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FNS Research Corner

Summary of Research

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Please note that this study was published before the SY2014-15 implementation of the Smart Snacks Nutrition Standards for Competitive Food in Schools, as required by the Healthy, Hunger-Free Kids Acts of 2010. As such, certain research relating to food in schools may not be relevant today

The FNS Research Corner provides a continuing series of summaries of recently completed and current research conducted by the U.S. Department of Agriculture's Food and Nutrition Service (FNS) in the area of child nutrition. For further information, contact the Office of Policy Support (OPS), formerly the Office of Research and Analysis (ORA) at (703) 305-2117. Links to published studies and reports as well as descriptions of ongoing studies conducted by OPS are available from the FNS website at http://www.fns.usda.gov/research-and-analysis.

RECENTLY COMPLETED RESEARCH

School Nutrition Dietary Assessment Study IV

Since the early 1990s, USDA has sponsored studies of key characteristics of the school meal programs, the school environments in which the programs operate, the food and nutrient content of school meals and, in some studies, the contributions of school meals to students' diets. This report summarizes findings from the fourth School Nutrition Dietary Assessment Study (SNDA-IV), which collected data from nationally representative samples of school districts and schools in school year (SY) 2009-10. As in prior studies, the nutrient content of the average meals *offered* and *served* in the Nation's schools was compared with regulatory standards in effect at the time—the School Meal Initiative (SMI) nutrition standards—as well as selected recommendations included in the *Dietary Guidelines for Americans*. In January 2012, USDA issued new standards for school meals to be phased in over 3 years beginning in SY 2012-13. The data reported here thus serve as a marker of progress in achieving the SMI standards, and a baseline for measuring future improvements under the new standards. The study also collected information about the availability of competitive foods—foods sold in competition to USDA school meals through a la carte sales in cafeterias, vending machines, school stores, and other venues. Finally, the study collected data from a sample of elementary schools participating in the HealthierUS School Challenge (HUSSC) and compared them to elementary schools nationwide.

Findings of this study include the following:

Most schools *offered* and *served* National School Lunch Program (NSLP) lunches that, on average over a typical school week, met SMI standards for minimum levels of target nutrients.

- Eighty-five percent or more of all schools offered NSLP lunches that, on average, met or exceeded SMI standards for protein, vitamin A, vitamin C, calcium, and iron.
- The average NSLP lunch served in more than three-quarters of all schools met or came within 10 percent of the SMI standards for all target nutrients.

Schools were less likely to *offer* and *serve* average NSLP lunches that met the SMI standard for minimum calories.

- Sixty-five percent of all schools *offered* average NSLP lunches that met the minimum calorie level defined in the SMI standards, and another 20 percent came within 10 percent of the minimum standard.

- In contrast, 39 percent of all schools *served* average NSLP lunches that met the SMI minimum for calories and another 26 percent came within 10 percent of this standard.

A majority of schools *offered* and *served* average NSLP lunches that were consistent with the SMI standard for total fat (no more than 30 percent of total calories from fat) or came within 10 percent of this standard.

- On average, 35 percent of all schools *offered* NSLP lunches that were consistent with the SMI standard for total fat and an additional 25 percent of schools *offered* lunches that came within 10 percent of this standard.
- More than one-third (34 percent) of schools *served* NSLP lunches that were consistent with the SMI standard for total fat, and an additional 29 percent of schools *served* lunches that came within 10 percent of this standard.

More than half of all schools *offered* and *served* NSLP lunches that, on average, met SMI's standard for saturated fat. Another 26 to 28 percent of schools *offered* and *served* lunches that came within 10 percent of the standard (equivalent to 10 to 10.9 percent of total calories from saturated fat).

- Among elementary schools, the percentage of schools that served average NSLP lunches that met the SMI standard for saturated fat increased from 34 percent in SY 2004–2005 to 53 percent in SY 2009–2010. Among secondary schools, the percentage of schools meeting the standard almost doubled, from 24 percent in SY 2004–2005 to 46 percent in SY 2009–2010.

Overall, 14 percent of schools offered NSLP lunches that met all of the SMI standards, while 7 percent of schools served NSLP lunches that met all of the SMI standards. Most schools offered and served School Breakfast Program (SBP) breakfasts that, on average over a typical school week, were consistent with the SMI standards.

- For each of the SMI target nutrients, 92 percent or more of all schools *offered* and more than 80 percent of all schools *served* average SBP breakfasts that met the SMI standards for target nutrients.
- Substantially fewer schools met the SMI standard for minimum calories than the SMI standards for minimum levels of target nutrients with relatively little difference in the findings for breakfasts *offered* and breakfasts *served*. In both cases, only about 20 percent of schools met the standard for calories and about 20 percent more came within 10 percent of this standard.
- Almost all schools *offered* (93 percent) and *served* (85 percent) SBP breakfasts that, on average, met the SMI standard for total fat.
- More than three-quarters of all schools *offered* and *served* average breakfasts that met the SMI standard for saturated fat. An additional 11 to 13 percent of schools *offered* and *served* breakfasts that came within 10 percent of this standard (equivalent to 10 to 10.9 percent of total calories from saturated fat).

Competitive foods were widely available in schools, particularly in secondary schools.

- Eighty-two percent of elementary schools, 95 percent of middle schools, and 90 percent of high schools had a la carte offerings available at lunch. Smaller percentages of schools (58, 74 and 70 percent, respectively) had a la carte offerings available at breakfast.
- Vending machines were widely available in high schools (85 percent), somewhat less common in middle schools (67 percent), and rare in elementary schools (13 percent).
- More than 80 percent of school districts had a ban or restriction related to sweetened beverages and more than 75 percent had a ban or restriction related to snack foods.

Compared with elementary schools nationwide, larger proportions of HUSSC elementary schools met most SMI standards for both lunches offered and served.

- For both lunches *offered* and *served*, a larger share of HUSSC elementary schools met the SMI standards for calories, vitamin C, and iron, on average, than elementary schools nationwide. This was also true for vitamin A in lunches *served*.
- For both lunches *offered* and *served*, a larger share of HUSSC elementary schools met SMI standards for total fat and saturated fat, on average, than elementary schools nationwide.

Compared with elementary schools nationwide, HUSSC elementary schools offered raw vegetables and fresh fruit more frequently.

- Raw vegetables were offered in 63 percent of daily lunch menus in HUSSC elementary schools, compared with 57 percent of daily lunch menus in elementary schools nationwide.

- More than 8 out of 10 lunch menus in HUSSC elementary schools (82 percent) included fresh fruit, compared with just over half (56 percent) of lunch menus in elementary schools nationwide.

Evaluation of the Fresh Fruit and Vegetable Program: Final Report

The Fresh Fruit and Vegetable Program (FFVP) is designed to increase fruit and vegetable consumption among students in the Nation's poorest elementary schools by providing free fresh fruits and vegetables to students outside of regular school meals. FFVP began as a pilot program in 2002 and was converted into a nationwide program in the Food, Conservation, and Energy Act of 2008, also known as the Farm Bill (PL110-234). The FFVP authorizing legislation mandated an evaluation of the program to determine whether children experienced, as a result of participating in the program, increased consumption of fruits and vegetables and other dietary changes, such as decreased consumption of less nutritious foods. This evaluation includes two components: (1) an impact study to estimate program effects on participating students and schools; and (2) an implementation study to examine how FFVP operates in participating schools. Data was collected during SY 2010-2011.

The results indicate that students in FFVP schools increased average fruit and vegetable consumption on FFVP days by approximately one-third of a cup per day. About a quarter cup of the total impact on fruit and vegetable intake came from increased fruit consumption. Exploratory analysis suggests that most, but not all, of the observed differences in consumption is attributable to direct effects on intake due to consumption of FFVP snacks. FFVP snacks provided students with approximately one-quarter cup of fresh fruits and vegetables which represents about 80 percent of the total observed difference in fruit and vegetable consumption. No increase in total energy intake was found.

Nutrition education is considered a critical component of FFVP and schools are strongly encouraged to provide nutrition education along with the FFVP snacks. On average, FFVP schools offered nutrition education activities 2.4 times per week compared to 0.7 times per week in schools not participating in the program. Nutition education and promotion messages about fruits and vegetables and about trying new kinds of foods were conveyed more frequently in FFVP schools.

Consistent with legislative intent, FFVP is reaching students in the highest need schools. Compared to schools that applied for program funding but did not receive it, FFVP schools had a higher percentage of students eligible for free and reduced-price lunches (85 percent compared to 64 percent), had a higher percentage of non-white students (77 percent compared to 51 percent), and were more likely to be located in urban areas (45 percent compared to 27 percent). While USDA encouraged schools to implement FFVP two or more days a week, most schools exceeded that threshold. In fact, 41 percent of FFVP schools chose to provide free snacks five days a weeks and another 41 percent of schools offered FFVP snacks three or four times per week. Consistent with the program goal of exposing students to a variety of fresh fruits and vegetables, schools reported serving, on average, six different fruits or vegetables each week. Serving FFVP snacks in classrooms was the preferred method for most schools.

Finally, FFVP is a popular program among all it constituents. Over 95 percent of program administrators, including SFA directors, principals, school food service staff, and teachers expressed strong support for FFVP. Similarly, student and parent opinions mirrored those of the program administrators expressing a desire for the program to continue.

School Food Purchase Study III: Nutritional Characteristics of School Food Acquisitions

The most recent School Food Purchase Study provides national estimates of the types, amounts, and costs of foods acquired by public school districts participating in the National School Lunch Program during SY 2009/10. It also includes a comprehensive analysis of the nutritional characteristics of foods acquired by these school districts. This report presents findings about the calories, nutrients, and food groups available for use in school meals and other school food programs, including a la carte foods, and the extent to which school food acquisitions are consistent with the *Dietary Guidelines for Americans* and associated food guidance system.

Food acquisition data from a nationally representative sample of 420 public school districts was linked to USDA nutrient and MyPyramid databases and then adjusted to reflect the amount of food available for consumption. Calorie density (calories/gram), sources of calories, nutrient density (per 1,000 calories), food group density, and Healthy Eating Index-2005 (HEI-2005) scores were analyzed for all foods combined and separately for purchased foods, donated USDA Foods and processed foods containing donated USDA Foods. These measures were compared to nutrition and dietary reference standards in place during SY 2009/10. The MyPlate food guidance system replaced MyPyramid in June 2011.

Since the vast majority of school food acquisitions are used in NSLP and SBP reimbursable meals that must meet defined nutrition standards, it is not surprising that the nutritional profile of school food acquisitions as a whole compare favorably with various nutrition measures. The mix of foods acquired were nutrient dense and met or exceeded DRI standards for school age children for a number of nutrients. The percentage of calories from total fat and saturated fat were within or near acceptable ranges. The amount of sodium present in food acquisitions continues to exceed recommendations. USDA Foods received perfect or near perfect HEI-2005 scores for total fruit, whole fruit, total vegetables, milk, meat and beans, and oils. However, USDA Foods and processed foods containing donated USDA Foods accounted for a disproportionate share of several nutrients that are a concern due to overconsumption (total fat, saturated fat, and cholesterol). Foods used in reimbursable meals were of higher nutritional quality than foods used exclusively in a la carte sales.

Direct Certification in the National School Lunch Program: State Progress in Implementation, School Year 2011/12
This report responds to a legislative requirement of Public Law 110-246 to assess the effectiveness of State and local efforts to conduct direct certification of children for free school meals. Under direct certification, children are determined eligible for free meals without the need for household applications by using data from other means-tested programs. The 2004 Child Nutrition and WIC Reauthorization Act required local educational agencies (LEAs) to establish a system of direct certification of children from households that receive Supplemental Nutrition Assistance Program (SNAP) benefits. This report presents information on the outcomes of direct certification for SY 2011/12.

In SY 2011/12, 89 percent of LEAs directly certified some children from SNAP-participating households. These LEAs enroll 98 percent of all students in schools participating in the National School Lunch Program. States and LEAs directly certified more than 11.6 million students during SY 2011/12. This was an increase of 17 percent (1.7 million) over the number of directly certified students in the previous school year. The percentage of SNAP participating children certified for free school meals without application increased from 77 percent in SY 2010/11 to 86 percent in SY 2011/12. Thirty-four States, the District of Columbia, and Guam achieved direct certification rates at or above the 80 percent performance target established in the Healthy, Hunger-Free Kids Act of 2010. Seventeen States achieved rates at or above 90 percent.

States and LEAs continue to find success with both centralized and district-level matching systems. Successful States perform monthly or even daily matches of SNAP data against student enrollment lists, and have formal processes for handling partial and non-matches. Several States cited the use of unique student identifiers as key to effect direct certification matching. Others stressed the importance of training and technical assistance provided to LEA administrators who contribute to the direct certification process at the local level.

Regional Office Review of Applications (RORA) for School Meals 2011
This is the seventh in a series of annual reports that examines administrative error incurred during the local educational agencies' (LEAs) approval process of applications for free and reduced-price school meals. It does not examine the accuracy of household reporting of information on the applications or errors made in counting and claiming.

School districts were stratified into 28 strata defined by seven FNS regions and four size categories within each region. Almost 2,800 applications from SY 2010/11 were selected for review. The LEA's determination of household size, total gross income, and certification status (free, reduced-price,

paid) for the selected students was recorded. FNS Headquarter staff reviewed each application and made an independent assessment of household size, total gross monthly income, and certification status, based on the information on the applications. FNS' independent assessments were compared to the LEA's determinations.

About 96 percent of students submitting applications for meal benefits in School Year (SY) 2010/11 were certified for the correct level of meal benefits, based on information in the application files. The percentage of applications with certification errors was comparable to the previous school years (2004-2010). Over 75 percent of those students incorrectly certified were certified for more benefits than they were entitled. More errors continue to be made processing income-based applications, with many of these errors associated with the determination of a household's gross income.

FNS has continued to be proactive in efforts to improve program integrity without compromising access to low-income families. Technical assistance and training materials have been provided to State and local partners to reduce administrative errors and improve program integrity. FNS will continue to conduct annual reviews of a statistical sample of LEA application eligibility determinations to measure changes in administrative error rates.

Evaluation of the Summer Electronic Benefit Transfer for Children Demonstration – Proof-of-Concept Year Results
In the 2010 Agriculture Appropriations Act (P.L. 111-80), Congress authorized demonstration projects to develop and test methods of providing access to food for low-income children in urban and rural areas during the summer months when schools are not in regular session, as well as rigorous independent evaluations of each projects' effectiveness. FNS launched the first of these projects, collectively known as the Summer Food for Children Demonstrations in the summer of 2012 (see Research in Progress below).

This report presents findings from the proof-of-concept year (summer 2011) of the Summer Electronic Benefits Transfer for Children (SEBTC) evaluation. This evaluation randomly assigned treatment and control households in selected demonstration areas in five states. Consenting treatment households received approximately $60 in benefits per child per month.

The first year of the SEBTC demonstration shows promise. All five sites were able to successfully recruit and enroll households in spring 2011 and administer SEBTC benefits during the summer of 2001. The five sites issues benefits to a total of 6,968 households with 12,463 eligible children. Over 90 percent of participating households used the benefit at least once during the summer and, on average, redeemed between 71 and 99 percent of their issued benefits, totaling over $1.6 million. Among the households participating in the demonstration, SEBTC reduced the prevalence of food insecurity and very low food security among children during the summer of 2011by about 20 percent. While the proof-of-concept results are encouraging, these initial results must await confirmation in 2012. In 2012, the proof-of-concept sites will more than double the number of children they serve to about 64,000. Results from the expanded operations are expected to be available in summer 2013.

RESEARCH IN PROGRESS

The following section provides a brief description of some on-going FNS research and the current status of these studies:

Special Nutrition Program Operations Study
This study will collect information needed to address current policy issues related to the Special Nutrition Programs. The study is designed to collect data from a nationally representative sample of about 1,500 school food authorities (SFAs) and all Child Nutrition State Agencies. Data collection for the base year occurred in School Year 2011-12. Data collection from the same sample of SFAs is scheduled to occur in the following two school years. This ongoing survey capability is intended to reduce FNS' information collection costs and reduce the length of time necessary to obtain required data and thus provide information in a timelier manner. The surveys will provide a cross-sectional "snapshot" of program characteristics, as well as longitudinal estimates of year-to-year changes in

operations. The study will provide general descriptive information on the characteristics of the school-based Child Nutrition Programs necessary for the preparation of program budgets, data on various aspects of the program administration to inform program policy and regulations, as well as data to identify areas in need of technical assistance and training. Results from the first year data collection are expected in 2013.

School Nutrition and Meal Cost Study

The Healthy, Hunger-Free Kids Act of 2010 required the U.S. Department of Agriculture to establish new nutrition standards for the National School Lunch Program and School Breakfast Program. The new standards are substantially different from the previous ones and bring the requirements into alignment with the *Dietary Guidelines for Americans*. The changes to the food and nutrition standards are designed to support the broader public health goals, including preventing obesity and ensuring adequate nutrient intakes. The School Nutrition and Meal Cost Study (SNMCS) will generate a nationally representative data set on about 500 school food authorities, 1,200 schools, 2,400 students, and a large sample of school meals (over 5,000 lunches and 3,000 breakfasts) for SY 2014/15. The data collection includes the administration of several different types of instruments and modes, including self-administered web-based SFA director and school principal surveys, a food service manager survey, an electronic menu survey, competitive foods checklists, cafeteria environment observation, plate waste observation, Automated Multiple Pass Method 24-hour dietary recalls, measurement of student's height and weight, student/parent surveys, meal cost interviews, and collection of administrative cost data.

Implementation of the SNMCS at this historic juncture will provide FNS with crucial information about the nutritional quality and cost of school meals after implementation of the new regulations. The resulting data will allow USDA to describe the characteristics of school environments, policies, and practices; the levels of students' participation, satisfaction, and their dietary intake; plate waste; and the relationships between these variables and the nutritional quality and cost of school meals. Comparisons of SNMCS findings with the findings from relatively recent prior national studies will provide information on the effects of the new regulations on food service operations, nutrition quality of meals, meal costs, and student dietary intakes. The study will produce five separate reports summarizing study findings (SFA/school characteristics and food service operations; nutrition quality of meals; meal costs; student participation, dietary intake, and other outcomes; and plate waste) and a stand-alone summary of findings.

Summer Food for Children Demonstrations

Food insecurity continues to be a problem in summer months when school is out and free and reduced-priced school meals are not available to many low-income children. USDA has created the Summer Food for Children demonstrations which will explore and test a number of alternatives to the existing Summer Food Service Program (SFSP) over the next several summers. Rigorous evaluations are planned for each demonstration alternative.

Strengthened SFSP Demonstrations will test changes to the existing structure and delivery mechanism of SFSP to determine if they lead to increased participation.

- Two initial demonstrations – a project in Arkansas that provides incentives to extend the duration of SFSP operations, and a project in Mississippi that enhances the program with funding for enrichment activities, which began in summer 2010.
- Two additional demonstrations, testing meal delivery in rural areas, and "backpack" food packages for consumption over weekends, which began in summer 2011.

USDA is also exploring *Household-Based Alternative Demonstrations*, which will provide summer food benefits using Supplemental Nutrition Assistance Program (SNAP) and WIC electronic benefit transfer (EBT) technology as the delivery mechanism, to give low-income families with children more resources to use at food stores during the summer.

- Small-scale "proof-of-concept" demonstrations of EBT-based approaches began in summer 2011.
- Expanded operations of successful first-year models, including additional test sites and variation in operational parameters such as the value of benefits provided, began summer 2012.

- USDA will also examine the feasibility and potential benefits of using cards similar to store "gift cards" to provide more purchasing power to these families, to determine if a proof-of-concept demonstration of that approach would be worthwhile.

Healthy, Hunger-Free Kids Act of 2010 Studies

The Child Nutrition Reauthorization legislation includes a number of studies and evaluations. Some of these studies are funded, while others are subject to appropriations or have no funds provided. There are three studies that have been funded to date:

- *Study of Direct Certification for Children Receiving Medicaid Benefits:* Section 103 requires demonstrations of direct certification for households receiving medical assistance under the Medicaid program beginning in SY 2012/13 in selected LEAs nationwide. The evaluation will look at the effectiveness of direct certification with Medicaid to identity children eligible for free meals that are not currently being certified for free meals through direct certification through SNAP or through the current application process. Demonstrations will be conducted in a select number of LEAs in Florida, Illinois, and New York, and statewide in Kentucky and Pennsylvania. Demonstrations in a select number of LEAs in New York and Massachusetts will begin in SY 2013/14. An interim report is due to Congress by October 1, 2014.
- *Universal Meal Service in High Poverty Areas:* Section 104(a) provides an alternative to household applications for free and reduced-price meals in high poverty LEAs and schools, referred to as the Community Eligibility option. For those eligible LEAs and schools, reimbursements are based on claiming percentages derived from the percent of students directly certified. The evaluation will examine both eligible LEAs and schools that elect the special assistance payments and those that do not. The evaluation will examine the impact of electing to receive special assistance payments on program integrity, availability and type of breakfast program, nutritional quality of school meals, and program participation. The Community Eligibility Option was implemented in Illinois, Kentucky, and Michigan in SY 2011/12 and in the District of Columbia, New York, Ohio, and West Virginia in SY 2012/13. School districts in Florida, Georgia, Maryland, and Massachusetts will be eligible to implement the option in SY 2013/14. A report is due to Congress by December 31, 2013.
- *NSLP Indirect Cost Study:* Section 307 requires a study to assess the extent to which school food authorities (SFAs) participating in the National School Lunch Program (NSLP) and School Breakfast Program (SBP) pay indirect costs, including assessments of the methodologies used to establish indirect costs, the types and amounts of indirect costs that are charged and not charged to the school food service account, and the types and amounts of indirect costs recovered by school districts. As school district budgets have tightened, some school nutrition programs have experienced escalating indirect charges which may affect the effectiveness of the federal child nutrition programs. This study is intended to determine whether the indirect costs charged and/or recovered are consistent with requirements for the allocation of costs to the school food service operation. Web surveys will be conducted with nearly 2,000 SFA Food Service Directors and business managers, as well as surveys of a census of State Child Nutrition Directors and SEA Finance Officers during SY 2012/13. A report is due to Congress by October 1, 2013.

BIOGRAPHY

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