

Summary of Research

Please note that this study was published before the implementation of Healthy, Hunger-Free Kids Act of 2010, which went into effect during the 2012-13 school year, and its provision for Smart Snacks Nutrition Standards for Competitive Food in Schools, implemented during the 2014-15 school year. As such, certain research may not be relevant today.

The FNS Research Corner provides a continuing series of summaries of recently completed and current research in the area of child nutrition, conducted by the U.S. Department of Agriculture (USDA) Food and Nutrition Service (FNS). For further information, contact the Office of Analysis, Nutrition, and Evaluation (OANE) at (703) 305-2117. Links to published studies and reports, as well as descriptions of ongoing studies conducted by OANE, are available from the [FNS Web site](#).

Recently Completed Research

Evaluation of the School Breakfast Program (SBP) Pilot Project: Findings from the First Year of Implementation

This congressionally mandated three-year pilot, which began in 2000-01 in six school districts, is studying the impact of the availability of universal-free school breakfast on breakfast participation and measures related to elementary school students' nutritional status and academic performance (also see RESEARCH IN PROGRESS). The pilot is not intended to evaluate the current School Breakfast Program or the value of consuming breakfast.

This interim report includes data that were collected in Spring 2001 from approximately 4,300 elementary school students across all the pilot schools, those schools offering universal-free school breakfasts (79 schools) and those that operated the regular School Breakfast Program (74 schools). Students were measured on dietary intake, cognitive function, height, and weight. This report also includes data collected from parents and teachers, data from school records, and information collected during interviews with school district staff in Spring 2001.

Initial findings from the first year of implementation published in the interim report released in November 2002 show the following:

Breakfast Participation and Dietary Intake

- Participation in the School Breakfast Program nearly doubled in the schools that provided universal-free school breakfasts (from 19% to 36%).
- Greater increases were seen among the paid-eligible participants than the free and reduced-price participants.
- Few elementary school students, less than 4% in both treatment and control schools, skipped breakfast altogether.
- Students in treatment schools (80%) were more likely than control school students (76%) to consume a nutritionally substantive breakfast.

- Given that most students in this study consumed breakfast, universal-free school breakfast seems to have shifted the source of breakfast from home to school.
- Students in treatment schools (7%) were more likely than control school students (4%) to consume two or more substantive breakfasts.
- There was almost no difference in the food and nutrient intake of treatment and control school students at breakfast or over the course of a day. Food energy, protein, and vitamin and mineral intakes of most students in both groups met the standards for dietary adequacy.
- Few students, teachers, or principals in either treatment or control schools reported a stigma that associated breakfast participation with students from low-income households.

Cognitive Functioning and Academic Achievement Test Scores

- Treatment and control school students had similar scores on a cognitive test battery that assessed a range of cognitive functions including attention, short-term memory, and long-term memory.
- There were no differences in math and reading score gains across all grades between treatment and control school students.

Other Measures

- School attendance, tardiness, social/emotional functioning, food insecurity, and health status showed no difference between treatment and control school students.
- The prevalence of overweight was similar--and high--in both treatment (17%) and control (18%) school students.
- There was one significant difference on a behavior rating between treatment and control school students. Treatment school students had a slightly more negative rating. In addition, a significantly higher number of disciplinary incidents were recorded in treatment schools.

Implementation-Related Findings

- School breakfast participation was much higher in treatment schools in which students ate breakfast in classrooms (65%) than when they ate in a cafeteria or other non-classroom setting (28%).
- Treatment school breakfasts were just as likely as control school breakfasts to meet SBP nutrition standards for food energy, target nutrients, and total and saturated fat.
- Increased breakfast participation resulted in lower per-meal labor costs in treatment schools.

NSLP Application/Verification Pilot Project: Report on First Year Experience

Twenty-two School Food Authorities (SFAs) across 16 states began testing pilot procedures in 2000-01 to determine and verify the eligibility of children for free and reduced-price (F/RP) school meals. Three pilot F/RP eligibility determination models are being tested over a three-year period. The three models are:

- Up-Front Documentation;
- Graduated Verification; and
- Verify Direct Certification.

This project responds to a growing concern on the part of the Food and Nutrition Service (FNS) about program integrity issues associated with the current system by which SFAs determine eligibility for F/RP school meals. This report provides a description of these SFAs' experience during their first year under the pilot procedures, drawing comparisons with the same SFAs' operations over a two-year pre-pilot baseline (also see RESEARCH IN PROGRESS). Results are presented for each pilot group.

First Year Highlights: Up-Front Documentation (8 SFAs)

SFAs operating this pilot project require all non-directly certified households to provide documentation of household income upon submission of F/RP application materials.

- **Free and reduced-price approvals fell substantially.** There was an average decrease of 20.2% and 8.8% in the proportion of enrolled children approved for free and reduced-price meals on the basis of an application, respectively, across the eight SFAs.
- **All eight SFAs experienced a drop in the number of children approved for free meals.** The largest drop was 51.7% and the smallest drop was 9.2%.
- **Free meals served fell at a rate similar to the drop in free approvals.** The average SFA had a 21% decrease in the number of free lunches served. There was little change (decline of 1%) in the average number of reduced-price lunches served. Meanwhile, the average SFA in this group had an 8% increase in the number of paid meals served.
- **Total lunches served declined modestly.** On average, there was a 3% decrease in the number of lunches served in 2000-01 compared to the baseline across the eight SFAs.

Graduated Verification (4 SFAs)

SFAs in this pilot project are required to conduct expanded verification if their initial verification sample results in more than one-quarter of all verified applications having a reduction or termination of free or reduced-price meal benefits.

- **Three of four SFAs had initial verification results that triggered expanded verification samples.** Among the initial verification sample, 49% of children whose applications were verified had a reduction or termination of benefits. In the second and third rounds, the reduction/termination rates were 46% and 55%, respectively.
- **Thirty-six percent of children approved for free or reduced-price meal benefits with an application had a reduction or termination in their benefits through the verification process.** Forty-five percent of children enrolled in these four school districts, on average, had been free- or reduced-price approved at the beginning of the school year (September 2000). An estimated 29% of enrolled children would have been approved for such benefits at the conclusion of all verification activities (April 2001).
- **Free meals served fell by 19.9% in the three SFAs that conducted expanded verification in April/May 2001.** Reduced-price meals served dropped by 7.6% and paid meals increased by 29.0% over the same time period.
- **Total meals dropped modestly in April/May 2001.** Overall, across the three SFAs that conducted expanded verification, there was an average drop of 1.1% in the total number of meals served.

Verify Direct Certification (7 SFAs)

SFAs operating this pilot project were required to verify the eligibility of all children directly certified for free meal benefits prior to 2000-01 by December 15, 2000.

- **Almost nine-tenths of directly certified children that were verified were receiving Food Stamp/TANF benefits at the time of verification.**
- **A majority of children who no longer received Food Stamp/TANF benefits were approved for free or reduced-price meal benefits by submitting a new application.** On average, 59.9% of these children submitted a new application and 97.9% of these applications were approved for free or reduced-price status; 27.3% of children who no longer received Food Stamp/TANF benefits remained enrolled in the pilot school district but did not submit a new application, while 12.8% of these children were not enrolled.
- **Verification of directly certified children resulted in the reduction or termination of free meal benefits for very few children.** In the average pilot SFA, only 6.6% of directly certified children in the SFAs had a reduction or termination of benefits. (Initial results provide strong evidence that very few directly certified children become income-ineligible later within the same school year in which they were directly certified.)
- **The standard income verification process resulted in a much higher termination/reduction rate than the verification of direct certification.** On average, 52.6% of application-approved children had a reduction or termination in benefits.

School Lunch Salad Bars

This report compares the availability of fruits and vegetables in schools with and without salad bars using data from the School Nutrition Dietary Assessment Study, Part II (SNDA-II), which were collected during 1998-99. SNDA-II data were used to examine the choice and variety of foods offered at salad bars, but not the quantity in a typical serving or the amount consumed.

Key findings are as follows:

Salad Bar Availability Varies By Grade Level and Free and Reduced-Price Eligibility Status

- Twenty-one percent of public schools offer a salad bar at least once per week.
- Salad bars are most common in high schools and least common in elementary schools. Forty-one percent of high schools, 26% of middle schools, and 14% of elementary schools offer a salad bar at least once per week
- .On a typical school day, 20% of public school children have access to a salad bar--that is, they are enrolled in a school where a salad bar is served.
- Free- and reduced-price-approved children are less likely to be enrolled in a school that offers a salad bar than paid status children because salad bars were more commonly found in the more affluent public National School Lunch Program (NSLP) schools.

A Wide Range of Vegetables and Fruits are Available in Salad Bars

- Nearly all salad bars include at least one vegetable, with the most prevalent being lettuce, tomatoes, and other raw vegetables.
- Over one-half of salad bars include at least one type of fruit, with the most prevalent types being fresh fruit and canned fruit.

Schools With Salad Bars Offer a Wider Variety of Vegetables and Fruits Than Other Schools

- At all grade levels, schools with salad bars are more likely to offer green salad, raw vegetables, fresh fruit, canned fruit, and dried fruit than schools without salad bars.
- Elementary schools with salad bars are more likely to offer fruit or vegetable juice. Middle schools with salad bars are more likely to offer legumes, and high schools with salad bars are more likely to offer legumes, cooked vegetables, or French fries (either baked or fried) than schools without salad bars.
- Middle schools with salad bars are more likely to serve baked French fries and less likely to serve fried French fries than middle schools without salad bars.

The Presence of a Salad Bar is Related to School Characteristics and NSLP Participation

- Schools offering a salad bar at least once per week have a lower percentage of students who are approved for free and reduced-price meals than schools without salad bars.
- In middle and high schools, NSLP participation rates for all students are higher for schools with a salad bar at least once per week than for schools without salad bars.
- Urban schools are less likely to have salad bars than rural or suburban schools.
- High schools with 500-999 students are more likely to have salad bars than larger or smaller schools.

One overarching caveat for this report is that the differences noted above that are associated with salad bars cannot necessarily be attributed to the fact of a school adding a salad bar. It is possible that schools with these pre-existing characteristics were *more likely* to add salad bars. For example, schools with pre-existing higher NSLP participation may have chosen to add salad bars; therefore, one cannot conclude from this report that adding salad bars caused the higher NSLP participation.

Research In Progress

The following section provides a brief description of ongoing FNS research and the current status of these studies:

Evaluation of the School Breakfast Program Pilot Project

The U.S. Department of Agriculture, Food and Nutrition Service (FNS), is currently evaluating the congressionally mandated three-year School Breakfast Pilot Project that began in 2000-01. The six participating school districts, selected from among the 386 that applied to participate, are:

- Harrison County School District, Gulfport, MS

- Independent School District of Boise City, Boise, ID
- Santa Rosa City Schools, Santa Rosa, CA
- Shelby County Board of Education, Columbiana, AL
- Washington Elementary School District, Phoenix, AZ
- Wichita Public Schools, Wichita, KS

In about half of the pilot schools within each of the six school districts, school breakfasts are available at no cost to all elementary school students, regardless of their household income (universal-free school breakfasts). The remaining schools are continuing to operate the regular School Breakfast Program (SBP). This evaluation is rigorously assessing the effects of the availability of universal-free school breakfasts on breakfast participation and a broad range of student outcomes, including academic achievement, school attendance and tardiness, classroom behavior and attentiveness, and dietary intakes. It also is examining how school districts are implementing universal-free breakfasts, including its effect on cost, paperwork, and other administrative requirements.

Initial findings based on the first year data were published in the interim report that was released in November 2002 (see RECENTLY COMPLETED RESEARCH). The final evaluation report will include analyses based on the first year data, as well as data collected during the second and third year of the pilot and will be available in 2004. Data collection in the second year is limited to student and school-level administrative data (for example: attendance, tardiness, breakfast participation, scores on academic achievement tests) and the collection of health and disciplinary data from schools. In the third year, in addition to collecting student and school-level administrative data, another round of implementation-related interviews and site visits would be conducted in Spring 2003 to assess the long-term impacts of the implementation of universal-free breakfasts.

NSLP Application and Verification Pilot Projects

Twenty-two School Food Authorities (SFAs) in 16 states currently are involved in a three-year demonstration to test alternative application, approval, and verification procedures for free/reduced-price meal eligibility determination. FNS is conducting basic assessments of pilot performance by analyzing administrative data for each of the three pilot school years and two preceding school years. A report on Year 1 pilot operations (covering 2000-01) was released in 2002 (see RECENTLY COMPLETED RESEARCH). An updated report spanning all three pilot years will be available in mid-2003.

In addition, FNS awarded a contract in FY 2002 to conduct a rigorous evaluation of the effect of the pilot projects on households below and above the income eligibility guidelines for free and reduced-price meals. The contractor also is collecting and analyzing information about the burden these pilot procedures place on the pilot sites. Results of this evaluation also are expected midyear in 2003.

Case Study of Verification Outcomes in Major Metro Areas

In recent years, FNS has found a high proportion of children selected for verification by SFAs that do not respond to the SFA verification request. Consequently, their benefits have been terminated. FNS is keenly interested in gaining insight into the underlying circumstances of non-

respondent households. To address this concern, through a contract awarded in FY 2002, FNS is conducting in-home interviews with a random sample of households across 21 districts in 7 metropolitan areas that did not respond to verification 2002-03. The contractor also will be collecting and analyzing information regarding the re-application patterns of these same households. Results of this evaluation are expected in late 2003.