes, estimated to be about 3 percent per month over the year.

Over the last 3 years, FNS has sponsored a series of new studies by Mathematica Policy Research, Inc. (MPR), on certification errors. One MPR study assessed the verification results from a sample of 21 large metropolitan SFAs by collecting data from households and comparing that data with the verification results (Burghardt et al., 2004a). They found that just over one-half of households that had not responded to the December verification were eligible for the level of benefits they had received or for a higher level of benefits. They also found that 26 percent of households that had been certified

for free meals but that did not respond to the verification request were eligible for reduced-price meals.

More than three-fourths of the households that were re-approved for benefits (after having been dropped for nonresponse) were re-approved for the same level of benefits they had received before or for a higher level of benefits. One-third of the households whose status was verified as unchanged were no longer eligible for the benefits received by the time of their interview in February or March 2003. Burghardt et al. estimate that as much as 30-40 percent of the differences between household eligibility status from the time of verification to the time of their survey data could be explained by changes in household income or household composition.

Another recent MPR study used nationally representative school administrative data along with SIPP data to analyze the impacts of direct certification (Gleason et al., 2003). They estimated the rate of ineligibility among certified students resulting from the two main certification processes, direct certification and the regular application process. They found that, for the average school district, the share of ineligible students in December was 12-20 percent. The lower rate was based on the assumption that families that did not respond to the verification request were eligible, and the higher rate was based on the assumption that they were not. Because the error rates were significantly higher in large districts, Gleason et al. also estimated error rates for all certified students. They found that the error rate for all certified students was 12-33 percent. Bear in mind that an error rate at either end of this range is implausible. The study of the verification process in large SFAs showed that half of the households that do not respond to the verification request are eligible. The actual error rate likely lies somewhere near the middle of this range (around 23 percent).

Two studies by MPR also evaluated FNS-sponsored pilot projects that used upfront documentation of income and additional household verifications to address the issue of certification accuracy. Burghardt et al. (2004b) found that neither piloted method significantly affected overall certification accuracy but that both methods deterred eligible families and effectively raised application barriers to eligible families. Their overall estimate of certification error was 18 percent, meaning that 18 percent of the students who were certified as eligible for free meals were not eligible for free meals, although about two-thirds of those were eligible for reduced-price meals. Hulsey et al. (2004) found that the two piloted methods significantly increased administrative error rates.[14]

Income Changes Likely to Be Detected at Verification

Next, we examine the possible effects of volatility on verification findings. The purpose is to identify the extent to which income volatility can account for the magnitude of verification error rates identified in previous studies under the regulations in effect at that time.

Under the provisions in effect before the new law, how many of the households eligible in August were still eligible for the same benefits in subsequent months? We look separately at 3 school years, 1996-97, 1997-98, and 1998-99, to see if the pattern was typical or not. In this section, we look at eligibility for free and reduced-price lunch, both together and separately. We combine them for reasons previously discussed, and we separate them in order to understand how much of the changes in status that resulted from verification were due to changes across these categories. We report the results using both the unadjusted data and seam-bias-adjusted data.

As just stated, these results do not take into account possible household choices about whether to apply for the program or not given their income situation, so the results represent solely the effect of income volatility if all incomeeligible (at the time of application) households participate. Additionally, the analysis does not identify households that were NSLP-certified at that time and we assume that all eligible households at the start of the year were correctly certified. Thus, the analysis examines the extent to which income volatility for eligible households alone can account for overcertification.

The first question we address is: How many households eligible in August for either a reduced-price or free lunch were ineligible for either by the next month, September, due to an increase in income relative to poverty that raised the household above 185 percent? How many of them were ineligible in the following months of the school year? Households can become eligible again in this counting framework—that is, households that become ineligible in 1 month are not excluded from the sample. Given the number of changes in eligibility we saw earlier, some households are known to be cycling in and out of eligibility status over the course of a year (tables 10, 11, and 12).[15]

Each of tables 10, 11, and 12 shows estimates from a different school year of the share of initially eligible households that are ineligible in each subsequent month of the school year. The tables report both the estimates and their respective 95-percent confidence intervals. December is highlighted to identify what share of initially eligible households were ineligible as of the final month of verification.

The unadjusted data for the 1996-97 school year show that 15.6 percent of the initially eligible households were ineligible as of September and that 21.2 percent of them were ineligible as of December (table 10). The September data for 1997-98 and 1998-99 were 13.9 percent and 8.7 percent, and the December data for 1997-98 and 1998-99 were 19.2 percent and 17.9 percent (tables 11 and 12). These estimates, however, are subject to artificial inflation from the possibility of seam bias.

Table 10. Share of Households That Were Eligible for NSLP in August but Ineligible After August, 1996-97 School Year

	No adjustment		Seam-adjusted data	
Month	**Ineligible households**	**95-percent confidence interval**	**Ineligible households**	**95-percent confidence interval**
	Percent			
September	15.6	14.4-16.9	13.7	12.5-14.9
October	14.4	13.2-15.6	12.9	11.8-14.1
November	19.0	17.7-20.3	17.6	16.3-18.9
December	***21.1***	***19.7-22.4***	***19.5***	***18.2-20.9***
January	20.7	19.4-22.1	20.3	18.9-21.6
February	22.8	21.4-24.3	22.1	20.7-23.5
March	23.2	21.8-24.7	23.0	21.6-24.4
April	21.9	20.5-23.3	22.2	20.8-23.6
May	22.4	21.0-23.8	23.1	21.7-24.6
June	26.3	24.8-27.7	25.9	24.4-27.4
July	22.7	21.3-24.2	23.3	21.8-24.7

Source: U.S. Department of Commerce, U.S. Census Bureau, 1996 panel of the Survey of Income and Program Participation.

Note: December figures are highlighted because December is when certification errors are likely to be caught.

When we use adjusted income data, we see that, as expected, the share of households that became ineligible is lower month-by-month than in the unadjusted data.[16] The data for September for the 3 consecutive school years were 13.7 percent, 11.8 percent, and 7.2 percent, plus or minus 1 or 2 percentage points when including the possible range of values in the 95-percent confidence intervals. The data for December for the 3 school years were 19.5 percent, 18.4 percent, and 16.8 percent, plus or minus 1 or 2

percentage points when including the possible range of values in the 95-percent confidence intervals.

Table 11. Share of Households That Were Eligible for NSLP in August but Ineligible After August, 1997-98 School Year

Month	No adjustment		Seam-adjusted data	
	Ineligible households	95-percent confidence interval	Ineligible households	95-percent confidence interval
	Percent			
September	13.9	12.3-15.4	11.8	10.4-13.3
October	14.3	12.7-15.9	13.1	11.6-14.7
November	22.2	20.3-24.1	21.1	19.3-23.0
December	***19.2***	***17.4-21.0***	***18.4***	***16.7-20.2***
January	20.9	19.1-22.8	19.8	18.0-21.6
February	24.5	22.6-26.5	23.8	21.8-25.7
March	21.9	20.0-23.8	21.6	19.7-23.4
April	22.2	20.3-24.1	22.0	20.2-23.9
May	23.9	21.9-25.8	23.5	21.6-25.4
June	25.7	23.8-27.7	25.3	23.4-27.3
July	23.2	21.3-25.1	23.2	21.3-25.1

Source: U.S. Department of Commerce, U.S. Census Bureau, 1996 panel of the Survey of Income and Program Participation.

Note: December figures are highlighted because December is when certification errors are likely to be caught.

What about the error related to households eligible for free lunches becoming eligible for only reduced-price lunches by December? This change in eligibility is considered an overcertification error because it entails an unwarranted payment of benefits. Results from the adjusted income series show that, in the 1996-97 school year, 9.4 percent of households that were eligible for free lunches in August were eligible for only reduced-price lunches by December (table 13). In the next 2 years, the share was 8.2 and 7.9 percent.

Combining the two types of errors that would lead to a benefit reduction or termination in December verifications under the old law, we estimate overcertification error for the 3 school years at 28.9, 26.6, and 24.7 percent, or an average of 27 percent. These estimates are notable when compared with the estimates of errors found in December verifications discussed in the literature

review. Our estimate of ineligibility due to an income volatility of 27 percent constitutes 82 percent of the high-end estimate of total error of 33 percent among students as estimated by Gleason et al. (2003) (which is considered unrealistic because it assumes all nonrespondents are ineligible). Our estimate would more than explain the lower estimate of total error of 12 percent by Gleason et al., as well as estimates from other studies of 15-19 percent. Given that we do not estimate the effects of participation or certification that income volatility might also affect, this estimate may be upwardly biased. We conclude that income volatility by itself can possibly account for a large amount of overcertification error rates found in previous studies, though the precise amount is unknown.

Table 12. Share of Households That Were Eligible for NSLP in August but Ineligible After August, 1998-99 School Year

	No adjustment		Seam-adjusted data	
Month	**Ineligible households**	**95-percent confidence interval**	**Ineligible households**	**95-percent confidence interval**
	Percent			
September	8.7	7.7-9.7	7.2	6.3-8.1
October	13.1	11.9-14.3	11.1	10.0-12.2
November	18.6	17.2-20.0	17.0	15.7-18.3
December	***17.9***	***16.5-19.2***	***16.8***	***15.5-18.1***
January	19.1	17.7-20.4	19.0	17.7-20.4
February	20.3	18.9-21.7	20.0	18.6-21.4
March	19.5	18.1-20.9	18.8	17.4-20.2
April	20.9	19.4-22.3	20.6	19.2-22.0
May	24.3	22.8-25.8	23.8	22.3-25.3
June	22.7	21.2-24.1	22.5	20.1-24.0
July	23.8	22.3-25.3	23.6	22.1-25.1

Source: U.S. Department of Commerce, U.S. Census Bureau, 1996 panel of the Survey of Income and Program Participation.

Note: December figures are highlighted because December is when certification errors are likely to be caught.

Tables 10-13 reveal an interesting temporal pattern in the changes over time of the share of households that are ineligible.[17] The share typically increased with each passing month, but the rate of increase diminished over time. Although the share of households ineligible for any benefit grew from zero in August to about 18 percent by December, after 4 more months, the share of

ineligible households increased to only around 23 percent by the end of the school year. Similarly, households that went from free-lunch eligible to reduced-price eligible hit a maximum of 1-2 percentage points higher than the December figures in the subsequent spring and summer months. This pattern can be understood by remembering that only part of the population is significantly changing eligibility status over the course of a year, and they are the ones likely to be still changing (compared with their status in August) at the end of the year. The bulk of the changes that occur earlier include the households that experience one change in status, especially those close to the eligibility limit, some of which may have steady State incomes just above the limit.

Table 13. Share of Households That Changed Eligibility Status for Free and Reduced-Price Lunches After August, 1996-97, 1997-98, and 1998-99 School Years[1]

	1996-97, eligibility after August from:		1997-98, eligibility after August from:		1998-99, eligibility after August from:	
Month	**Free to reduced-Price lunches**	**Reduced-price to free lunches**	**Free to educed-Price lunches**	**Reduced-price to free lunches**	**Free to educed-price lunches**	**Reduced-price to free lunches**
	Percent					
September	7.2	3.6	6.9	4.4	4.5	7.1
October	6.8	6.1	6.0	5.6	7.1	8.1
November	8.9	6.2	9.1	5.3	8.2	6.7
December	***9.4***	***7.6***	***8.2***	***7.1***	***7.9***	***9.3***
January	9.2	8.2	8.3	7.1	9.2	9.4
February	10.9	8.4	9.4	6.5	10.1	8.5
March	10.3	8.0	7.7	8.4	9.3	9.9
April	10.1	8.2	8.7	8.4	10.5	9.2
May	10.1	7.9	9.2	7.1	11.0	8.2
June	11.3	7.0	9.6	7.0	9.9	9.0
July	10.8	7.3	9.1	8.0	10.6	8.9

Source: U.S. Department of Commerce, U.S. Census Bureau, 1996 panel of the Survey of Income and Program Participation.

Note: December figures are highlighted because December is when certification errors are likely to be caught.

[1] Based on seam-adjusted data.

Table 14 shows how changes in a household's month-to-month eligibility status differ by its original eligibility status—reduced-price or free lunch—using the adjusted data. Most of the households that became ineligible in the months immediately after August had been eligible for the reduced-price lunch. For example, in the 1996-97 school year, 80.3 percent of households that were ineligible in September were households that had been in the reduced-price-meal category in August. In the other years, 79.3 and 70.0 percent of households that were ineligible in September had been eligible for the reduced-price lunch the month before. The preponderance of reduced-price households among the households that crossed the 185 percent income threshold is logical because these households were closest to the threshold. The share of reduced-price-eligible households among subsequent ineligible households declined continuously with each month. By December, the share was about three-fifths. By July, the share was about half.

Another type of error occurs when the household is not provided extra benefits to which they are entitled after an income change. Instead of measuring the share of households going from free-lunch to reduced-price eligibility, we measure the share of households going from reduced-price to free-lunch eligibility. In practice, these households may have applied for the increased benefits, in which case, they have not been underpaid at all. However, for illustration, table 13 also shows the possible extent of underpayment of free lunch benefits to those receiving reduced-price lunches. This type of error appears to be slightly smaller than the free to reduced-price direction of error in general. For example, 3.6 percent of households eligible for reduced-price lunches in August became eligible for free lunches in September compared with 7.2 percent of households moving from freelunch eligibility to reduced-price eligibility. However, in several months, the differences were reversed. In 1998-99, 7.1 percent of households moved from free-lunch to reduced-price eligibility compared with 4.5 percent of households moving from free-lunch to reduced-price eligibility.

Income dynamics can also bring households that are ineligible in August into eligibility during the school year. Because December serves as a useful benchmark, table 15 again highlights the December data. The adjusted data show that, in 1996-97, 5.2 percent of households that were ineligible in August for either benefit were eligible for free lunches in December and 3.2 percent were eligible for reduced-price lunches. The share rose slightly over the school years for households becoming eligible for free lunches as of December: 5.9 percent in 1997-98 and 6.5 percent in 1998-99. The share declined slightly for households becoming eligible for reduced-price lunches: 2.9 percent in 1997-

98 and 2.7 percent in 1998-99. Many households that were not certified at the start of the school year experienced income or household composition changes that changed their eligibility status within a few months (table 15). The largest change in the share of eligible households occurred in the first month, mirroring the changes from eligible to ineligible status just analyzed.

Table 14. Share of Households That Were Eligible for Free or Reduce-Price Lunches in August but Ineligible for Either After August, 1996-97, 1997-98, and 1998-99 School Years[1]

	1996-97, ineligible after August for either, had been eligible for:		1997-98, ineligible after August for either, had been eligible for:		1998-99, ineligible after August for either, had been eligible for:	
Month	**Reduced-price lunches**	**Free lunches**	**Reduced-price lunches**	**Free lunches**	**Reduced- price lunches**	**Free lunches**
	Percent					
September	80.3	19.7	79.3	20.7	70.0	30.0
October	66.0	34.0	63.7	36.3	60.8	39.2
November	65.9	34.1	64.9	35.1	58.5	41.5
December	***61.7***	***38.3***	***59.6***	***40.4***	***57.2***	***42.8***
January	58.0	42.0	60.1	39.9	57.0	43.0
February	58.4	41.6	60.5	39.5	54.6	45.4
March	56.9	43.1	57.2	42.8	53.5	46.5
April	55.8	44.2	55.7	44.3	54.5	45.5
May	55.4	44.6	55.0	45.0	54.5	45.5
June	56.1	43.9	54.5	45.5	51.8	48.2
July	52.4	47.6	54.0	46.0	52.7	47.3

Source: U.S. Department of Commerce, U.S. Census Bureau, 1996 panel of the Survey of Income and Program Participation.

Note: December figures are highlighted because December is when certification errors are likely to be caught.

[1] Based on seam-adjusted data.

Annual versus Monthly Eligibility Determination

SFAs use monthly income most often to determine household eligibility at the time of application. This was the case under the old rules and still is under the new rules. Households apply for program benefits based on 1 month of

income under the tacit assumption that monthly income is a good predictor of annual income. Is 1 month of income a good predictor of annual income? One would imagine that its power as a predictor would decline the more variable it was over the year. To explore the power of 1 month of income as a predictor in the context of NSLP eligibility, we compare estimates of eligibility by using August income alone and estimates of eligibility based on annual income reported in the following months of the school year (using adjusted data). We do not think that August has any particular seasonal properties; any single month's income would provide similar results. We look at the share of households that qualify for various categories: (1) the two categories of eligible or ineligible for any benefits, and (2) the three categories of free, reduced-price, and ineligible.

Table 15. Share of Households That Were Ineligible for Free or Reduce-Price Lunches in August but Eligible for One or the Other After August, 1996-97, 1997-98, and 1998-99 School Years1

	1996-97, eligible after August for:		1997-98, eligible after August for:		1998-99, eligible after August for:	
Month	**Free lunches**	**Reduced-price lunches**	**Free lunches**	**Reduced-price lunches**	**Free lunches**	**Reduced-price lunches**
	Percent					
September	2.6	1.0	3.5	1.0	5.0	0.8
October	4.0	2.1	4.5	1.6	5.2	1.3
November	4.3	2.3	3.8	1.8	4.3	1.7
December	***5.2***	***3.2***	***5.9***	***2.9***	***6.5***	***2.7***
January	5.8	3.8	5.9	3.4	5.7	3.4
February	5.7	3.7	5.2	3.8	6.2	3.9
March	5.3	4.7	6.4	4.7	7.5	4.2
April	6.3	4.9	6.5	4.7	7.2	3.9
May	6.2	5.0	5.8	4.5	5.9	3.9
June	5.3	5.1	5.8	4.5	6.7	4.7
July	6.0	5.2	6.2	4.9	6.7	4.7

Source: U.S. Department of Commerce, U.S. Census Bureau, 1996 panel of the Survey of Income and Program Participation.

Note: December figures are highlighted because December is when certification errors are likely to be caught.

[1] Based on seam-adjusted data.

Table 16 allows us to view the complete overlap of the two categories of eligibility determined by month and by year. Looking at the first section of the table that shows the cross-tabulations for August 1996 and the school year 1996-97, we see that the share of households eligible from the annual calculation is

33.8 percent. In contrast, the share of households eligible from the August (monthly) calculation is 29.9 percent, about 4 percentage points lower. Similarly, for the other 2 years, the August calculation is lower by about 3 percentage points in 1997-98 and by almost 5 percentage points in 1998-99.

Table 16. Monthly (August) Versus Annual Eligibility Determinations: Overlap Between the Two Determinations of Eligibility, 1996-97, 1997-98, and 1998-99 School Years

		Annual eligibility, 1996-97		
Month and year	**Monthly eligibility**	**Ineligible**	**Eligible**	**Total**
		Percent		
August 1996	Ineligible	*85.0*	*15.0*	*100.0*
		90.1	31.1	70.1
	Eligible	*22.0*	*78.0*	*100.0*
		9.9	68.9	29.9
	Total	*66.2*	*33.8*	*100.0*
		100.0	100.0	100.0
		Annual, 1997-98		
		Ineligible	**Eligible**	**Total**
		Percent		
August 1997	Ineligible	*86.6*	*13.4*	*100.0*
		90.5	29.4	70.7
	Eligible	*21.9*	*78.1*	*100.0*
		9.5	70.6	29.3
	Total	*67.6*	*32.4*	*100.0*
		100.0	100.0	100.0
		Annual, 1998-99		
		Ineligible	**Eligible**	**Total**
		Percent		
August 1998	Ineligible	*86.2*	*13.8*	*100.0*
		92.4	32.3	73.5
	Eligible	*19.6*	*80.4*	*100.0*
		7.6	67.7	26.5
	Total	*68.6*	*31.4*	*100.0*
		100.0	100.0	100.0

Italicized numbers highlight row frequencies, and unitalicized numbers highlight column frequencies.

Source: U.S. Department of Commerce, U.S. Census Bureau, 1996 panel of the Survey of Income and Program Participation.

Note: Annual income uses data from months July to June of each respective school year.

In 1996-97, of the households that were annually eligible, the monthly determination of eligibility counted 68.9 percent of them as eligible, whereas for the annually *in*eligible, the monthly determination was closer—it counted 90.1 percent of them as ineligible. Households with high incomes in August tended to have high incomes throughout the school year. Italicized numbers in table 16 show the results of analyzing the monthly cross-tabulations. In 1996, 78 percent of households that were eligible in August were also annually eligible; 85 percent of households that were ineligible in August were also annually ineligible. The single-month determination appears to be better at capturing annually ineligible than annually eligible households. The same pattern was repeated in the other 2 years.

How does the August determination compare with the annual determination of eligibility when we look at the three categories of ineligible, reduced-price-eligible, and free-eligible? As in the two-category case, the monthly determination classifies a higher share of the whole population as ineligible than as eligible for the free and reduced-price categories (see app. table 3).

This analysis shows that income from a single month tends to overestimate annual income for households with children. Perhaps this overestimation is attributable to the higher relative volatility of low-income households: Households with greater volatility (even if only relative) may be more likely to cross the threshold of eligibility and be "caught" on the ineligible side when 1 month's income is used to determine eligibility. To the extent that households are not aware of their ability to apply for NSLP benefits throughout the year, using monthly income to determine eligibility could lead to a lower certification rate than that which would come from using annual income, which more accurately matches the certification period of a year. This outcome suggests that it is important for schools to emphasize to families that they can apply for benefits at any time of the school year.

CONCLUSIONS

In this study, we found that income volatility among households with children could cause frequent shifts in food assistance program eligibility. We used the 1996 panel of the Survey of Income and Program Participation. We started by testing the notion that lower income households have more volatile incomes than higher income households do. For a measure of volatility, we

used the coefficient of variation rather than the standard deviation of a household's monthly income in order to provide a scaleindependent measure of variation. We found that relative income volatility decreased as income increased. That is, monthly incomes of higher income households showed smaller changes relative to their means than those of lower income households. The relative income volatility of households with incomes below 75 percent of poverty was double the magnitude found for households with incomes above 300 percent of poverty.

Monthly incomes of families with children were clustered around 130-185 percent of the poverty line; the most frequently reported category of the household income distribution was between the two thresholds for NSLP free and reduced-price lunch eligibility. Thus, small changes in monthly income for these large groups of households could produce a high frequency of overall changes in monthly eligibility status. To examine changes in monthly eligibility status, the analysis combined the free and reduced-price lunch categories and examined how many times households crossed the 185-percent threshold in a year. Most households did not experience a change in their eligibility status during the school year. Only onethird (31 percent) of households had one or more transitions from eligibility to ineligibility or vice versa. However, that result is driven by including higher income households for which the chances are relatively small of dropping below the 185-percent threshold. Among those lower income households with income below 185 percent of poverty in at least 1 month, two-thirds (65 percent) had one or more transitions, and one-fifth (21 percent) had three or more transitions.

Not surprisingly, we also found that households closest to the eligibility income cutoff point of 185 percent of poverty experienced more eligibility changes per year. Households with children whose average monthly income (across the survey) fell between 130 percent and 240 percent of poverty crossed the eligible line five times per year on average. Altogether, this analysis of eligibility transitions shows that schools would be changing the eligibility status of numerous households throughout the school year if households faithfully reported income changes and schools reexamined the eligibility status of these households.

In order to estimate the main sources of eligibility changes, we conducted bivariate and multivariate analysis of income change events (or "triggers") that might lead to eligibility change. For the multivariate analysis, we estimated a hazard model of entry into NSLP eligibility and another hazard model of exit from NSLP eligibility. In the models, we included static characteristics of households and triggers of economic and household changes. We estimated

entry and exit models using periods of different lengths in order to understand which triggers may be more important for shorter periods versus longer periods. However, we did not find large differences in the kinds of triggers that were statistically significant between the shorter and longer period models.

In both the exit and entry models, the most important triggers were changes in the total household hours worked in a month and changes in the share of working adults in the household. We obtained the standard results with respect to the static household-level determinants that one would expect in a model of poverty dynamics. For example, higher education levels led to higher chances of exit from eligibility, and households with Black, Hispanic, or Asian reference people were less likely to exit compared with those with White reference people. Corresponding results were obtained for the entry model.

In the entry model, the event that had the highest odds of triggering entry into eligibility was for a woman to become divorced, separated, or widowed. But the opposite event of a female head of household getting married did not lead to exit from eligibility—an asymmetry of effects that could be explained in at least two ways. A married woman may choose not to work outside the home and instead focus on child care or other unpaid domestic work, thus not adding earned income to household income. Or the women in these two groups possibly are not demographically similar enough for us to expect a symmetric effect of marital status change; the marriage "markets" and other economic circumstances may be quite different among women who go from being single to being married and vice versa. Pay cuts for all household members were important triggers for entering eligibility, but only increases in spouses' wages were important for exiting eligibility. An explanation for this result could be that, when the pay rates of spouses increase, the extra earnings to the household provide a critical route out of low-income status.

We then turned to the question of the impact of income volatility on NSLP certification errors. For the 3 school years that are in the 1996 SIPP panel, we traced over the next 12 months the income changes of households that would be eligible in August, based on income criteria alone (under the old rules), to count the share of households that were ineligible for benefits received in any given month. We counted changes to eligibility for any benefit as well as changes from free-lunch eligible to reduced-price eligible, which is the standard type of error that has raised concern. We found that up to one-fifth of households that were eligible in August became ineligible right away in September: 21 percent in 1996-97, 19 percent in 1997-98, and 12 percent in

1998-99. In all 3 years, the share of August eligibles that were ineligible increased through December: 29, 27, and 25 percent in each school year in turn. These shares constitute this study's estimates of households that were ineligible by December due to changes in income alone. We also found that the majority (57-60 percent) of those that were ineligible in December were households that had been eligible for reduced-price lunch.

In the literature on certification errors, estimates of overcertification differ widely. The estimated range of 12-33 percent error found by Gleason et al. (2003) provides a benchmark of two estimates at the extremes. Earlier studies found verification error rates in the range of 15-19 percent. Our estimate of overcertification in December due to income volatility alone of 27 percent is higher than most estimated overcertification error rates. (See table 17 for a summary list of estimates from other studies.) However, an important qualifier to these results is that we had to assume that there was no interaction between income volatility and household or school administration behavior. These results assume all households participate if eligible and that all certifications are made correctly. Thus, the results may be overstated to the extent that there are, in reality, important interactions that we have not considered. We conclude that income volatility has the potential to explain a large portion of NSLP overcertification error but that the exact amount is unknown.

Next, we looked at the question of how well monthly income predicts eligibility if eligibility were determined by annual income. We found that a certification process that uses a single month's income produces systematically fewer eligible households than a certification process that uses annual income. The differences in matching were largest for reduced-price-eligible households. A monthly determination of reduced-price eligibility was less likely to match an annual determination of reduced-price eligibility than it was to match free-lunch eligibility. A monthly determination was more likely to correctly match ineligible households than to match reduced-priceor free-lunch-eligible households. Overall, a single month's determination is more likely to err in the direction of ineligibility. Up to 5 percent of the annually eligible population was found to be ineligible when we used income from August.

The important insight from this exercise is that program accessibility is supported by the rule that families can apply for benefits throughout the school year. The importance of this policy is also suggested by the evidence on the frequency of eligibility changes that low-income families experience within a year. The policy is important to gaining full program accessibility.

Table 17. Comparison of Overcertification Estimates in the Literature

Year	Authors	Data	Estimates of overcertification rates
			Percent
1990	St.Pierre et al.	National school data	15
1997	USDA, Office of Inspector General	Illinois school data	19
1999	USDA, FNS	CPS	27[1]
2003	Neuberger and Greenstein	SIPP	2[1]
2004a	Burghardt et al.	21 large metro schools	17[2]
2003	Gleason et al.	National school data	12-33[3]
2004b	Burghardt et al.	FNS Pilot Data	181

[1] Measuring eligibility for free lunch only.

[2] This is of the total students verified, including the 50 percent who did not respond to verification.

[3] The low estimate assumes nonrespondents were eligible, and the high estimate assumes they were ineligible. (These error rates are based on the average student not the average school district because the error rates were found to be significantly higher in large districts.)

The Child Nutrition and WIC Reauthorization Act of 2004 extended NSLP eligibility through the school year. One implication of the new law is that the administrative responsibility and potential burden for schools to adjust eligibility status every month has been eliminated. Another direct implication is that income volatility will no longer affect NSLP eligibility. However, it remains an important issue to other USDA food assistance programs. The evidence here shows that income volatility is relatively more important for low-income households, and it is strongly linked to monthly changes in the characteristics of a household's labor force participation. To the extent that the USDA food assistance programs are to serve the needy, the volatility associated with low-income working households will become an increasing challenge to program administration.

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APPENDIX TABLE 1. COEFFICIENT OF VARIATION (CV) OF INCOME DATA: DISTRIBUTION OVER 1 YEAR BY AVERAGE MONTHLY INCOME-TO-POVERTY STATUS

	Unadjusted data					
Income-to-poverty status	**<0.75**	**0.75-1.30**	**1.30-1.85**	**1.85-2.40**	**2.40-3.00**	**>3.00**
Observations (number)	792	1,290	1,402	1,452	1,387	4,807
75th percentile	0.77	0.57	0.47	0.41	0.37	0.37
50th percentile (median)	.52	.39	.32	.28	.25	.24
25th percentile	.32	.26	.22	.20	.18	.17
Mean	.61	.44	.38	.33	.31	.31
Standard deviation	.45	.28	.26	.19	.24	.23
Interquartile range	.45	.31	.25	.21	.19	.20
	Adjusted data					
	<0.75	**0.75-1.30**	**1.30-1.85**	**1.85-2.40**	**2.40-3.00**	**>3.00**
Observations (number)	792	1,290	1,402	1,452	1,387	4,807
75th percentile	0.68	0.51	0.42	0.36	0.33	0.33
50th percentile (median)	.45	.34	.28	.25	.23	.21
25th percentile	.27	.22	.19	.17	.16	.15
Mean	.53	.39	.34	.29	.28	.27
Standard deviation	.40	.25	.23	.17	.22	.20
Interquartile range	.41	.29	.23	.19	.17	.18

Source: U.S. Department of Commerce, U.S. Census Bureau, 1996 panel of the Survey of Income and Program Participation.

Note: The average CV in each income-to-poverty status group is significantly different from the average CV of all the other groups combined, and each average CV is significantly different from the average CV in the following and preceding income to poverty groups. The differences are all significant at the 0.0001 level.

APPENDIX TABLE 2. CHANGES IN ELIGIBILITY STATUS BY HOUSEHOLD OVER 1 YEAR AND 3 YEARS

	A	B	C	D	E	F
	Over 1 year, 1996-97,		Over 1 year, 1997-98,		Over 3 years, 1996-99,	
Changes	**Including never-eligible households**	**Only once-eligible households**	**Only once-eligible households**	**Only once-eligible households**	**Including never-eligible households**	**Only once-eligible households**
	Percent					
0 changes	69	35	34	35	50	14
1 change	10	21	21	22	5	8
2 changes	11	23	23	22	14	23
3+ changes	10	21	22	21	32	54
	Number					
Observations	8,753	4,376	3,798	3,583	4,333	2,571

Source: U.S. Department of Commerce, U.S. Census Bureau, 1996 panel of the Survey of Income and Program Participation.

APPENDIX TABLE 3. MONTHLY (AUGUST) VERSUS ANNUAL ELIGIBILITY DETERMINATIONS: OVERLAP BETWEEN THREE DETERMINATIONS OF ELIGIBILITY, 1996-97, 1997-98, AND 1998-99 SCHOOL YEARS

		Annual eligibility, 1996-97			
Month and year	**Monthly eligibility**	**Ineligible**	**Reduced-price eligible**	**Free-eligible**	**Total**
		Percent			
August 1996	Ineligible	*85.0*	*5.8*	*9.2*	*100.0*
		90.1	34.7	29.3	70.1
	Reduced-price	*39.5*	*40.4*	*20.1*	*100.0*
	eligible	6.5	37.8	9.8	10.9
	Free-eligible	*12.0*	*16.8*	*71.2*	*100.0*
		3.4	27.5	60.9	19.0
	Total	*66.2*	*11.6*	*22.2*	*100.0*
		100.0	100.0	100.0	100.0
		Annual eligibility, 1997-98			
		Ineligible	**Reduced-price eligible**	**Free-eligible**	**Total**
		Percent			
August 1997	Ineligible	*86.6*	*5.6*	*7.9*	*100.0*
		90.5	32.6	27.5	70.7
	Reduced-price	*36.1*	*47.3*	*16.6*	*100.0*
	eligible	6.0	43.8	9.2	11.2
	Free-eligible	*13.2*	*15.7*	*71.1*	*100.0*
		3.5	23.7	63.4	18.1
	Total	*67.6*	*12.1*	*20.3*	*100.0*
		100.0	100.0	100.0	100.0
		Annual eligibility, 1998-99			
		Ineligible	**Reduced-price eligible**	**Free-eligible**	**Total**
		Percent			
August 1998	Ineligible	*86.2*	*6.4*	*7.4*	*100.0*
		92.4	40.4	27.5	73.5
	Reduced-price	*31.3*	*45.7*	*23.0*	*100.0*
	eligible	4.4	37.6	11.2	9.6
	Free-eligible	*12.9*	*15.3*	*71.8*	*100.0*
		3.2	22.0	61.3	16.8
	Total	*68.6*	*11.7*	*19.7*	*100.0*
		100.0	100.0	100.0	100.0

Italicized numbers highlight row frequencies, and unitalicized numbers highlight column frequencies.

Source: U.S. Department of Commerce, U.S. Census Bureau, 1996 panel of the Survey of Income and Program Participation.

End Notes

[1] Statement of Eric M. Bost,Undersecretary, Food, Nutrition, and Consumer Services before the Senate Committee on Agriculture, Nutrition, and Forestry, April 3, 2003.

[2] The poverty guidelines used for Federal means-tested programs are established annually by the U.S. Department of Health and Human Services; they differ slightly from the Census Bureau poverty thresholds. In 2004, the Federal poverty guideline for a household of four was $18,850 of annual income.

[3] Research on the extent of seam bias has focused on how it affects estimates of program participation transition data (Doyle, Martin, and Moore, 2000; see U.S. Census Bureau, 1998, "SIPP Quality Profile" for a review).

[4] We also tested other ways of adjusting and organizing the data that are not discussed here, such as using only the most recent month of data (the fourth reference month) and using 3-month intervals that skip the seam instead of 4-month intervals. Both methods provided similar evidence of income volatility as we show later.

[5] See Kalton and Miller (1991), Marquis and Moore (1990), Rips et al. (2003) for analysis of the cognitive roots of seam bias.

[6] We include all households that were in the survey for 12 months or more in order to maximize observations (11,135). The median number of months in the survey for those in the survey 12 months or more was 31 months, and 39 percent of the households were in for the maximum 36 months. The results are similar, if not more pronounced, when using the smaller sample sizes of households in the survey for 24 months or more (7,195 households) or in the survey for 36 months (4,333 households).

[7] The same diagram using unadjusted data shows qualitatively the same result of lower CVs at higher income-topoverty levels. But the unadjusted data show higher CVs for all groups than do the adjusted data, as expected.

[8] Appendix table 1 provides the numerical values for the diagrams as well as a few other statistics that describe the CV distributions for both adjusted and unadjusted data. The means of the CV distributions range from 0.31 for the highest income group to 0.61 for the lowest income group. Because the seam bias-adjusted data were derived by smoothing reported income, it is not surprising that the mean CVs of each income group are lower than in the unadjusted data: Mean CVs range from 0.27 to 0.53 across income groups. Thus, whether examining adjusted or unadjusted data, the CV of the lowest income group is double the CV of the highest income group.

[9] In their analysis of poverty dynamics, McKernan and Ratcliffe also say that it is hard to try to define mutually exclusive categories because there are so many. But in the program participation literature, for example, Gleason et al. (1988) defined trigger events for FSP participation entry and exit as falling into three mutually exclusive groups of (1) income changes, (2) household composition changes, and (3) the combination of both events happening simultaneously.

[10] Analysis was also conducted with the left-censored variables included. The main substantive difference in the results is that more variables were significant, and those that were significant without the left-censored observations were more significant with them.

[11] The changes in all of these variables include all changes; no threshold of change was defined for a change to be counted. But the changes at the median are not trivial. For example, the median change in the total household hours worked in 1 month was 60 hours in both directions.

[12] The 15 percent error is the sum of errors from December results and the error rate inferred from a May audit of families that did not respond to the request for verification in December. One-third of those who did not reply in December were found to be ineligible in May. That ineligible percentage rate was added to the rate from December.

[13] Unlike this study, Neuberger and Greenstein present analysis that compares participation in the NSLP along with eligibility. We focus on eligibility dynamics only.

[14] Other studies explored the role of administrative errors (USDA, FNS, 2002; Strasberg, 2004). In FNS's 2002 study of the eligibility determination process, an average of 6 percent of certifications for benefits were inaccurate and an average of 8 percent of verification decisions were inaccurate.

[15] In other words, these are not life tables of the percentage of households with children who become ineligible by a certain month and are treated as no longer at risk for re-entry or re-exit in following months. Instead, these tables are a tally of ineligibility in any month, inclusive of those who may have re-exited and re-entered. This analysis is designed to estimate what percentage of households with children can be expected to be ineligible if a verification sample of these households were conducted in various months.

[16] The data reverses in the 1996-97 school year for some months after April in that the share from the adjusted data exceeds the share from the unadjusted data. We are not entirely sure why these adjustments would yield higher estimates in some cases. The differences, however, are not large enough such that the 95-percent confidence intervals of each estimate do not also contain the other estimates.

[17] This pattern is not affected by seasonal factors.

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Chapter 3

TESTIMONY OF THE SCHOOL NUTRITION ASSOCIATION EDUCATION AND LABOR COMMITTEE, HOUSE OF REPRESENTATIVES

School Nutrition Association

INTRODUCTION

Chairman Miller, Members of the Committee, we deeply appreciate this hearing. This hearing continues a most extraordinary Congressional tradition, participated in by the House and the Senate, the unprecedented tradition of scheduling a hearing to coincide with an organization's Washington meeting. We fully understand and appreciate that the tradition represents a shared commitment to ending childhood hunger and improving the nutritional health of all children in the country.

I am Mary Hill, the President of the School Nutrition Association, and the Director of Child Nutrition in Jackson, Mississippi. With me is Katie Wilson our President-Elect from Onalaska, Wisconsin; Dora Rivas our Vice President from Dallas, Texas; Craig Weidel, the Chairman of our Public Policy and Legislation Committee, from Mesa, Arizona, and a few hundred of my best friends. The School Nutrition Association (SNA) represents the state and local public administrators of the National School Lunch and Breakfast Programs. We have approximately 55,000 dedicated members who serve 30 million children each school day in almost 100,000 schools.

NUTRITION STANDARDS

Mr. Chairman, as you know, in the last year or two, most of the attention with regard to child nutrition has focused on the key issue of nutrition standards. It is a two part challenge: how to implement the 2005 *Dietary Guidelines for Americans* into the meal program and what standards to apply to so-called "competitive foods" sold outside of the meal program whether in the cafeteria or sold down the hall in vending machines.

SNA is deeply committed to the *Dietary Guidelines for Americans* and we believe that they should be applied to all foods and beverages sold in school. Years ago we successfully petitioned the Congress to apply the *Guidelines* to school meals. Since 1983, however, we have been trying in vain to amend the law and provide the Secretary of Agriculture with the authority needed to regulate the sale of all foods and beverages sold on the school campus.

SNA originally endorsed the legislation introduced by Chairman Harkin and Representative Woolsey to end the "time and place rule" providing the Secretary with the authority to regulate the sale of ***ALL*** foods and beverages in the school, not just those foods and beverages included in a reimbursable meal. It was, therefore, with great regret that SNA could not support the final version of the nutrition standards amendment that was offered during consideration of the Senate farm bill last December. Why the change?

USDA currently reimburses local schools $2.47 for every "free" lunch provided to a child with income below 130% of the poverty line…less than the price of a latte at the neighborhood coffee shop. The school food service authority needs the revenue from the sale of all beverages and foods sold on campus to "balance the books" and make the program work for all children. Consistent nutrition standards must therefore be provided for all foods and beverages sold in the school in order to protect the financial and nutritional integrity of the school nutrition program. We were concerned that the version of the amendment offered as a part of the farm bill could have adversely effected the economics of the school meal program in two ways:

1. It would have locked into law a wide variety of different nutrition standards all over the country, increasing the cost of school meals at the local level.
2. The amendment would also have allowed different nutrition standards in different parts of the school building, giving a mixed message to

students and draining needed revenue from the school food service authority.

SNA believes that we need to craft a science based, practical, nutrition standard that applies throughout the school and throughout the entire country. The children in California need the same nutrients for healthy development that are needed by the children in South Dakota and Florida.

Schools have a critical role to play in the fight against obesity. We must not, however, craft a standard that could undermine the financial status of many local programs thereby jeopardizing their service to children, including low income children.

As this Committee and the Congress begins to think about the 2009 Child Nutrition Reauthorization Act, SNA has several goals with regard to nutrition standards:

- First, and foremost, provide the Secretary of Agriculture with the authority to regulate the sale of all foods and beverages sold on the school campus, thus ending the "time and place" rule.
- Require that all foods and beverages provided on campus (with some exceptions) be consistent with the *Dietary Guidelines*, as is currently required for school meals.
- Require a uniform national nutrition standard throughout the country. Children in all states and local districts need the same nutrients to grow and be healthy.
- Finally, please increase the federal reimbursements as a part of any legislation to improve nutrition standards anywhere in schools.

We must consider nutrition standards in the practical context of the financial structure of the program. Whatever nutrition standard is ultimately agreed upon by the Congress or as a result of a Rule Making (we prefer a Rule Making) we believe that it must be uniformly applied and enforced throughout the school land then throughout the country.

We appreciate that many states or local school boards, for the best of reasons, have tried to do "better" than the *Dietary Guidelines* and have adopted their own version of the Guidelines. We are very sympathetic to this effort. If the Congress, however, allows each state or each district to select its own interpretation of the *Dietary Guidelines* it will further increase the cost of the school meals program. Further, if, for example, the athletic department in the school is allowed to sell high-profit drinks and the school food service authority is prohibited from selling those same drinks it makes it much more

difficult to "balance the books" and feed all children, particularly low income children. In short, there is a connection between nutrition standards and funding for the program.

Obesity is a national epidemic and schools have an important role to play, indeed a critical role to play, in the fight against childhood obesity. SNA is committed to that fight against obesity. But in addressing the obesity issue we must not ignore the practical constraints in the school meals program. We urge the Congress to require a science based, yet practical, uniform national nutrition standard to benefit all children.

Finally, it is our best judgment that developing the precise details of the nutrition standard should be left to Administrative Rule Making, with the benefit of the Institute of Medicine. As you know, science changes all the time. If the nutrition standard were locked into law every time the science changed the statute would have to be changed.

The recent experience with the 2005 *Dietary Guidelines* is instructive. USDA has been trying to update the meal pattern since the 2005 *Guidelines* were released three years ago. However, the recent *Guidelines* changed the recommendation on fat and included several nutrients not included in earlier editions of the *Guidelines.* After much consideration, and several meetings with SNA, last November USDA announced that it would have to consult with the Institute of Medicine before it could update the meal pattern. Consulting with IOM will take two years. Attached is the USDA memo to our state directors.

We commend USDA for this decision and for acknowledging what we all know to be true: nutrition science is complicated. If USDA must consult with the IOM before proposing a new school meal pattern, then our counsel is twofold:

1. Please don't lock the nutrition standard into statute; and
2. Please don't allow each state and district to establish their own interpretation of the *Dietary Guidelines*.

THE RECALL

Mr. Chairman**,** a not so funny thing has happened on the way to this hearing: USDA has had one the largest recalls in history, if not the very

largest. As we understand it, approximately 143 million pounds of beef was recalled, of which millions of pounds went to nutrition programs.

Schools, like all consumers, rely on the Department of Agriculture and the Food and Drug Administration to protect the safety of our food supply. USDA has had an excellent food safety record and we appreciate their vigilance. The schools support the USDA commodity distribution program. Approximately 20% of the food served in school comes from USDA; the remaining 80% is purchased locally. The commodities we receive from USDA are quite important to the programs we run. Further, in recent years, USDA has greatly improved the quality of the commodity program. Schools are treated as a customer. USDA asks what commodities the individual local school would prefer. The image of USDA "dumping" commodities the schools do not want and can't use is no longer valid. There are two areas, however, where we believe that things can be improved with regard to the recall:

1. Communication:
In an era of instant news and email, when any USDA agency puts out a press release saying the product is "unfit for human communication," the information reaches parents ***immediately***. Frequently, the information reaches the parents before the information reaches the local school. That is not good. Parents start calling before we have any information.
When the FSIS press release went out on February 17th we had no way of knowing the nature of the recall or how serious the threat was to public health. We did not have the information we needed to respond to the many questions we immediately received from very concerned parents. In short, we believe there must be a better communication system put in place. There must be faster communication between the Food and Nutrition Service and the local recipients that may or may not actually be using the product. Communication from Food and Nutrition Service in Washington to the USDA Regional Offices, to the fifty states, to the local school food service authority, and then to the local 100,000 schools takes too long…particularly when CNN can put out the recall immediately. The USDA communication system needs to be updated.

1. The Recall Procedure:
Many of our programs were affected. Dora Rivas has 3,000 cases of affected product. Craig Weidel has 750 cases. The cases have not yet been disposed of for a variety of reasons and it is also unclear who will absorb the cost associated with the recall. In short, the

Department should improve their procedures on how to execute a recall when one is announced. The schools need better guidance and more training. Funds should be provided to execute the recall, to transport the product and dispose of the product. Existing procedures are not adequate; state and local administrators have not been trained in advance on how to execute a recall of this magnitude.

2009 AUTHORIZATION

Mr. Chairman, we have focused our testimony on just one issue, plus the recall, as they have received the most attention this year. There are, of course other issues that we will want to bring to the Committee's attention next year, as the 111th Congress drafts the next Reauthorization.

- We remain concerned about low-income children who cannot afford a reduced price meal and the recent economic downturn is making the problem worse.
- We must find ways to expand the school breakfast program and break down the practical barriers to implementing the program.
- Providing school breakfast commodities seems like an idea whose time has come.
- The program needs further streamlining. In most schools the number of personnel is limited and the program is increasingly complicated. It is very difficult to focus on nutrition standards if we are also forced to verify income for tens of millions of children.

The school nutrition programs have stood the test of time. They have risen above partisan politics. We all understand that our children are the future of the country. Hungry children can't learn and you can't compete in a world economy without an education. An educated workforce is the backbone of the country and the school nutrition programs are vital to our success.

It has been many years, Mr. Chairman, since the Congress has given these critical child nutrition programs a top to bottom review. We thank you again for our first 2009 Reauthorization Hearing and would be delighted to answer any questions.

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Chapter 4

TESTIMONY OF KATE J. HOUSTON, FOOD, NUTRITION, AND CONSUMER SERVICES U.S. DEPARTMENT OF AGRICULTURE BEFORE THE HOUSE COMMITTEE ON EDUCATION AND LABOR

Kate J. Houston

Good afternoon, Mr. Chairman and members of the Committee. I am Kate Houston, Deputy Under Secretary for Food, Nutrition and Consumer Services (FNCS) at the U.S. Department of Agriculture (USDA). Thank you for inviting me to appear before you today as part of the hearing, *Challenges and Opportunities for Improving School Nutrition*.

The mission of the Food and Nutrition Service (FNS) is to increase food security and reduce hunger in partnership with cooperating organizations by providing children and low-income people access to food, a more healthful diet, and nutrition education in a manner that supports American agriculture and inspires public confidence.

USDA's 15 federal nutrition assistance programs collectively touch the lives of one in five Americans in the course of a year. And as this Committee knows, the school meals programs – two of the largest nutrition assistance programs – represent an especially important opportunity to improve the health and well-being of the Nation's school children. With over 101,000 schools and institutions participating in the National School Lunch Program

and nearly 84,000 participating in the School Breakfast Program, USDA is proud that schools across the country are providing safe, wholesome, and nutritious meals to over 31 million school children each school day.

I have been invited here today to provide the Committee important information on a critical issue facing the Department, consumers, and schools—the Hallmark/Westland Meat Packing Company (Hallmark/Westland) beef recall. As Agriculture Secretary Ed Schafer has assured the public, I want to assure you—the food supply is safe. This includes USDA commodities available to schools and other outlets participating in our nutrition assistance programs.

On January 30, 2008, the Humane Society of the United States brought to public attention an alarming and disturbing video showing the gross mistreatment of cattle. Secretary Schafer has described the footage depicted in the video as "shameful and irresponsible." The Department has pledged to find out what went wrong at the Hallmark/Westland and to hold anyone involved in violations fully accountable for their actions.

As has been reported, Hallmark/Westland was one of the contractors of commodity ground beef and beef products for the National School Lunch Program. In total, USDA's Agricultural Marketing Service (AMS) purchased about 20 percent of USDA commodity ground beef and beef products from Hallmark/Westland. About 94 percent of this beef—just over 50 million pounds—was directed to the National School Lunch Program. In addition, some schools may have purchased beef from Hallmark/Westland commercially.

The same day the video was released, USDA immediately put the administrative and regulatory tools at our disposal to work. We launched investigations by our Office of the Inspector General and by our Food Safety and Inspection Service (FSIS) and AMS. Those investigations are ongoing. We also put an immediate administrative hold on the use of Hallmark/Westland products dating back to October 1, 2006 received by the school lunch program and our other nutrition assistance programs.

Over the past five weeks, as information has become available, USDA has taken further actions with regard to Hallmark/Westland. Based on evidence from the ongoing investigation, FSIS recommended to Hallmark/Westland that it undertake a recall of all products produced at the plant since February 1, 2006, and Hallmark/Westland initiated a voluntary recall of 143 million pounds of fresh and frozen beef products.

USDA recommended that this action be taken because of a serious violation of FSIS' animal slaughter rules. For that reason, USDA

recommended this be a Class 2 recall. While it is extremely unlikely that these animals posed a risk to human health, recall action was deemed necessary because the establishment did not comply with FSIS regulations. USDA is requiring that any unconsumed products affected by the recall by destroyed or rendered inedible.

Immediately following the recall, Food, Nutrition and Consumer Services' Under Secretary, Nancy Montanez Johner, pledged that the Food and Nutrition Service (FNS), along with our Department partners, would do everything possible to assist State Agencies and schools in responding to the recall. She also made clear that parents and their children should continue to have confidence in the safety of the food supply as a whole, including meals served as part of the National School Lunch Program.

We at the Department of Agriculture take this recall very seriously. It is the largest beef recall in U.S. history and its impact is wide-reaching. It has affected nutrition assistance programs in 45 States and the District of Columbia. We do not yet know the total number of affected schools. While managing a recall of such proportion has many challenges, FNS, together with our Department partners, has taken a series of actions to maintain clear lines of communication with States and local programs, and to minimize disruption to school meal service operations.

Ongoing communication is critical to effectively carry out a recall of this magnitude. From the time of USDA's decision to suspend Hallmark/Westland contracts, FNS has utilized all available channels to provide ongoing communication with State agencies, school officials, and other key stakeholders.

USDA utilizes a Rapid Alert System (RAS), an automated, web-based tool to communicate emergency information to USDA commodity recipients. It allows State agency cooperators to immediately receive information by several means, including cell phone, email, or fax. The system uses the communication tools sequentially until the recipient acknowledges receipt of the message, which confirms to USDA that all affected parties received notification.

FNS immediately activated the RAS following the January 30, 2008, administrative hold, and provided the necessary information for States and Indian Tribal Organizations (ITO) to track the product and suspend use until further notice. A followup notice was sent to *all* States and ITOs about the product hold.

When FSIS announced the recall on February 17, 2008, the same procedures were followed. Issuances through RAS and e-mail went out on

February 17, February 19 and February 26 to announce additional products as the trace-forward and tracebackward investigations continued.

FNS also partnered with the U.S. Department of Education to disseminate the recall information to school officials in *every* school district across the country. FNS has developed and disseminated information for specialized audiences, including State Agencies, school officials, and parents. State distributing agencies provided schools with State-specific, detailed instructions for the appropriate destruction of product in accordance with local health agency requirements. Talking points were developed and provided to schools for use in communicating recall information to concerned parents.

FNS stakeholder organizations have also been invaluable to disseminate critical information regarding the recall. Over the past weeks, FNS reached out to numerous organizations, including the School Nutrition Association, the American Commodity Distribution Association, the National Association of Elementary and Secondary School Principals, and the National School Boards Association. All agreed to provide assistance, and we are grateful for their help.

To further ensure school food service professionals are fully informed, FNS posted recall information on FNS' food safety website and utilized the Meal Talk list serve to advise them of its availability. Specialized staff in FNS' seven regional offices is on call to provide ongoing technical assistance to States and schools.

USDA has been working aggressively with both States and local program operators to locate affected product as expeditiously as possible. I can report today that significant progress has been made. Within hours of USDA's decision to suspend Hallmark/Westland contracts on January 30, FNS identified which State agencies ordered commodity beef products from Hallmark/Westland and in what amounts. These products were immediately placed on hold and since that time, have not been available for use in schools and other nutrition assistance programs.

FNS is actively collecting information from States to determine the status of affected beef that has been consumed or is being destroyed. States have been responsive and almost 90 percent of affected beef has been tracked. States continue to report daily as they receive additional information from their local school food authorities. The States' responsiveness reflects the effectiveness of the RAS and the positive relationships we have nurtured with State officials and stakeholder organizations. As of February 29, thirteen States have completed their reporting on the status of affected product, and reporting is in progress and nearing completion in the 32 additional States

affected and the District of Columbia. We continue to work with States to complete a full accounting of all affected products dating back to February 1, 2006.

There are some challenges in identifying all affected product involved in the nutrition assistance programs, and these challenges can slow down the completion of this process. For example, USDA must rely on States to provide information on where the affected meat was distributed following USDA delivery to our State customers, and in most cases, States rely on schools to provide information back to the State. Local schools have yet to finalize their reports to States regarding the status of affected product covered by the recall dating back to February 1, 2006.

Furthermore, the commodity distribution system is complex. About 60 percent of the Westland product purchased for schools went to further processors to convert the ground beef into value added products, like meatballs or hamburger patties. That meat is often commingled with other product. While the identity of the product is not lost, it adds a layer of complexity to the tracing and reporting process.

Finally, when a product reaches a distributor or State warehouse, product is not segregated by manufacturer, but by product type, such as beef taco meat. There can be several of the same type of product by different manufacturers all stored in the same warehouse location. Accordingly, in a recall, the distributors and warehouses must contact every school that received a specific type of product, and provide identifying information, including lot numbers on the recalled product for the schools to use when locating the product in their systems. As I'm sure you can appreciate, all of these activities take time to complete.

While the process of tracing all affected product continues, FNS and AMS are working as quickly as possible to provide replacement product to schools with the goal of minimizing disruption to local school food service operations. We are working with States and further processors to prioritize shipments to destinations with the greatest need, and we are working with schools to determine their needs for product replacement for the remainder of the school year. Because the end of the school year is fast approaching, USDA is offering schools a choice of replacement product or credit to their commodity entitlement accounts that will be available for the next school year.

Mr. Chairman, this is the most up-to-date information I can provide today on the recall. USDA staff has held several staff-level briefings for House staff over the past weeks, and as our efforts continue, I would be pleased to provide updates to the Committee as new information is available.

I also want to take this opportunity to share a broader view of FNS' activities to ensure school food safety, and to briefly mention the wide array of other important activities ongoing within the Agency to improve meal quality, participation, and program integrity.

There are many controls in place that allow us to have day-to-day confidence in the safety of meals served in schools, and school meals have a demonstrated safety record. Congressional and USDA action has been crucial in developing a strong school food safety system, which was further enhanced by the passage of the Child Nutrition and WIC Reauthorization Act of 2004. The mechanisms and resources Congress provides have allowed us to develop a robust and successful school food safety record.

To implement the food safety provisions of the Act, USDA issued "Guidance for School Food Authorities: Developing a School Food Safety Program Based on the Process Approach to HACCP Principles," which was distributed to all school food authorities in the summer of 2005. The process approach to HACCP (Hazard Analysis and Critical Control Point) is a food safety management system that focuses on the control of biological, chemical, and physical hazards in food by scrutinizing every step of the food preparation process.

Through a HACCP-based food safety program, schools can identify potential food hazards, identify critical points where hazards can be controlled or minimized, and develop monitoring procedures to determine whether the hazards identified are effectively controlled.

The HACCP Guidance was developed with input from a variety of stakeholders, including representatives from FSIS, the Food and Drug Administration, the National Food Service Management Institute, the Centers for Disease Control and Prevention, the School Nutrition Association, the National Environmental Health Association, State and local public health Agencies, and State and local education agencies, including school food service directors.

The Child Nutrition and WIC Reauthorization Act of 2004 also increased the existing food safety inspection requirement from one to two per year. These health inspections must be conducted by the State or local governmental agencies responsible for food safety inspections. The Department provides school districts with ongoing food safety education and outreach to program stakeholders by conducting presentations throughout the country to inform State and local health and school officials about food safety inspection requirements.

In addition to our ongoing work to ensure the safety of school meals, FNS is engaged in a variety of activities that support, encourage, and promote efforts to improve the quality of school meals, and the nutrition environment more generally, in ways that are both consistent with the latest nutrition science, and meet the specific needs and circumstances of each community.

To conform meal standards to the most recent Dietary Guidelines for Americans (DGA), FNS has contracted with the National Academy of Sciences' Institute of Medicine (IOM) to recommend updated meal patterns and nutrition requirements for both the National School Lunch Program and the School Breakfast Program. When the IOM recommendations are final, FNS will then engage in the formal rulemaking process to promulgate a proposed rule that incorporates the IOM recommendations to the fullest extent practicable.

While IOM is working to develop recommendations, FNS is encouraging State Agencies to provide technical assistance to school food authorities so that they can begin implementing the applicable recommendations of the 2005 DGAs within the current meal pattern requirements and nutrition standards. This spring, FNS will issue updated school meal pattern guidance and a series of nutrition fact sheets to assist foodservice professionals and menu planners in implementing the 2005 DGAs.

In addition, FNS has launched an aggressive initiative to improve the nutritional quality of its commodity program. Schools participating in the NSLP today have access to the widest choice of healthy commodity foods in history. Over the past two decades, we have worked to reduce the levels of fat, sodium, and sugar. We now offer schools more than 180 choices of quality products, including whole grains and low fat foods. FNS also continues to promote the *HealthierUS School Challenge* and support implementation of local wellness policies as part of its broad strategy to reduce obesity and improve the nutritional health and well-being of children. To ensure a strong future for the National School Lunch and Breakfast Programs, FNS is working hard to improve program participation among children from all income levels, and we are working with schools to strengthen program integrity by assisting schools in improving the accuracy of meal counting and claiming. In particular, FNS is focusing efforts on improving participation in the School Breakfast Program, where a significant disparity exists between the average daily participation in the School Breakfast Program and the National School Lunch Program.

While we all recognize that providing nutritious meals in a healthy school nutrition environment is important, school children represent a particularly

vulnerable population, and first and foremost, USDA, along with our partners at the Federal, State and local levels, has a responsibility to ensure school meals are safe.

We are proud of our many efforts to ensure the safety and improve the quality of school meals, and many of these efforts could not have been possible without the School Nutrition Association and the many school food service professionals who give their very best to provide nutritious meals in our schools each day.

As we celebrate National School Breakfast Week, I would like to conclude by thanking Congress and the school food service community for your daily commitment to the National School Lunch and School Breakfast Programs.

Thank you for the opportunity to share the work of USDA with you today.

CHAPTER SOURCES

The following chapters have been previously published:

Chapter 1 is an edited, excerpted and augmented edition of a United States Department of Agriculture publication Economic Research Report Number 61 dated July 2008.

Chapter 2 is an edited, excerpted and augmented edition of a United States Department of Agriculture publication Economic Research Report Number 23 dated August 2008.

Chapter 3 is these remarks were delivered as testimony by the school Nutrition Association Education and Labor Committee House of Representatives dated March 4, 2008.

Chapter 4 is these remarks were delivered as testimony by Kate J. Houston deputy under Secretary Food, Nutrition and Consumer Services U. S. Department of Agriculture before the House Committee on Education and Labor dated March 4, 2008.

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